

INTRODUCTION

How to Use This Manual

This manual is divided into multiple sections. The first page of each section is marked with a black tab that lines up with its corresponding thumb index tab on this page and the back cover. You can quickly find the first page of each section without looking through a full table of contents. The symbols printed at the top corner of each page can also be used as a quick reference system.


Each section includes:

1. A table of contents, or an exploded view index showing:
 - Parts disassembly sequence.
 - Bolt torques and thread sizes.
 - Page references to descriptions in text.
2. Disassembly/assembly procedures and tools.
3. Inspection.
4. Testing/troubleshooting.
5. Repair.
6. Adjustments.

Safety Messages

Your safety, and the safety of others, is very important. To help you make informed decisions, we have provided safety messages, and other safety information throughout this manual. Of course, it is not practical or possible to warn you about all the hazards associated with servicing this vehicle. You must use your own good judgment.

You will find important safety information in a variety of forms including:

- **Safety Labels** — on the vehicle.
- **Safety Messages** — preceded by a safety alert symbol  and one of three signal words, DANGER, WARNING, or CAUTION. These signal words mean:

- DANGER** You WILL be KILLED or SERIOUSLY HURT if you don't follow instructions.
- WARNING** You CAN be KILLED or SERIOUSLY HURT if you don't follow instructions.
- CAUTION** You CAN be HURT if you don't follow instructions.

- **Instructions** — how to service this vehicle correctly and safely.

All information contained in this manual is based on the latest product information available at the time of printing. We reserve the right to make changes at anytime without notice. No part of this publication may be reproduced, or stored in a retrieval system, or transmitted, in any form by any means, electronic, mechanical, photocopying, recording, or otherwise, without the prior written permission of the publisher. This includes text, figures, and tables.

As you read this manual, you will find information that is preceded by a **NOTICE** symbol. The purpose of this message is to help prevent damage to your vehicle, other property, or the environment.

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Specifications apply to USA and Canada

HONDA MOTOR CO., LTD.

Service Publication Office

As sections with * include SRS components;
special precautions are required when servicing.

2006-08 Honda Pilot

Navigation Tools: Click on the "Table of Contents" below, or use the Bookmarks to the left.

General Information



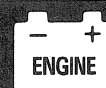
Specifications

specs

Maintenance



*Engine Electrical



Engine Mechanical



Engine Cooling



Fuel and Emissions



*Transaxle



*Steering



Suspension
(Including TPMS)



Brakes
(Including VSA)



*Body



*Heating, Ventilation,
and Air Conditioning



*Body Electrical



*Restraints

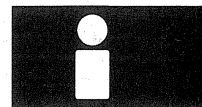


SUPPLEMENTAL RESTRAINT SYSTEM (SRS)

The Pilot SRS includes a driver's airbag in the steering wheel hub, a passenger's airbag in the dashboard above the glove box, seat belt tensioners in the front seat belt retractors, side curtain airbags in the side of the roof, and side airbags in the front seat-backs. Information necessary to safely service the SRS is included in this Service Manual. Items marked with an asterisk (*) on the contents page include or are located near SRS components. Servicing, disassembling, or replacing these items requires special precautions and tools, and should be done by an authorized Honda dealer.

- To avoid rendering the SRS inoperative, which could lead to personal injury or death in the event of a severe frontal or side collision, all SRS service work should be done by an authorized Honda dealer.
- Improper service procedures, including incorrect removal and installation of the SRS, could lead to personal injury caused by unintentional deployment of the airbags and/or side airbags.
- Do not bump or impact the SRS unit, front impact sensors, or side impact sensors when the ignition switch is ON (II), or for at least 3 minutes after the ignition switch is turned OFF; otherwise, the system may fail in a collision, or the airbags may deploy.
- SRS electrical connectors are identified by yellow color coding. Related components are located in the steering column, front console, dashboard, dashboard lower panel, in the dashboard above the glove box, in the front seats, in the roof side, and around the floor. Do not use electrical test equipment on these circuits.





General Information

Chassis and Paint Codes

'06 Model	1-2
'07 Model	1-4
'08 Model	1-6
Identification Number Locations	1-8
Danger/Warning/Caution Label Locations	1-9
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Parts Marking	1-15
Precautions for Variable Torque Management 4WD (VTM-4) System	1-15

General Information

Chassis and Paint Codes

'06 Model

Vehicle Identification Number

5FN YF1 8 1 * 6 B 000001

5	F	N	Y	F	1	8	1	*	6	B	0	0	0	0	0	1
a	b	c	d	e	f	g	h									

a. Manufacturer, Make, and Type of Vehicle

5FN: Honda Manufacturing., of Alabama, LLC.
Honda Multipurpose passenger vehicle
2HK: Honda of Canada Mfg.,
Honda Canada Inc.
Honda Multipurpose passenger vehicle

b. Body and Engine Type

YF1: Pilot 4WD/J35A9
YF2: Pilot 2WD/J35Z1

c. Body Type and Transmission Type

8: 5-door/5-speed Automatic

d. Vehicle Grade (Series)

1: LX
4: EX
5: EXL
6: EXL with Rear Entertainment System
7: EXL with Navigation System

e. Check Digit

f. Model Year

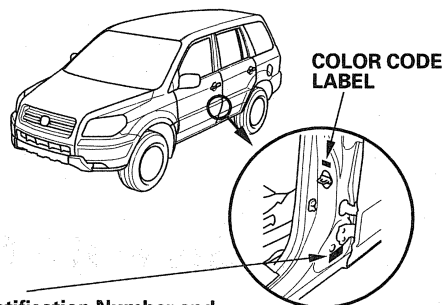
6: '06

g. Factory Code

B: Lincoln Factory in Alabama
H: Alliston, Ontario Factory in Canada

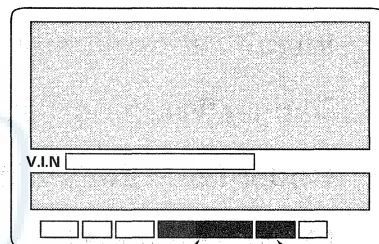
h. Serial Number

Produced in Alabama models
000001—: USA models
500001—: Canada models
Produced in Canada models
000001—: Canada models
500001—: USA models

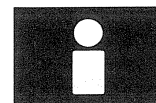


Vehicle Identification Number and
Federal Motor Vehicle
Safety Standard Certification and Paint Code Label

Vehicle Identification Number and
Canadian Motor Vehicle
Safety Standard Certification and Paint Code Label



PAINT CODE INTERIOR COLOR CODE



Engine Number

J35A9 - 1500001

a

b

a. Engine Type

J35A9: 3.5 L SOHC VTEC Sequential Multiport
Fuel-injected engine

J35Z1: 3.5 L SOHC i-VTEC Sequential Multiport
Fuel-injected engine

b. Serial Number

1000001—: J35Z1 engine

1300001—: J35A9 engine, Produced in Canada

1500001—: J35A9 engine, Produced in Alabama

Paint Code

Code	Color	USA models	Canada models
B-92P	Nighthawk Black Pearl	<input type="radio"/>	<input type="radio"/>
B-533M	Steel Blue Metallic	<input type="radio"/>	<input type="radio"/>
G-521M	Amazon Green Metallic	<input type="radio"/>	<input type="radio"/>
NH-578	Taffeta White	<input type="radio"/>	
NH-662P	Sage Brush Pearl	<input type="radio"/>	<input type="radio"/>
NH-689M	Billet Silver Metallic	<input type="radio"/>	<input type="radio"/>
R-519P	Redrock Pearl	<input type="radio"/>	<input type="radio"/>
YR-545M	Desert Rock Metallic	<input type="radio"/>	<input type="radio"/>

Transmission Number

BVLA - 8000001

a

b

a. Transmission Type

BVLA: 5-speed Automatic (2WD model)

BVGA: 5-speed Automatic (4WD model)

b. Serial Number

General Information

Chassis and Paint Codes (cont'd)

'07 Model

Vehicle Identification Number

5FN YF1 8 1 * 7 B 000001

5	F	N	Y	F	1	8	1	*	7	B	0	0	0	0	0	1
a	b	c	d	e	f	g	h									

a. Manufacturer, Make, and Type of Vehicle

5FN: Honda Manufacturing., of Alabama, LLC.
Honda Multipurpose passenger vehicle

2HK: Honda of Canada Mfg.,
Honda Canada Inc.

Honda Multipurpose passenger vehicle

b. Body and Engine Type

YF1: Pilot 4WD/J35A9

YF2: Pilot 2WD/J35Z1

c. Body Type and Transmission Type

8: 5-door/5-speed Automatic

d. Vehicle Grade (Series)

1: LX

4: EX

5: EXL

6: EXL with Rear Entertainment System

7: EXL with Navigation System

e. Check Digit

f. Model Year

7: '07

g. Factory Code

B: Lincoln Factory in Alabama

H: Alliston, Ontario Factory in Canada

h. Serial Number

Produced in Alabama models

000001—: USA models

500001—: Canada models

Produced in Canada models

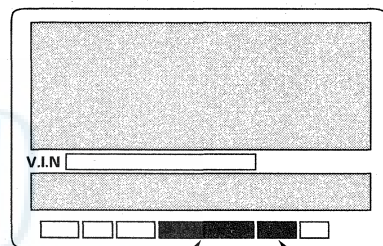
000001—: Canada models

500001—: USA models



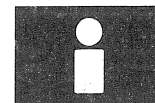
Vehicle Identification Number and
Federal Motor Vehicle
Safety Standard Certification and Paint Code Label

Vehicle Identification Number and
Canadian Motor Vehicle
Safety Standard Certification and Paint Code Label



PAINT CODE

INTERIOR COLOR CODE



Engine Number

J35A9 - 2500001

a

b

a. Engine Type

J35A9: 3.5 L SOHC VTEC Sequential Multiport
Fuel-injected engine

J35Z1: 3.5 L SOHC i-VTEC Sequential Multiport
Fuel-injected engine

b. Serial Number

2000001—: J35Z1 engine

2300001—: J35A9 engine, Produced in Canada

2500001—: J35A9 engine, Produced in Alabama

Transmission Number

BVLA - 9000001

a

b

a. Transmission Type

BVLA: 5-speed Automatic (2WD model)

BVGA: 5-speed Automatic (4WD model)

b. Serial Number

Paint Code

Code	Color	USA models	Canada models
NH-578	Taffeta White	<input type="radio"/>	<input type="radio"/>
NH-689M	Billet Silver Metallic	<input type="radio"/>	<input type="radio"/>
NH-705M	Nimbus Gray Metallic	<input type="radio"/>	<input type="radio"/>
NH-707	Formal Black	<input type="radio"/>	<input type="radio"/>
B-533M	Steel Blue Metallic	<input type="radio"/>	<input type="radio"/>
G-525M	Aberdeen Green Metallic	<input type="radio"/>	<input type="radio"/>
R-529P	Dark Cherry Pearl	<input type="radio"/>	<input type="radio"/>
YR-545M	Desert Rock Metallic	<input type="radio"/>	<input type="radio"/>
NH-677P	Aspen White Pearl	<input type="radio"/>	<input type="radio"/>

General Information

Chassis and Paint Codes (cont'd)

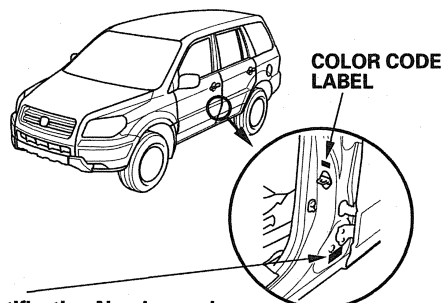
'08 Model

Vehicle Identification Number

5FN YF1 8 1 * 8 B 000001

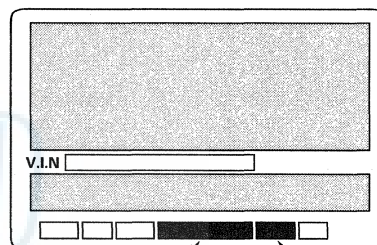
a b c d e f g h

- a. **Manufacturer, Make, and Type of Vehicle**
5FN: Honda Manufacturing., of Alabama, LLC.
Honda Multipurpose passenger vehicle
- b. **Body and Engine Type**
YF1: Pilot 4WD/J35A9
YF2: Pilot 2WD/J35Z1
- c. **Body Type and Transmission Type**
8: 5-door/5-speed Automatic
- d. **Vehicle Grade (Series)**
USA models
2: LX-VP
3: EX-SE
4: EX
5: EXL
6: EXL with Rear Entertainment System
7: EXL with Navigation System
Canada models
1: LX
3: EX
5: EXL
6: EXL with Rear Entertainment System
7: EXL with Navigation System
- e. **Check Digit**
- f. **Model Year**
8: '08
- g. **Factory Code**
B: Lincoln Factory in Alabama
- h. **Serial Number**
000001—: USA models
500001—: Canada models

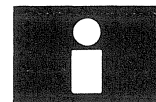


Vehicle Identification Number and
Federal Motor Vehicle
Safety Standard Certification and Paint Code Label

Vehicle Identification Number and
Canadian Motor Vehicle
Safety Standard Certification and Paint Code Label



PAINT CODE INTERIOR COLOR CODE



Engine Number

J35A9 - 3500001	
a	b
a. Engine Type	
J35A9: 3.5 L SOHC VTEC Sequential Multiport Fuel-injected engine	
J35Z1: 3.5 L SOHC i-VTEC Sequential Multiport Fuel-injected engine	
b. Serial Number	
3000001—: J35Z1 engine	
3500001—: J35A9 engine, Produced in Alabama	

Paint Code

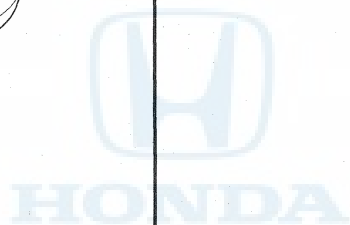
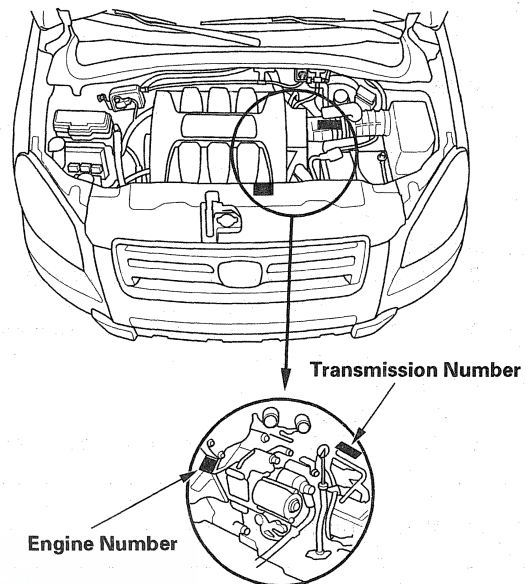
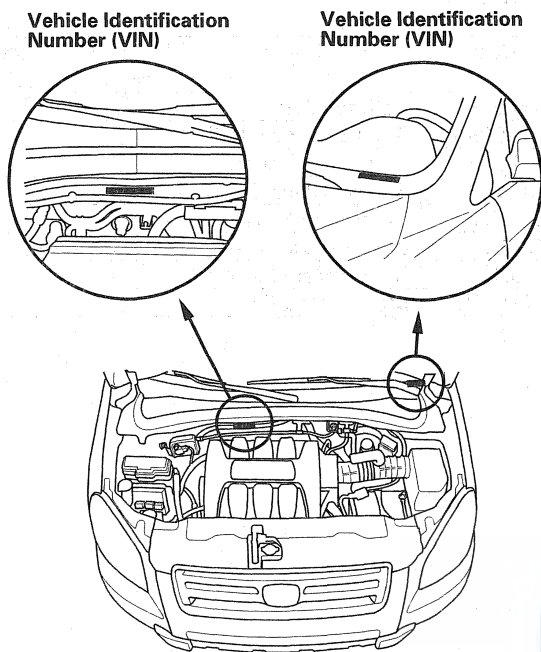
Code	Color	USA models	Canada models
NH-578	Taffeta White	<input type="radio"/>	<input type="radio"/>
NH-689M	Billet Silver Metallic	<input type="radio"/>	<input type="radio"/>
NH-705M	Nimbus Gray Metallic	<input type="radio"/>	<input type="radio"/>
NH-707	Formal Black II	<input type="radio"/>	<input type="radio"/>
B-533M	Steel Blue Metallic	<input type="radio"/>	<input type="radio"/>
G-525M	Dark Silver Sage Metallic	<input type="radio"/>	<input type="radio"/>
R-529P	Dark Cherry Pearl	<input type="radio"/>	<input type="radio"/>
YR-573M	Mocha Metallic	<input type="radio"/>	<input type="radio"/>

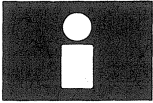
Transmission Number

P34A - 6000001	
a	b
a. Transmission Type	
P35A: 5-speed Automatic (2WD model)	
P34A: 5-speed Automatic (4WD model)	
b. Serial Number	

General Information

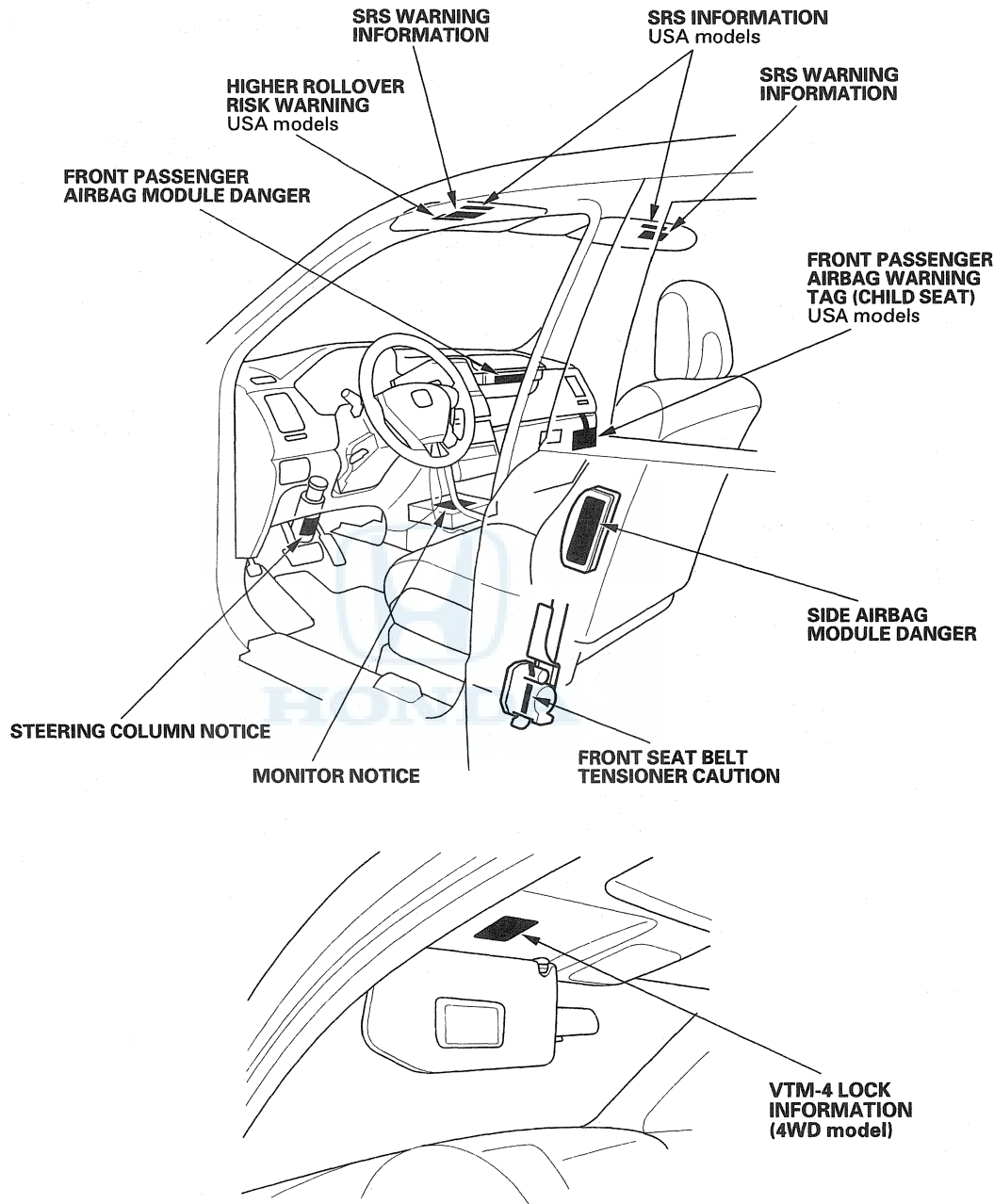
Identification Number Locations





Danger/Warning/Caution Label Locations

Front Passenger's Compartment:

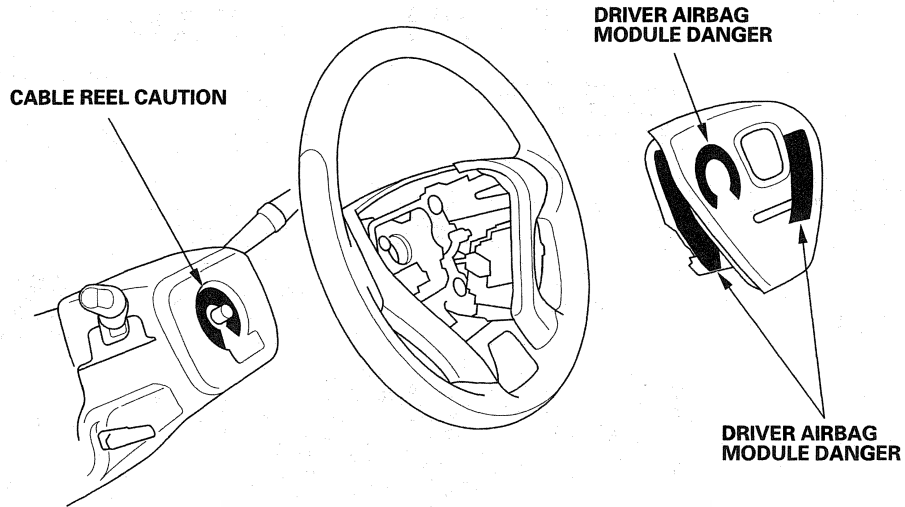


(cont'd)

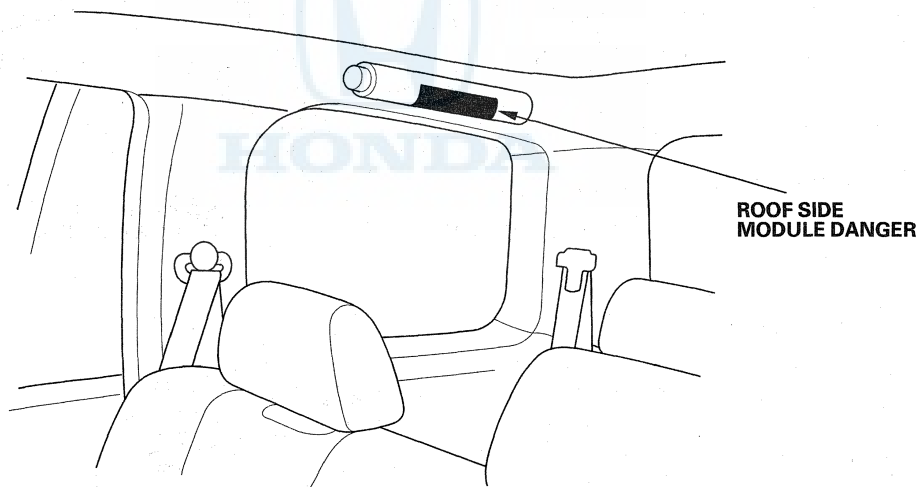
General Information

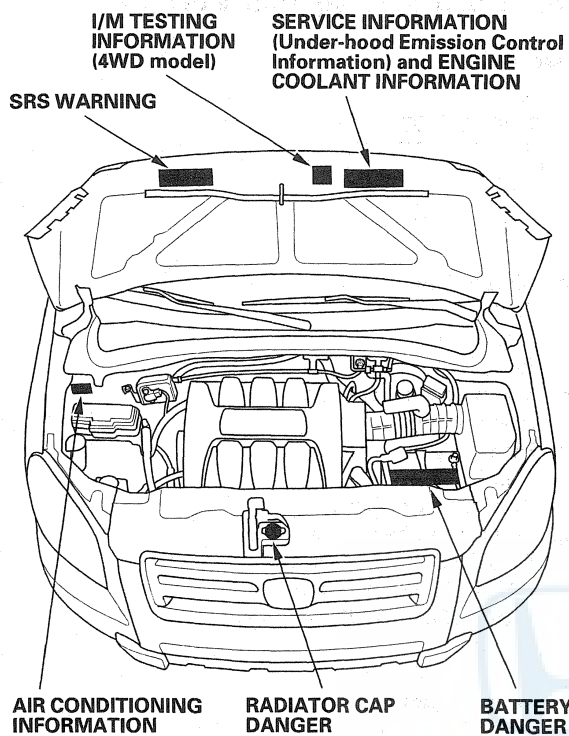
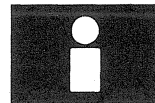
Danger/Warning/Caution Label Locations (cont'd)

Steering Wheel:



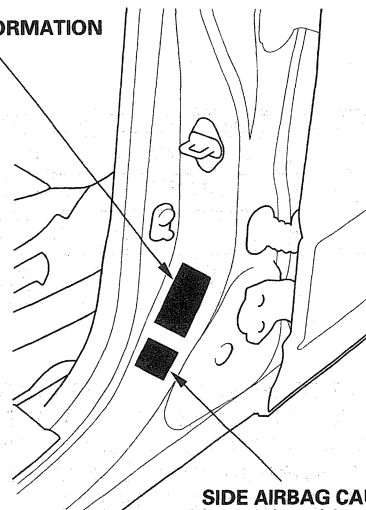
Rear Passenger's Compartment:





Doorjamb:

TIRE INFORMATION



General Information

Under-hood Emission Control Label

Emission Group Identification

Example:

'06-'08 Models

INFORMATION ▶THE FACTORY INSTALLED LONG LIFE COOLANT MUST BE REPLACED AT 120 MONTHS OR 180,000 KM (111,849 MILES). ▶REPLACEMENT COOLANT MUST BE DONE AT 120 MONTHS OR 180,000 KM (111,849 MILES). ▶PRIOR TO ADDING OR REPLACING THE COOLANT, ALWAYS USE Honda RECOMMENDED COOLANT. ALL SEASON ANTIFREEZE/COOLANT TYPE 2. THIS COOLANT IS PRE-MIXED WITH 50% DISTILLED WATER. IT DOES NOT REQUIRE ANY ADDITIONAL MIXING. ▶PRIOR TO ADDING THE COOLANT, OR THE LIFE OF THE ENGINE MAY BE SERIOUSLY COMPROMISED. ▶CHECK ON AND ADD THE COOLANT AT THE RESERVE TANK, NOT THE RADIATOR. ▶FOR FURTHER INFORMATION ON THE COOLING SYSTEM, READ THE OWNER'S MANUAL OR CHECK WITH YOUR Honda DEALER.	VEHICLE EMISSION CONTROL INFORMATION THIS VEHICLE CONFORMS TO U.S. EPA TIER 2 BIN 5 REGULATIONS APPLICABLE TO 2006 MODEL YEAR NEW LIGHT-DUTY TRUCKS AND CALIFORNIA REGULATIONS APPLICABLE TO 2006 MODEL YEAR NEW LEV II ULEV LIGHT-DUTY TRUCKS. CATALYST 2006-2007 TWC, 2A/F SENSOR, 2H052, EGR, SFI U.S. EPA : T2B5 LDT2 OBD : CA OBD II FUEL : GASOLINE ARB : LEV II ULEV LDT2 OBD : CA OBD II FUEL : GASOLINE 2WU-TWC, TWC, 2A/F SENSOR, 2H052, EGR, SFI HONDA MOTOR CO., LTD. 7-B PVT-A04
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'06 Model

THIS VEHICLE CONFORMS TO U.S. EPA TIER 2 BIN 5 REGULATIONS APPLICABLE TO 2006 MODEL YEAR NEW LIGHT-DUTY TRUCKS AND CALIFORNIA REGULATIONS APPLICABLE TO 2006 MODEL YEAR NEW LEV II ULEV LIGHT-DUTY TRUCKS.

'07 Model

THIS VEHICLE CONFORMS TO U.S. EPA TIER 2 BIN 5 REGULATIONS APPLICABLE TO 2007 MODEL YEAR NEW LIGHT-DUTY TRUCKS AND CALIFORNIA REGULATIONS APPLICABLE TO 2007 MODEL YEAR NEW LEV II ULEV LIGHT-DUTY TRUCKS.

'08 Model

INFORMATION ▶THE FACTORY INSTALLED LONG LIFE COOLANT MUST BE REPLACED ACCORDING TO MAINTENANCE INTERVAL (SEE CODE 2) OR AT 120 MONTHS WHICHEVER COMES FIRST. ▶PRIOR TO ADDING OR REPLACING THE COOLANT, ALWAYS USE Honda RECOMMENDED COOLANT. LONG-LIFE ANTIFREEZE/COOLANT TYPE 2. THIS COOLANT IS PRE-MIXED WITH 50% DISTILLED WATER. IT DOES NOT REQUIRE ANY ADDITIONAL MIXING. ▶PRIOR TO ADDING THE COOLANT, OR THE LIFE OF THE ENGINE MAY BE SERIOUSLY COMPROMISED. ▶CHECK ON AND ADD THE COOLANT AT THE RESERVE TANK, NOT THE RADIATOR. ▶FOR FURTHER INFORMATION ON THE COOLING SYSTEM, READ THE OWNER'S MANUAL OR CHECK WITH YOUR Honda DEALER.	VEHICLE EMISSION CONTROL INFORMATION CONFORMS TO REGULATIONS : 2008MY U.S. EPA : T2B5 LDT2 OBD : CA OBD II FUEL : GASOLINE ARB : LEV II ULEV LDT2 OBD : CA OBD II FUEL : GASOLINE 2WU-TWC, TWC, 2A/F SENSOR, 2H052, EGR, SFI HONDA MOTOR CO., LTD. 7-B PVT-A04 8HNXT03.5NKR 8HNXR0156BBA 3.5L
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Test Group and Evaporative Family

Test Group:

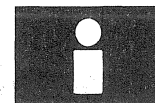
8 HNX T 03.5 NKR
a b c d e

- a. Model Year
6: '06
7: '07
8: '08
- b. Manufacturer Subcode
HNX: Honda
- c. Family Type
T: LDT
- d. Displacement Group
03.5: 3.5L
- e. Sequence Characters
TKR/WKR: J35Z1 engine
RKR/VKR: J35A9 engine
NKR: J35Z1 and J35A9 engines

Evaporative Family:

8 HNX R 0156 BBA
a b c d e

- a. Model Year
6: '06
7: '07
8: '08
- b. Manufacturer Subcode
HNX: Honda
- c. Family Type
R: Refueling
- d. Canister Working Capacity Group
0156: '06 and '08 models
0163: '07 model
- e. Sequence Characters
BBA: '06 and '08 models
BBY: '07 model

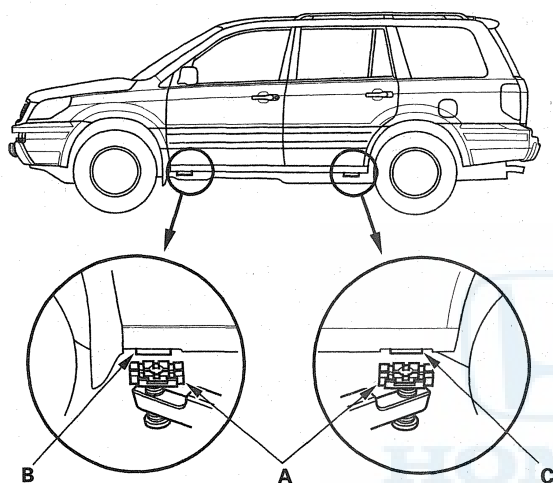


Lift and Support Points

NOTE: If you are going to remove heavy components such as suspension or the fuel tank from the rear of the vehicle, first support the front of the vehicle with tall safety stands. When substantial weight is removed from the rear of the vehicle, the center of gravity can change, causing the vehicle to tip forward on the lift.

Vehicle Lift

1. Position the lift blocks (A) under the vehicle's front support points (B) and rear support points (C).



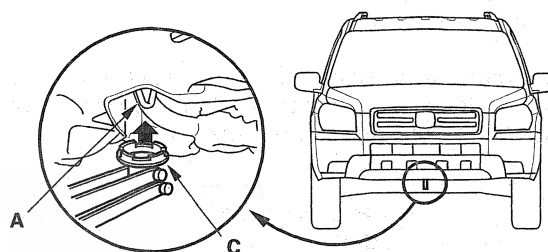
2. Raise the lift a few inches, and rock the vehicle gently to be sure it is firmly supported.
3. Raise the lift to its full height, and inspect the vehicle support points for solid contact with the lift blocks.

Safety Stands

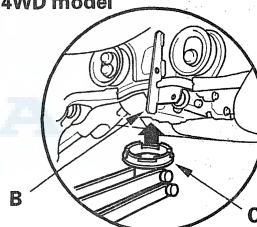
To support the vehicle on safety stands, use the same support points (B and C) as for a vehicle lift. Always use safety stands when working on or under any vehicle that is supported only by a jack.

Floor Jack

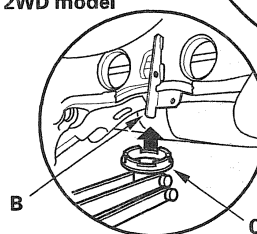
1. When lifting the front of the vehicle, set the parking brake. When lifting the rear of the vehicle, put the shift lever in the P position.
2. Block the wheels that are not being lifted.
3. Position the floor jack under the front jacking bracket (A) or the rear jacking bracket (B). Center the jacking bracket on the jack platform (C), and jack up the vehicle high enough to fit the safety stands under it.



4WD model



2WD model



4. Position the safety stands under the support points, and adjust them so the vehicle is level.
5. Lower the vehicle onto the stands.

General Information

Towing

If the vehicle needs to be towed, call a professional towing service. Never tow the vehicle behind another vehicle with a rope or chain. It is very dangerous.

Emergency Towing

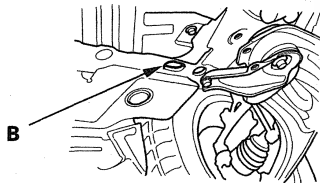
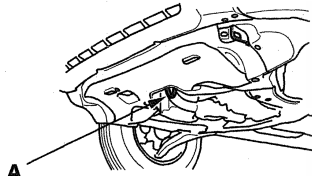
There are three popular methods of towing a vehicle.

Flat-bed Equipment — The operator loads the vehicle on the back of a truck. **This is the best way of transporting the vehicle.**

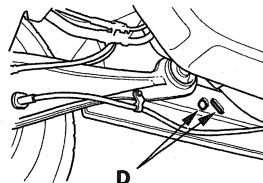
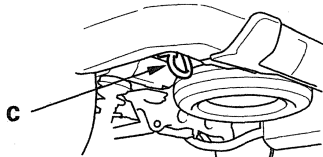
To accommodate flat-bed equipment, the vehicle is equipped with a front towing hook (A), front tie down hook slots (B), rear towing hook (C), and rear tie down hook slots (D).

The towing hooks can be used with a winch to pull the vehicle onto the truck, and the tie down hook slots can be used to secure the vehicle to the truck.

Front:



Rear:



Wheel Lift Equipment — The tow truck uses two pivoting arms that go under the tires (front or rear) and lifts them off the ground. The other two wheels remain on the ground. **Never tow the vehicle with this wheel lift equipment.**

Sling-type Equipment — The tow truck uses metal cables with hooks on the ends. These hooks go around parts of the frame or suspension, and the cables lift that end of the vehicle off the ground. The vehicle's suspension and body can be seriously damaged if this method of towing is attempted. **This method of towing the vehicle is unacceptable.**

The only recommended way of towing the PILOT is on a flat-bed truck. Towing the 4WD PILOT with only two wheels on the ground will damage parts of the VTM-4 system. The 2WD PILOT may also be towed with the front wheels off the ground, or with all four wheels on the ground.

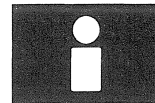
If the 2WD PILOT cannot be transported by a flat-bed, it should be towed with the front wheels off the ground. If the vehicle is damaged, and must be towed with the front wheels on the ground, or if the vehicle is towed with all four wheels on the ground, do this:

- Release the parking brake.
- Start the engine.
- Shift to the D position, then to the N position.
- Turn off the engine.
- Leave the ignition switch in the ACCESSORY (I) position so the steering wheel does not lock.
- Make sure all accessories are turned off to minimize battery current draw.

It is best to tow the vehicle no farther than 50 miles (80 km), and keep the speed below 35 mph (55km/h).

NOTICE

- Improper towing preparation will damage the transmission. Follow the above procedure exactly. If you cannot shift the transmission or start the engine, the vehicle must be transported on a flat-bed.
- Trying to lift or tow the vehicle by the bumpers will cause serious damage. The bumpers are not designed to support the vehicle's weight.



Parts Marking

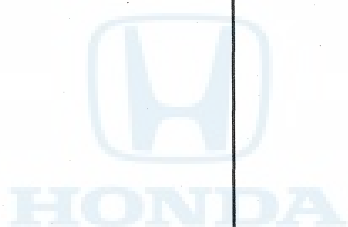
To deter vehicle theft, certain major components are marked with the vehicle identification number (VIN). Original parts have self-adhesive labels. Replacement body parts have generic self-adhesive labels. These labels should not be removed. The original engine or transmission VIN plates are not transferable to the replacement engine or transmission.

NOTE: Be careful not to damage the parts marking labels during body repair. Mask the labels before repairing the part.

Precautions for Variable Torque Management 4WD (VTM-4) System

This vehicle is equipped with the Variable Torque Management 4WD (VTM-4) System. The VTM-4 system distributes driving torque between the front and rear wheels when accelerating and when wheel spin occurs.

The VTM-4 system does not have a manual switch to disable the 4WD system. Whenever service work requires spinning the front or rear wheels with the engine, always lift and support the vehicle so all four wheels are off the ground.



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Standards and Service Limits

Engine Electrical

Item	Measurement	Qualification	Standard or New	Service Limit
Ignition coil	Rated voltage		12 V	
	Firing order		1—4—2—5—3—6	
Spark plug	Type		NGK: IZFR5K11	
	Gap		1.0—1.1 mm (0.039—0.043 in.)	
Ignition timing	At idle	In N or P position	10±2 °BTDC	
	Check the <i>red</i> mark			
Drive belt	Tension		Auto tensioner	
Alternator	Output	At 13.5 V and normal engine temperature	130 A	
	Coil (rotor) resistance	At 68 °F (20 °C)	2.5 Ω	
	Slip ring O.D.		14.4 mm (0.57 in.)	14.0 mm (0.55 in.)
	Brush length		10.5 mm (0.41 in.)	1.5 mm (0.06 in.)
	Brush spring tension		3.2 N (0.33 kgf, 0.72 lbf)	
Starter	Output		1.6 kW	
	Commutator mica depth		0.4—0.5 mm (0.016—0.020 in.)	0.2 mm (0.008 in.)
	Commutator runout		0.05 mm (0.002 in.) max.	0.1 mm (0.004 in.)
	Commutator O.D.		29.3—29.5 mm (1.15—1.16 in.)	28.8 mm (1.134 in.)
	Brush length		7.7—8.0 mm (0.30—0.31 in.)	11 mm (0.433 in.)
	Brush spring tension (new)		15.7—17.7 N (1.60—1.80 kgf, 3.53—3.98 lbf)	

Engine Assembly

Item	Measurement	Qualification	Standard or New
Compression	Pressure	Minimum	930 kPa (9.5 kgf/cm ² , 135 psi)
	Check the engine with the starter cranking	Maximum variation	200 kPa (2.0 kgf/cm ² , 28 psi)

HONDA

Cylinder Head

Item	Measurement		Qualification	Standard or New	Service Limit
Head	Warpage			————	0.05 mm (0.002 in.)
	Height			120.95—121.05 mm (4.762—4.766 in.)	————
Camshaft	End play			0.05—0.20 mm (0.002—0.008 in.)	0.20 mm (0.008 in.)
	Camshaft-to-holder oil clearance			0.050—0.089 mm (0.0020—0.0035 in.)	0.15 mm (0.006 in.)
	Total runout			0.03 mm (0.001 in.) max.	0.04 mm (0.002 in.)
	Cam lobe height	J35A9	Intake, primary	35.041 mm (1.3796 in.)	————
			Intake, mid	36.445 mm (1.4348 in.)	————
			Intake, secondary	35.284 mm (1.3891 in.)	————
		J35Z1	Intake, front side	36.149 mm (1.4232 in.)	————
			Intake, rear side	35.096 mm (1.3817 in.)	————
		J35A9	Exhaust	36.326 mm (1.4302 in.)	————
		J35Z1	Exhaust, front side	35.864 mm (1.4120 in.)	————
	Exhaust, rear side		36.509 mm (1.4374 in.)	————	
Valve	Clearance (cold)		Intake	0.20—0.24 mm (0.008—0.009 in.)	————
			Exhaust	0.28—0.32 mm (0.011—0.013 in.)	————
	Stem O.D.		Intake	5.485—5.495 mm (0.2159—0.2163 in.)	5.455 mm (0.2148 in.)
			Exhaust	5.450—5.460 mm (0.2146—0.2150 in.)	5.420 mm (0.2134 in.)
	Stem-to-guide clearance		Intake	0.020—0.045 mm (0.0008—0.0018 in.)	0.08 mm (0.003 in.)
			Exhaust	0.055—0.080 mm (0.0022—0.0031 in.)	0.11 mm (0.004 in.)
Valve seat	Width		Intake	1.25—1.55 mm (0.049—0.061 in.)	2.00 mm (0.079 in.)
			Exhaust	1.25—1.55 mm (0.049—0.061 in.)	2.00 mm (0.079 in.)
	Stem installed height		Intake	46.75—47.55 mm (1.841—1.872 in.)	47.80 mm (1.882 in.)
			Exhaust	46.68—47.48 mm (1.838—1.869 in.)	47.73 mm (1.879 in.)
Valve spring	Free length	J35A9	Intake	51.54 mm (2.029 in.)	————
		J35Z1	Intake, front side	53.63 mm (2.111 in.)	————
			Intake, rear side		————
		J35A9	Exhaust	51.06 mm (2.010 in.)	————
		J35Z1	Exhaust, front side	52.55 mm (2.069 in.)	————
			Exhaust, rear side		————
Valve guide	I.D.		Intake	5.510—5.530 mm (0.2169—0.2177 in.)	5.55 mm (0.219 in.)
			Exhaust	5.510—5.530 mm (0.2169—0.2177 in.)	5.55 mm (0.219 in.)
	Installed height		Intake	21.20—22.20 mm (0.835—0.874 in.)	————
			Exhaust	20.60—21.60 mm (0.811—0.850 in.)	————
Rocker arm	Arm-to-shaft clearance	J35A9	Intake	0.026—0.067 mm (0.0010—0.0026 in.)	————
		J35Z1	Intake, front side	0.019—0.067 mm (0.0007—0.0026 in.)	————
			Intake, rear side	0.015—0.046 mm (0.0006—0.0018 in.)	————
		J35A9	Exhaust	0.026—0.077 mm (0.0010—0.0030 in.)	————
		J35Z1	Exhaust, front side	0.019—0.058 mm (0.0007—0.0023 in.)	————
			Exhaust, rear side	0.015—0.046 mm (0.0006—0.0018 in.)	————

Standards and Service Limits

Engine Block

Item	Measurement	Qualification	Standard or New	Service Limit
Block	Warpage of deck		0.07 mm (0.003 in.) max.	0.10 mm (0.004 in.)
	Bore diameter		89.000—89.015 mm (3.5039—3.5045 in.)	89.065 mm (3.5065 in.)
	Bore taper		—	0.05 mm (0.002 in.)
	Reboring limit		—	0.25 mm (0.01 in.)
Piston	Skirt O.D. at 16.0 mm (0.63 in.) from bottom of skirt		88.975—88.985 mm (3.5029—3.5033 in.)	—
	Clearance in cylinder		0.015—0.040 mm (0.0006—0.0016 in.)	0.08 mm (0.003 in.)
	Ring groove width	Top	1.240—1.250 mm (0.0488—0.0492 in.)	1.27 mm (0.050 in.)
		Second	1.220—1.230 mm (0.0480—0.0484 in.)	1.25 mm (0.049 in.)
		Oil	2.805—2.825 mm (0.1104—0.1112 in.)	2.85 mm (0.112 in.)
Piston ring	Ring-to-groove clearance	Top	0.055—0.080 mm (0.0022—0.0031 in.)	0.15 mm (0.006 in.)
		Second	0.030—0.055 mm (0.0012—0.0022 in.)	0.13 mm (0.005 in.)
	Ring end gap	Top	0.20—0.35 mm (0.008—0.014 in.)	0.60 mm (0.024 in.)
		Second	0.40—0.55 mm (0.016—0.022 in.)	0.70 mm (0.028 in.)
		Oil	0.20—0.70 mm (0.008—0.028 in.)	0.80 mm (0.031 in.)
Piston pin	O.D.		21.962—21.965 mm (0.8646—0.8648 in.)	21.954 mm (0.8643 in.)
	Pin-to-piston clearance		−0.0050 to +0.0010 mm (−0.00020 to +0.00004 in.)	0.004 mm (0.0002 in.)
Connecting rod	Pin-to-rod clearance		0.005—0.014 mm (0.0002—0.0006 in.)	0.019 mm (0.0007 in.)
	Small-end bore diameter		21.970—21.976 mm (0.8650—0.8652 in.)	—
	Large-end bore diameter		58.0 mm (2.28 in.)	—
	End play installed on crankshaft		0.15—0.35 mm (0.006—0.014 in.)	0.45 mm (0.018 in.)
Crankshaft	Main journal diameter		71.976—72.000 mm (2.8337—2.8346 in.)	—
	Rod journal diameter		54.976—55.000 mm (2.1644—2.1654 in.)	—
	Rod/main journal taper		0.005 mm (0.0002 in.) max.	0.010 mm (0.0004 in.)
	Rod/main journal out-of-round		0.005 mm (0.0002 in.) max.	0.010 mm (0.0004 in.)
	End play		0.10—0.35 mm (0.004—0.014 in.)	0.45 mm (0.018 in.)
	Runout		0.025 mm (0.0010 in.) max.	0.03 mm (0.0012 in.)
Crankshaft bearing	Main bearing-to-journal oil clearance		0.020—0.044 mm (0.0008—0.0017 in.)	0.050 mm (0.0020 in.)
	Rod bearing clearance		0.020—0.044 mm (0.0008—0.0017 in.)	0.050 mm (0.0020 in.)

Engine Lubrication

Item	Measurement	Qualification	Standard or New	Service Limit
Engine oil	Capacity	Engine overhaul	5.0 L (5.3 US qt)	
		Oil change including filter	4.3 L (4.5 US qt)	
		Oil change without filter	4.0 L (4.2 US qt)	
Oil pump	Inner-to-outer rotor clearance		0.04—0.16 mm (0.002—0.006 in.)	0.20 mm (0.008 in.)
	Pump housing-to-outer rotor clearance		0.10—0.19 mm (0.004—0.007 in.)	0.20 mm (0.008 in.)
	Pump housing-to-outer rotor axial clearance		0.02—0.07 mm (0.001—0.003 in.)	0.12 mm (0.005 in.)
	Oil pressure with oil temperature at 176 °F (80 °C)	At idle	70 kPa (0.7 kgf/cm ² , 10 psi)	
		At 3,000 rpm	490 kPa (5.0 kgf/cm ² , 71 psi)	

Cooling System

Item	Measurement	Qualification	Standard or New
Radiator	Coolant capacities (including engine, heater, hoses, and reservoir) Use Honda Long Life Antifreeze/ Coolant Type 2	Engine overhaul	9.2 L (2.43 US gal)
		Coolant change	7.3 L (1.93 US gal)
Coolant reservoir	Coolant capacity		0.73 L (0.19 US gal)
Radiator cap	Opening pressure		93—123 kPa (0.95—1.25 kgf/cm ² , 14—18 psi)
Thermostat	Opening temperature	Begins to open	169—176 °F (76—80 °C)
		Fully open	194 °F (90 °C)
	Valve lift at fully open		10.0 mm (0.39 in.) min.

Fuel and Emissions

Item	Measurement	Qualification	Standard or New
Fuel pressure regulator	Pressure with fuel pressure gauge connected		380—430 kPa (3.9—4.4 kgf/cm ² , 55—63 psi)
Fuel tank	Capacity		77.0 L (20.34 US gal)
Engine idle	Idle speed without load	In N or P position (J35Z1)	650±50 rpm
		In N or P position (J35A9)	730±50 rpm
	Idle speed with high electrical load (A/C switch ON, temperature set to max cool, blower fan on High, rear window defogger ON, and headlights on high beam)	In N or P position (J35Z1)	700±50 rpm
		In N or P position (J35A9)	730±50 rpm

Standards and Service Limits

Automatic Transmission and A/T Differential

Item	Measurement		Qualification	Standard or New	Service Limit
Automatic transmission fluid	Capacity: Use Honda ATF-Z1	4WD	Fluid change	3.3 L (3.5 US qt)	
			Overhaul	7.9 L (8.3 US qt)	
		2WD	Fluid change	3.8 L (4.0 US qt)	
			Overhaul	8.4 L (8.9 US qt)	
ATF pressure	Line pressure		At 2,000 rpm in N or P position	950—1,010 kPa (9.7—10.3 kgf/cm ² , 140—146 psi)	900 kPa (9.2 kgf/cm ² , 130 psi)
	5th clutch pressure		At 2,000 rpm in D position	950—1,010 kPa (9.7—10.3 kgf/cm ² , 140—146 psi)	890 kPa (9.1 kgf/cm ² , 130 psi)
	4th clutch pressure		At 2,000 rpm in D position	950—1,010 kPa (9.7—10.3 kgf/cm ² , 140—146 psi)	890 kPa (9.1 kgf/cm ² , 130 psi)
	3rd clutch pressure		At 2,000 rpm in D position	950—1,010 kPa (9.7—10.3 kgf/cm ² , 140—146 psi)	890 kPa (9.1 kgf/cm ² , 130 psi)
	2nd clutch pressure		At 2,000 rpm in 2 position	950—1,010 kPa (9.7—10.3 kgf/cm ² , 140—146 psi)	890 kPa (9.1 kgf/cm ² , 130 psi)
	1st clutch pressure		At 2,000 rpm in 1 position	950—1,010 kPa (9.7—10.3 kgf/cm ² , 140—146 psi)	890 kPa (9.1 kgf/cm ² , 130 psi)
	1st-hold clutch pressure		At 2,000 rpm in 1 position	800—880 kPa (8.2—9.0 kgf/cm ² , 120—130 psi)	760 kPa (7.7 kgf/cm ² , 110 psi)
Torque converter	Stall speed Check with vehicle on level ground			1,950 rpm	1,800—2,100 rpm
Clutch	Clutch end-plate-to-top disc clearance		1st	——	1.15—1.35 mm (0.045—0.053 in.)
			2nd	——	1.05—1.25 mm (0.041—0.049 in.)
			3rd	——	0.8—1.0 mm (0.031—0.039 in.)
			4th	——	0.7—0.9 mm (0.028—0.035 in.)
			5th	——	0.75—0.95 mm (0.030—0.037 in.)
			1st-hold	——	0.6—1.0 mm (0.024—0.039 in.)
	Clutch return spring free length		1st	68.3 mm (2.69 in.)	66.3 mm (2.61 in.)
			2nd	48.3 mm (1.90 in.)	46.3 mm (1.82 in.)
			3rd	52.0 mm (2.05 in.)	50.0 mm (1.97 in.)
			4th	37.7 mm (1.48 in.)	35.7 mm (1.41 in.)
			5th	37.4 mm (1.47 in.)	35.4 mm (1.39 in.)
	Clutch disc thickness			1.94 mm (0.076 in.)	——
	Clutch plate thickness		1st	1.6 mm (0.063 in.)	When discolored
			2nd	1.8 mm (0.071 in.)	When discolored
			3rd	2.0 mm (0.079 in.)	When discolored
			4th	1.8 mm (0.071 in.)	When discolored
			5th	1.6 mm (0.063 in.)	When discolored
			1st-hold	1.8 mm (0.071 in.)	When discolored
	1st clutch end-plate thickness		Mark 1	3.1 mm (0.122 in.)	When discolored
			Mark 2	3.2 mm (0.126 in.)	When discolored
			Mark 3	3.3 mm (0.130 in.)	When discolored
			Mark 4	3.4 mm (0.134 in.)	When discolored
			Mark 5	3.5 mm (0.138 in.)	When discolored
			Mark 6	3.6 mm (0.142 in.)	When discolored
			Mark 7	3.7 mm (0.146 in.)	When discolored
			Mark 8	3.8 mm (0.150 in.)	When discolored
	1st-hold clutch plate B thickness			5.0 mm (0.197 in.)	When discolored

Item	Measurement	Qualification	Standard or New	Service Limit
Clutch (cont'd)	2nd, 3rd, 4th, 5th clutch end plate thickness	Mark 1	2.1 mm (0.083 in.)	When discolored
		Mark 2	2.2 mm (0.087 in.)	When discolored
		Mark 3	2.3 mm (0.091 in.)	When discolored
		Mark 4	2.4 mm (0.094 in.)	When discolored
		Mark 5	2.5 mm (0.098 in.)	When discolored
		Mark 6	2.6 mm (0.102 in.)	When discolored
		Mark 7	2.7 mm (0.106 in.)	When discolored
		Mark 8	2.8 mm (0.110 in.)	When discolored
		Mark 9	2.9 mm (0.114 in.)	When discolored
Stator shaft	I.D. at needle bearing contact area	Torque converter side	27.000—27.021 mm (1.063—1.064 in.)	When worn or damaged
		ATF pump side	31.000—31.025 mm (1.220—1.221 in.)	—
	I.D. at mainshaft sealing ring contact area		31.000—31.025 mm (1.220—1.221 in.)	31.05 mm (1.222 in.)
ATF pump	Gear-to-body thrust clearance		0.03—0.06 mm (0.001—0.002 in.)	0.07 mm (0.003 in.)
	Gear-to-body clearance	Drive gear	0.210—0.265 mm (0.0083—0.0104 in.)	—
		Driven gear	0.070—0.125 mm (0.0028—0.0049 in.)	—
	Driven gear I.D.		14.016—14.034 mm (0.5518—0.5525 in.)	When worn or damaged
	Driven gear shaft O.D.		13.980—13.990 mm (0.5504—0.5508 in.)	When worn or damaged
Reverse shift fork	Fork finger thickness		5.90—6.00 mm (0.220—0.236 in.)	5.4 mm (0.213 in.)
Park gear and pawl	—		—	When worn or damaged
Regulator valve body	Shift fork shaft bore I.D.		14.000—14.010 mm (0.5512—0.5516 in.)	—
	Shift fork shaft/servo valve bore I.D.		37.000—37.039 mm (1.4567—1.4582 in.)	37.045 mm (1.4585 in.)
	Mainshaft sealing ring contact I.D.		31.000—31.025 mm (1.220—1.221 in.)	31.05 mm (1.222 in.)
Main valve body	Intermediary shaft sealing ring contact I.D.		35.000—35.025 mm (1.3780—1.3789 in.)	35.05 mm (1.3799 in.)
ATF guide collar	Secondary shaft sealing ring contact I.D.		29.000—29.021 mm (1.1417—1.1426 in.)	29.05 mm (1.1437 in.)
Mainshaft	Diameter at stator shaft needle bearing contact area		22.984—23.000 mm (0.9049—0.9055 in.)	When worn or damaged
	5th gear collar diameter at needle bearing contact area		39.975—39.991 mm (1.5738—1.5744 in.)	When worn or damaged
	5th gear collar length		48.7—48.8 mm (1.917—1.921 in.)	—
	5th gear collar flange thickness		5.15—5.30 mm (0.203—0.209 in.)	When worn or damaged
	5th gear I.D.		46.000—46.016 mm (1.8110—1.8116 in.)	When worn or damaged
	5th gear axial clearance		0.10—0.22 mm (0.004—0.009 in.)	—
	Sealing ring thickness		1.90—1.96 mm (0.074—0.077 in.)	1.85 mm (0.073 in.)
	Sealing ring groove width		2.025—2.060 mm (0.080—0.081 in.)	2.08 mm (0.082 in.)

(cont'd)

Standards and Service Limits

Automatic Transmission and A/T Differential (cont'd)

Item	Measurement	Qualification	Standard or New	Service Limit
Countershaft	Diameter at bearing contact area	Torque converter housing bearing	40.505—40.515 mm (1.5947—1.5951 in.)	When worn or damaged
		5th gear	34.975—34.991 mm (1.3770—1.3776 in.)	When worn or damaged
	Diameter of 2nd gear at needle bearing contact area		56.975—56.991 mm (2.2431—2.2437 in.)	When worn or damaged
	Reverse gear collar O.D.		39.979—40.000 mm (1.5740—1.5748 in.)	When worn or damaged
	Reverse selector hub O.D.		55.885—55.900 mm (2.200—2.201 in.)	When worn or damaged
	Cotter thickness		1.99—2.02 mm (0.078—0.080 in.)	—
	I.D. of gears	5th gear	41.000—41.016 mm (1.6142—1.6148 in.)	When worn or damaged
		Idler gear	65.000—65.019 mm (2.5590—2.5598 in.)	When worn or damaged
		Reverse gear	46.000—46.016 mm (1.8110—1.8116 in.)	When worn or damaged
	Axial clearance of gears	2nd gear	0.005—0.040 mm (0.0002—0.0016 in.)	—
		5th gear	0.12—0.27 mm (0.0047—0.0106 in.)	—
		Idler gear	0.005—0.040 mm (0.0002—0.0016 in.)	—
		Reverse gear	0.10—0.25 mm (0.0039—0.0098 in.)	—
	56 mm washer thickness	A	1.525 mm (0.0600 in.)	When worn or damaged
		B	1.505 mm (0.0593 in.)	When worn or damaged
		C	1.485 mm (0.0585 in.)	When worn or damaged
		D	1.465 mm (0.0577 in.)	When worn or damaged
		E	1.445 mm (0.0569 in.)	When worn or damaged
		F	1.425 mm (0.0561 in.)	When worn or damaged
		G	1.405 mm (0.0553 in.)	When worn or damaged
	50.2 mm washer thickness	A	3.95 mm (0.1555 in.)	When worn or damaged
		B	3.97 mm (0.1563 in.)	When worn or damaged
		C	3.99 mm (0.1571 in.)	When worn or damaged
		D	4.01 mm (0.1579 in.)	When worn or damaged
		E	4.03 mm (0.1587 in.)	When worn or damaged
		F	4.05 mm (0.1594 in.)	When worn or damaged
		G	4.07 mm (0.1602 in.)	When worn or damaged
		H	4.09 mm (0.1610 in.)	When worn or damaged
		I	4.11 mm (0.1618 in.)	When worn or damaged
		J	4.13 mm (0.1626 in.)	When worn or damaged
		K	4.15 mm (0.1634 in.)	When worn or damaged
		L	4.17 mm (0.1642 in.)	When worn or damaged
		M	4.19 mm (0.1650 in.)	When worn or damaged
		N	4.21 mm (0.1657 in.)	When worn or damaged
		O	4.23 mm (0.1665 in.)	When worn or damaged
		P	4.25 mm (0.1673 in.)	When worn or damaged
		Q	4.27 mm (0.1681 in.)	When worn or damaged
		R	4.29 mm (0.1689 in.)	When worn or damaged
		S	4.31 mm (0.1697 in.)	When worn or damaged
		T	4.33 mm (0.1705 in.)	When worn or damaged
		U	4.35 mm (0.1713 in.)	When worn or damaged
	35 x 47 mm thrust washer thickness		5.97—6.00 mm (0.2350—0.2362 in.)	When worn or damaged

Item	Measurement	Qualification	Standard or New	Service Limit
Secondary shaft	Diameter at bearing contact area	2nd gear	43.986—43.999 mm (1.7317—1.7322 in.)	When worn or damaged
		Torque converter housing bearing	32.002—32.015 mm (1.2599—1.2604 in.)	When worn or damaged
		Torque converter housing bearing (shaft end side)	28.592—28.608 mm (1.1257—1.1263 in.)	When worn or damaged
	Diameter of 1st gear collar at needle bearing contact area		38.978—38.991 mm (1.5344—1.5351 in.)	When worn or damaged
	I.D. of gears	1st gear	44.000—44.016 mm (1.7323—1.7329 in.)	When worn or damaged
		2nd gear	50.00—50.02 mm (1.9685—1.9693 in.)	When worn or damaged
	Axial clearance of gears	1st gear	0.085—0.130 mm (0.0033—0.0051 in.)	—
		2nd gear	0.06—0.23 mm (0.0024—0.0091 in.)	—
	52 mm thrust washer thickness	M	2.405 mm (0.095 in.)	When worn or damaged
		L	2.430 mm (0.096 in.)	When worn or damaged
		K	2.455 mm (0.097 in.)	When worn or damaged
		J	2.480 mm (0.098 in.)	When worn or damaged
		I	2.505 mm (0.099 in.)	When worn or damaged
		H	2.530 mm (0.100 in.)	When worn or damaged
		G	2.555 mm (0.101 in.)	When worn or damaged
		F	2.580 mm (0.102 in.)	When worn or damaged
		E	2.605 mm (0.103 in.)	When worn or damaged
		D	2.630 mm (0.104 in.)	When worn or damaged
		C	2.655 mm (0.105 in.)	When worn or damaged
		B	2.680 mm (0.106 in.)	When worn or damaged
		A	2.705 mm (0.106 in.)	When worn or damaged
	1st gear collar length		63.3—63.4 mm (2.4921—2.4961 in.)	—
	Sealing ring thickness		1.91—1.97 mm (0.075—0.078 in.)	1.86 mm (0.073 in.)
	Sealing ring groove width		2.025—2.060 mm (0.080—0.081 in.)	2.08 mm (0.082 in.)
	ATF feed pipe O.D.	1st clutch	11.47—11.48 mm (0.4516—0.4520 in.)	11.45 mm (0.4508 in.)
		1st-hold clutch	5.97—5.98 mm (0.2350—0.2354 in.)	5.95 mm (0.2343 in.)
	Feed pipe bushing I.D.	1st clutch	11.518—11.530 mm (0.4535—0.4539 in.)	11.545 mm (0.4545 in.)
		1st-hold clutch	6.018—6.030 mm (0.2369—0.2374 in.)	6.045 mm (0.2380 in.)

(cont'd)

Standards and Service Limits

Automatic Transmission and A/T Differential (cont'd)

Item	Measurement	Qualification	Standard or New	Service Limit
Secondary shaft (cont'd)	65 mm thrust shim thickness	0A	0.80 mm (0.031 in.)	When worn or damaged
		A	0.84 mm (0.033 in.)	When worn or damaged
		B	0.88 mm (0.035 in.)	When worn or damaged
		C	0.92 mm (0.036 in.)	When worn or damaged
		D	0.96 mm (0.038 in.)	When worn or damaged
		E	1.00 mm (0.039 in.)	When worn or damaged
		F	1.04 mm (0.041 in.)	When worn or damaged
		G	1.08 mm (0.043 in.)	When worn or damaged
		H	1.12 mm (0.044 in.)	When worn or damaged
		I	1.16 mm (0.046 in.)	When worn or damaged
		J	1.20 mm (0.047 in.)	When worn or damaged
		K	1.24 mm (0.049 in.)	When worn or damaged
		L	1.28 mm (0.050 in.)	When worn or damaged
		M	1.32 mm (0.052 in.)	When worn or damaged
		N	1.36 mm (0.054 in.)	When worn or damaged
		O	1.40 mm (0.055 in.)	When worn or damaged
		P	1.44 mm (0.057 in.)	When worn or damaged
		Q	1.48 mm (0.058 in.)	When worn or damaged
		R	1.52 mm (0.060 in.)	When worn or damaged
		S	1.56 mm (0.061 in.)	When worn or damaged
		T	1.60 mm (0.063 in.)	When worn or damaged
		U	1.64 mm (0.065 in.)	When worn or damaged
		V	1.68 mm (0.066 in.)	When worn or damaged
		W	1.72 mm (0.068 in.)	When worn or damaged
		X	1.76 mm (0.069 in.)	When worn or damaged
		Y	1.80 mm (0.071 in.)	When worn or damaged
		Z	1.84 mm (0.072 in.)	When worn or damaged
		AA	1.88 mm (0.074 in.)	When worn or damaged
		AB	1.92 mm (0.076 in.)	When worn or damaged
		AC	1.96 mm (0.077 in.)	When worn or damaged
		AD	2.00 mm (0.079 in.)	When worn or damaged
		AE	2.04 mm (0.080 in.)	When worn or damaged
		AF	2.08 mm (0.082 in.)	When worn or damaged
		AG	2.12 mm (0.083 in.)	When worn or damaged
		AH	2.16 mm (0.085 in.)	When worn or damaged
		AI	2.20 mm (0.087 in.)	When worn or damaged
		AJ	2.24 mm (0.088 in.)	When worn or damaged
		AK	2.28 mm (0.090 in.)	When worn or damaged
		AL	2.32 mm (0.091 in.)	When worn or damaged

Item	Measurement	Qualification	Standard or New	Service Limit
Intermediary shaft	I.D. of 3rd gear		36.000—36.016 mm (1.4173—1.4179 in.)	When worn or damaged
	Axial clearance of 3rd gear		0.005—0.045 mm (0.0002—0.0018 in.)	—
	Cotter thickness		2.99—3.02 mm (0.1177—0.1189 in.)	—
	Sealing ring thickness		1.89—1.95 mm (0.0744—0.0768 in.)	1.84 mm (0.0724 in.)
	Sealing ring groove width		2.025—2.060 mm (0.080—0.081 in.)	2.08 mm (0.082 in.)
	53 mm splined washer thickness	A	3.995 mm (0.1573 in.)	When worn or damaged
		B	4.015 mm (0.1581 in.)	When worn or damaged
		C	4.035 mm (0.1589 in.)	When worn or damaged
		D	4.055 mm (0.1596 in.)	When worn or damaged
		E	4.075 mm (0.1604 in.)	When worn or damaged
		F	4.095 mm (0.1612 in.)	When worn or damaged
		G	4.115 mm (0.1620 in.)	When worn or damaged
		H	4.135 mm (0.1628 in.)	When worn or damaged
		I	4.155 mm (0.1636 in.)	When worn or damaged
		J	4.175 mm (0.1644 in.)	When worn or damaged
		K	4.195 mm (0.1652 in.)	When worn or damaged
		L	4.215 mm (0.1659 in.)	When worn or damaged
		M	4.235 mm (0.1667 in.)	When worn or damaged
		N	4.255 mm (0.1675 in.)	When worn or damaged
	26.5 mm washer thickness	A	1.05 mm (0.041 in.)	When worn or damaged
		B	1.13 mm (0.044 in.)	When worn or damaged
		C	1.21 mm (0.048 in.)	When worn or damaged
		D	1.29 mm (0.051 in.)	When worn or damaged
		E	1.37 mm (0.054 in.)	When worn or damaged
		F	1.45 mm (0.057 in.)	When worn or damaged
		G	1.53 mm (0.060 in.)	When worn or damaged
		H	1.61 mm (0.063 in.)	When worn or damaged
		I	1.69 mm (0.067 in.)	When worn or damaged
		J	1.77 mm (0.070 in.)	When worn or damaged
		K	1.85 mm (0.073 in.)	When worn or damaged
		L	1.93 mm (0.076 in.)	When worn or damaged
Reverse idler gear	Gear shaft O.D.		13.99—14.00 mm (0.5508—0.5512 in.)	When worn or damaged
	I.D. of transmission housing of gear shaft contact area		14.006—14.024 mm (0.5514—0.5521 in.)	—
	I.D.		18.007—18.020 mm (0.7089—0.7094 in.)	When worn or damaged
	Axial clearance		0.07—0.38 mm (0.003—0.015 in.)	—
	Thrust washer thickness	Transmission housing	0.97—1.05 mm (0.038—0.041 in.)	—
		Holder side	0.97—1.05 mm (0.038—0.041 in.)	—

(cont'd)

Standards and Service Limits

Automatic Transmission and A/T Differential (cont'd)

Item	Measurement	Qualification	Standard or New			
			Wire Diameter	O.D.	Free Length	No. of Coils
Main valve body spring (see page 14-291)	Cooler check valve spring		0.6 mm (0.024 in.)	5.8 mm (0.228 in.)	14.5 mm (0.571 in.)	6.8
	Torque converter check valve spring		1.1 mm (0.043 in.)	8.6 mm (0.339 in.)	35.0 mm (1.378 in.)	12.6
	Lock-up timing valve spring		0.6 mm (0.024 in.)	6.6 mm (0.260 in.)	30.9 mm (1.217 in.)	11.1
	Shift valve D spring		0.7 mm (0.028 in.)	6.6 mm (0.260 in.)	32.2 mm (1.268 in.)	13.4
	Shift valve B spring		0.8 mm (0.031 in.)	6.6 mm (0.260 in.)	49.1 mm (1.933 in.)	21.7
	Shift valve A spring		0.8 mm (0.031 in.)	6.6 mm (0.260 in.)	49.1 mm (1.933 in.)	21.7
	Modulator valve spring		1.6 mm (0.063 in.)	10.4 mm (0.409 in.)	33.5 mm (1.319 in.)	9.8
	CPC valve C spring		0.7 mm (0.028 in.)	6.1 mm (0.240 in.)	17.8 mm (0.701 in.)	7.9
	Shift valve E spring		0.8 mm (0.031 in.)	7.1 mm (0.280 in.)	49.0 mm (1.929 in.)	17.2
	Relief valve spring		1.1 mm (0.043 in.)	8.6 mm (0.339 in.)	32.1 mm (1.264 in.)	11.2
	Lubrication control valve spring		0.7 mm (0.028 in.)	7.7 mm (0.303 in.)	28.8 mm (1.134 in.)	10.4
	Lock-up shift valve spring		0.9 mm (0.035 in.)	7.6 mm (0.299 in.)	63.0 mm (2.480 in.)	22.4
Secondary valve body spring (see page 14-293)	Reverse CPC valve spring		0.7 mm (0.028 in.)	6.1 mm (0.240 in.)	17.8 mm (0.701 in.)	7.9
	Servo control valve spring		0.7 mm (0.028 in.)	6.6 mm (0.260 in.)	35.7 mm (1.406 in.)	17.2
	Shift valve C spring		0.8 mm (0.031 in.)	6.6 mm (0.260 in.)	49.1 mm (1.933 in.)	21.7
	CPC valve A spring		0.7 mm (0.028 in.)	6.1 mm (0.240 in.)	17.8 mm (0.701 in.)	7.9
	Kick-down valve spring		0.8 mm (0.031 in.)	6.6 mm (0.260 in.)	49.1 mm (1.933 in.)	21.7
	CPC valve B spring		0.7 mm (0.028 in.)	6.1 mm (0.240 in.)	17.8 mm (0.701 in.)	7.9
Regulator valve body spring (see page 14-294)	3rd accumulator spring		3.1 mm (0.122 in.)	19.6 mm (0.772 in.)	41.4 mm (1.630 in.)	5.5
	Lock-up control valve spring		0.7 mm (0.028 in.)	6.6 mm (0.260 in.)	42.9 mm (1.689 in.)	14.2
			0.8 mm (0.031 in.)	6.6 mm (0.260 in.)	44.3 mm (1.744 in.)	25.5
	Regulator valve spring B		1.4 mm (0.055 in.)	8.8 mm (0.346 in.)	44.0 mm (1.732 in.)	12.0
	Regulator valve spring A		1.85 mm (0.073 in.)	14.7 mm (0.579 in.)	86.9 mm (3.421 in.)	16.2
	Stator reaction spring		5.5 mm (0.217 in.)	37.4 mm (1.472 in.)	30.3 mm (1.193 in.)	2.1

Item	Measurement	Qualification	Standard or New			
			Wire Diameter	O.D.	Free Length	No. of Coils
Accumulator body spring (see page 14-295)	1st-hold accumulator spring		2.0 mm (0.079 in.)	13.1 mm (0.516 in.)	42.9 mm (1.689 in.)	9.8
	4th accumulator spring		3.0 mm (0.118 in.)	19.6 mm (0.772 in.)	45.3 mm (1.783 in.)	6.4
	1st accumulator spring A		2.2 mm (0.087 in.)	17.7 mm (0.697 in.)	77.6 mm (3.055 in.)	12.1
	1st accumulator spring B		2.0 mm (0.079 in.)	7.1 mm (0.280 in.)	49.0 mm (1.929 in.)	10.0
	2nd accumulator spring		3.1 mm (0.122 in.)	19.6 mm (0.772 in.)	53.4 mm (2.102 in.)	7.5
	5th accumulator spring A		2.2 mm (0.087 in.)	16.4 mm (0.646 in.)	75.7 mm (2.980 in.)	14.2
	5th accumulator spring B		2.0 mm (0.079 in.)	6.0 mm (0.236 in.)	45.5 mm (1.791 in.)	11.6

Item	Measurement	Qualification	Standard or New	Service Limit
A/T differential carrier	Pinion shaft contact area I.D.		18.000—18.025 mm (0.7087—0.7096 in.)	—
	Carrier-to-pinion shaft clearance		0.013—0.054 mm (0.0005—0.0021 in.)	0.1 mm (0.004 in.)
	Driveshaft contact area I.D.		30.025—30.055 mm (1.182—1.183 in.)	—
	Carrier-to-driveshaft clearance		0.045—0.096 mm (0.002—0.004 in.)	0.13 mm (0.005 in.)
	Carrier-to-intermediate shaft clearance		0.080—0.126 mm (0.003—0.005 in.)	—
	Tapered roller bearing starting torque (preload)	For new bearing	3.9—5.1 N·m (40—52 kgf·cm, 35—45 lbf·in.)	Adjust
		For used bearing	3.6—4.8 N·m (37—49 kgf·cm, 32—43 lbf·in.)	Adjust
A/T differential pinion gear	Backlash		1.3—1.8 mm (0.05—0.07 in.)	—
	I.D.		18.042—18.066 mm (0.7103—0.7113 in.)	—
	Pinion gear-to-pinion shaft clearance		0.055—0.095 mm (0.0022—0.0037 in.)	0.12 mm (0.005 in.)

(cont'd)

Standards and Service Limits

Automatic Transmission and A/T Differential (cont'd)

Item	Measurement	Qualification	Standard or New	Service Limit
Transfer output shaft	Diameter at bearing contact area	Transmission housing side	21.977—21.990 mm (0.8652—0.8657 in.)	21.92 mm (0.8630 in.)
		Torque converter housing side	40.002—40.018 mm (1.5749—1.5755 in.)	39.95 mm (1.5728 in.)
	Axial clearance		0—0.39 mm (0—0.015 in.)	—
	28.5 mm thrust washer thickness	A	1.82 mm (0.0717 in.)	When worn or damaged
		B	1.84 mm (0.0724 in.)	When worn or damaged
		C	1.86 mm (0.0732 in.)	When worn or damaged
		D	1.88 mm (0.0740 in.)	When worn or damaged
		E	1.90 mm (0.0748 in.)	When worn or damaged
		F	1.92 mm (0.0756 in.)	When worn or damaged
		G	1.94 mm (0.0764 in.)	When worn or damaged
		H	1.96 mm (0.0772 in.)	When worn or damaged
		I	1.98 mm (0.0780 in.)	When worn or damaged
		J	2.00 mm (0.0787 in.)	When worn or damaged
		K	2.02 mm (0.0795 in.)	When worn or damaged
		L	2.04 mm (0.0803 in.)	When worn or damaged
		M	2.06 mm (0.0811 in.)	When worn or damaged
		N	2.08 mm (0.0819 in.)	When worn or damaged
		O	2.10 mm (0.0827 in.)	When worn or damaged
		P	2.12 mm (0.0835 in.)	When worn or damaged
		Q	2.14 mm (0.0843 in.)	When worn or damaged
		R	2.16 mm (0.0850 in.)	When worn or damaged
		S	2.18 mm (0.0858 in.)	When worn or damaged
		T	2.20 mm (0.0866 in.)	When worn or damaged
		U	2.22 mm (0.0874 in.)	When worn or damaged
		V	2.24 mm (0.0882 in.)	When worn or damaged
		W	2.26 mm (0.0890 in.)	When worn or damaged
		X	2.28 mm (0.0898 in.)	When worn or damaged
		Y	2.30 mm (0.0906 in.)	When worn or damaged
		Z	2.32 mm (0.0913 in.)	When worn or damaged
		AA	2.34 mm (0.0921 in.)	When worn or damaged
Transfer assembly fluid	Capacity Hypoid gear oil SAE90 or SAE 80W-90 viscosity, API classified GL4 or GL5 only	Fluid change	0.43 L (0.45 us qt)	
		Overhaul	0.45 L (0.48 us qt)	
Transfer assembly	Diameter of transfer hypoid drive gear/shaft assembly at tapered roller bearing contact area	Transfer cover side	50.002—50.018 mm (1.9686—1.9692 in.)	49.95 mm (1.9665 in.)
		Transfer gear side	24.987—25.000 mm (0.9837—0.9843 in.)	24.93 mm (0.9815 in.)
	Diameter of transfer output shaft (hypoid gear) at tapered roller bearing contact area	Transfer gear side	40.002—40.018 mm (1.5749—1.5755 in.)	39.95 mm (1.5728 in.)
		Companion flange side	27.975—27.990 mm (1.1014—1.1020 in.)	27.92 mm (1.0992 in.)
	Transfer gear backlash		0.06—0.17 mm (0.002—0.007 in.)	Adjust
	Tapered roller bearing total starting torque (preload)		3.20—4.16 N·m (32.6—42.4 kgf·cm, 28.3—36.8 lbf·in.)	Adjust

Rear Differential

Item	Measurement	Qualification	Standard or New
Rear differential fluid	Capacity Use Honda VTM-4 Differential Fluid	Fluid replacement	2.64 L (2.79 US qt)

Steering

Item	Measurement	Qualification	Standard or New	Service Limit
Steering wheel	Rotational play measured at outside edge	With engine running	0—10 mm (0—0.39 in.)	
	Initial turning load measured at outside edge	With engine running	29 N (3.0 kgf, 6.6 lbf)	If higher, check gearbox and pump
Gearbox	Angle of rack guide screw loosened from locked position		20 ° max. Tighten locknut to 25 N·m (2.5 kgf·m, 18 lbf·ft)	
Pump	Output pressure with shut-off valve closed		8,300—8,800 kPa (85—90 kgf/cm ² , 1,210—1,280 psi)	
Power steering fluid	Capacity Use Honda Power Steering Fluid	Reservoir capacity	0.4 L (0.42 US qt)	
		System capacity	With accessory power steering cooler: 1.26 L (1.33 US qt) Without accessory power steering cooler: 1.22 L (1.29 US qt)	

Suspension

Item	Measurement		Qualification	Standard or New	Service Limit
Wheel alignment	Camber	4WD	Front	−0°30' ±1°	
			Rear	−0°30' ±45'	
		2WD	Front	−0°40' ±1°	
			Rear	−0°40' ±45'	
	Caster	4WD	Front	1°53' ±1°	
		2WD	Front	1°59' ±1°	
	Total toe-in	4WD	Front	0±2 mm (0±0.08 in.)	
			Rear	0±2 mm (0±0.08 in.)	
		2WD	Front	0±2 mm (0±0.08 in.)	
			Rear	2±2 mm (0.08±0.08 in.)	
	Front wheel turning angle	4WD	Inward	38°08'	
			Outward	30°19' (Reference)	
		2WD	Inward	37°52'	
			Outward	30°10' (Reference)	
Wheel	Runout		Axial	0—0.7 mm (0—0.03 in.)	2.0 mm (0.08 in.)
			Radial	0—0.7 mm (0—0.03 in.)	1.5 mm (0.06 in.)
Wheel bearing	End play		Front	0—0.05 mm (0—0.002 in.)	
			Rear	0—0.05 mm (0—0.002 in.)	

Standards and Service Limits

Brakes

Item	Measurement	Qualification	Standard or New	Service Limit
Parking brake	Number of clicks when pedal pressed with 294 N (30 kgf, 66 lbf) of force		4 to 6 clicks	
	Drum I.D		209.9—210.0 mm (8.264—8.267 in.)	211.0 mm (8.307 in.)
	Shoe lining thickness		4.0 mm (0.16 in.)	1.0 mm (0.04 in.)
Brake pedal	Pedal height (carpet removed)		155 mm (6 1/8 in.)	
	Free play		1—5 mm (1/16—3/16 in.)	
Brake disc	Thickness	Front	27.9—28.1 mm (1.10—1.11 in.)	26.0 mm (1.02 in.)
		Rear	10.9—11.1 mm (0.43—0.44 in.)	9.0 mm (0.35 in.)
	Runout		—	0.04 mm (0.0016 in.)
	Parallelism		—	0.015 mm (0.0006 in.)
Brake pad	Thickness	Front	10.5—11.5 mm (0.41—0.45 in.)	1.6 mm (0.06 in.)
		Rear	9.5—10.5 mm (0.37—0.41 in.)	1.6 mm (0.06 in.)

Air Conditioning

Item	Measurement	Qualification	Standard or New
Refrigerant	Type		HFC-134a (R-134a)
	Capacity of system	Dual	700—750 g (24.7—26.5 oz)
Refrigerant oil	Type		ND-OIL 8 (P/N 38897-PR7-A01AH or 38899-PR7-A01)
	Capacity of components	Condenser	35 mL (1 1/6 fl-oz)
		Evaporator (front)	40 mL (1 1/3 fl-oz)
		Evaporator (rear)	30 mL (1 fl-oz)
		Each line and hose	10 mL (1/3 fl-oz)
Compressor		Compressor	180—195 mL (6—6 1/2 fl-oz)
	Field coil resistance	At 68 °F (20 °C)	3.9—4.3 Ω
	Pulley-to-pressure plate clearance		0.35—0.60 mm (0.014—0.024 in.)

HONDA

Design Specifications

specs

Item	Measurement	Qualification	Specification
DIMENSIONS	Overall length		4,775 mm (188.0 in.)
	Overall width	LX, LX-VP	1,943 mm (76.5 in.)
		EX, EX-SE, EXL	1,968 mm (77.5 in.)
	Overall height	4WD	1,793 mm (70.6 in.)
		2WD	1,780 mm (70.1 in.)
	Wheelbase		2,700 mm (106.3 in.)
	Track	Front (4WD)	1,685 mm (66.3 in.)
		Front (2WD)	1,690 mm (66.5 in.)
		Rear (4WD)	1,690 mm (66.5 in.)
		Rear (2WD)	1,694 mm (66.7 in.)
	Ground clearance	4WD	203 mm (8.0 in.)
		2WD	198 mm (7.8 in.)
	Seating capacity		Eight (8)
WEIGHT	Gross Vehicle Weight Rating (GVWR)	4WD	2,700 kg (5,950 lbs)
		2WD	2,650 kg (5,841 lbs)
ENGINE	Type	J35A9	Water-cooled, 4-stroke SOHC VTEC V6 gasoline engine
		J35Z1	Water-cooled, 4-stroke SOHC i-VTEC V6 gasoline engine
	Cylinder arrangement		60 ° V6-cylinder, transverse
	Bore and stroke		89.0 x 93.0 mm (3.50 x 3.66 in.)
	Displacement		3,471 cm ³ (mL) (211.8 cu in.)
	Compression ratio		10.0
	Valve train	J35A9	Belt driven, SOHC VTEC 4 valves per cylinder
		J35Z1	Belt driven, SOHC i-VTEC 4 valves per cylinder
	Lubrication system		Forced, wet sump, with trochoid pump
	Oil pump displacement	At 6,000 rpm	58.4 L (61.7 US qt)/minute
	Water pump displacement	At 6,000 rpm	172 L (182 US qt)/minute
	Fuel required	Normal driving	Regular UNLEADED gasoline with 87 Pump Octane Number or higher
		Towing	Premium UNLEADED gasoline 91 Pump Octane Number or higher is recommended when towing load is more than 1,590 kg (3,500 lbs.)
STARTER	Type		Gear reduction
	Normal output		1.6 kW
	Normal voltage		12 V
	Hour rating		30 seconds
	Direction of rotation		Counterclockwise as viewed from drive end
AUTOMATIC TRANSMISSION	Type	BVLA (2WD)	Electronically-controlled automatic, 5-speed forward, 1 reverse, 3-element torque converter with lock-up clutch
		BVGA (4WD)	
	Primary reduction		Direct 1:1
	Gear ratio	1st	2.693
		2nd	1.565
		3rd	1.023
		4th	0.726
		5th	0.530
		Reverse	1.888
	Final reduction	Type	Single helical gear
		Gear ratio	4.375
STEERING	Type		Hydraulic power-assisted rack and pinion
	Gear ratio		42.3
	Overall ratio		16.9
	Turns, lock-to-lock		3.22
	Steering wheel diameter		386 mm (15.2 in.)

(cont'd)

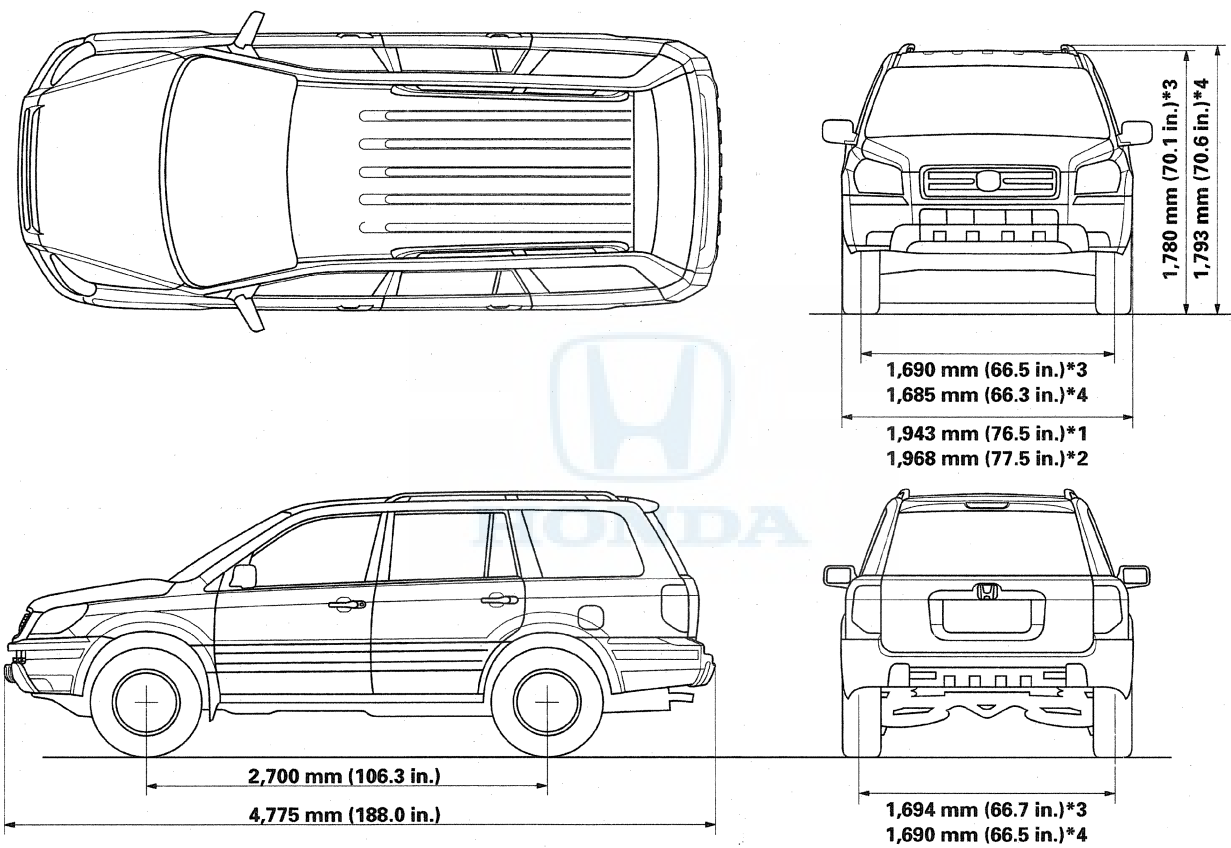
Design Specifications

Item	Measurement	Qualification	Specification
SUSPENSION	Type	Front	McPherson Strut
		Rear	Multilink with trailing arm
	Shock absorber	Front	Twin tube gas
		Rear	Twin tube gas
TIRES	Size of front and rear tires		P235/70R16 104S
	Size of spare tires		T155/90D16 110M
WHEEL ALIGNMENT	Camber	Front (4WD)	−0 °30 ′
		Rear (4WD)	−0 °30 ′
		Front (2WD)	−0 °40 ′
		Rear (2WD)	−0 °40 ′
	Caster	Front (4WD)	1 °53 ′
		Front (2WD)	1 °59 ′
	Total toe-in	Front	0 mm (0 in.)
		Rear (4WD)	0 mm (0 in.)
		Rear (2WD)	2 mm (0.08 in.)
	SAI at camber (kingpin axis)		11 °54 ′
BRAKES	Type of service brake	Front	Power-assisted self-adjusting ventilated disc
		Rear	Power-assisted self-adjusting solid disc
	Type of parking brake		Foot type, mechanical actuating, rear wheels
	Pad friction surface area	Front	53.3 cm ² (8.26 sq in.) x2
		Rear	21.8 cm ² (3.38 sq in.) x2
	Parking brake shoe friction surface area		60.2 cm ² (9.33 sq in.) x2
AIR CONDITIONING	Compressor	Type/Manufacturer	Swash plate/DENSO
		Number of cylinders	10
		Capacity	215 mL (13.12 cu in.)/rev.
		Maximum speed	7,600 rpm
		Lubricant capacity	180 mL (6 fl-oz)
		Lubricant type	DENSO ND-OIL 8
	Condenser	Type	Corrugated fin
	Evaporator	Type	Corrugated fin
	Blower	Type	Sirocco fan
		Motor input (front)	228 W/12 V
		Motor input (rear)	125 W/12 V
		Speed control (Front: Auto A/C)	Infinite variable
		Speed control (Front: Manual A/C)	7-speed
		Speed control (Rear: Auto A/C)	Infinite variable
		Speed control (Rear: Manual A/C)	3-speed
		Maximum capacity (front)	490 m ³ (17,300 cu ft)/h
		Maximum capacity (rear)	310 m ³ (11,000 cu ft)/h
	Temperature control		Air-mix type
	Compressor clutch	Type	Dry, single plate, Poly-V belt drive
		Electrical power consumption at 68 °F (20 °C)	35 W maximum at 12 V
	Refrigerant	Type	HFC-134a (R-134a)
		Quantity (dual)	700—750 g (24.7—26.5 oz)

Item	Measurement	Qualification	Specification
ELECTRICAL RATINGS	Battery	'06-'07 models	12 V—65 Ah/20HR (12V—52 Ah/5HR)
		'08 model	12 V—72 Ah/20HR (12V—60 Ah/5HR)
	Fuses	Under-hood fuse/relay box	120 A, 50 A, 40 A, 30 A, 20 A, 15 A, 7.5 A
		Driver's under-dash fuse/relay box	30 A, 15 A, 10 A, 7.5 A
		Auxiliary under-hood fuse box	40 A, 30 A, 20 A, 15 A, 10 A, 7.5 A
		Passenger's under-dash fuse/relay box	20 A, 15 A, 10 A, 7.5 A
		Auxiliary under-dash fuse holder	7.5 A
	Light bulbs	Headlight high beam	12 V—60 W (HB3)
		Headlight low beam	12 V—55 W (H11)
		Front fog lights	12 V—55 W (H11)
		Front turn signal lights	12 V—21 W (Amber)
		Front side marker/parking lights	12 V—5 W
		Front side turn signal lights	12 V—3CP
		Rear turn signal/taillights	12 V—21/5 W
		Rear side marker lights	12 V—3CP
		Brake/Taillights	12 V—21/5 W
		High mount brake light	12 V—18 W
		Back-up lights	12 V—21CP
		License plate lights	12 V—5 W
		Tailgate lights	12 V—5 W
		Vanity mirror lights	12 V—1.1 W
		Front individual map lights (EXL, EX-SE)	12 V—8 W
		Front individual map lights (LX, LX-VP, EX)	12 V—4CP
		2nd and 3rd Row Rear individual map lights	12 V—5 W
		Courtesy lights	12 V—3.8 W
		Gauge lights	LED
		Indicators	LED
		Ambient light	LED
		Courtesy lights	12 V—3.8 W
		Heater control panel lights	14 V—0.56 W, 14V—1.4 W
		Climate control unit lights	14 V—0.56 W
		Rear heater control panel lights	14 V—1.4 W
		Glove box light	12 V—3.4 W
		Console box light	12 V—1.4 W
	Washer reservoir	Capacity	4.5 L (4.7 US qt)

Design Specifications

Body Specifications



*1: LX, LX-VP
*2: EX, EXL, EX-SE
*3: 2WD model
*4: 4WD model



Maintenance

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Lubricants and Fluids

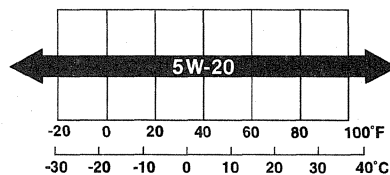
For details of the lubrication points and type of lubricants to be applied, refer to the illustrated index and various work procedures (such as Assembly/Reassembly, Replacement, Overhaul, Installation, etc.) contained in each section.

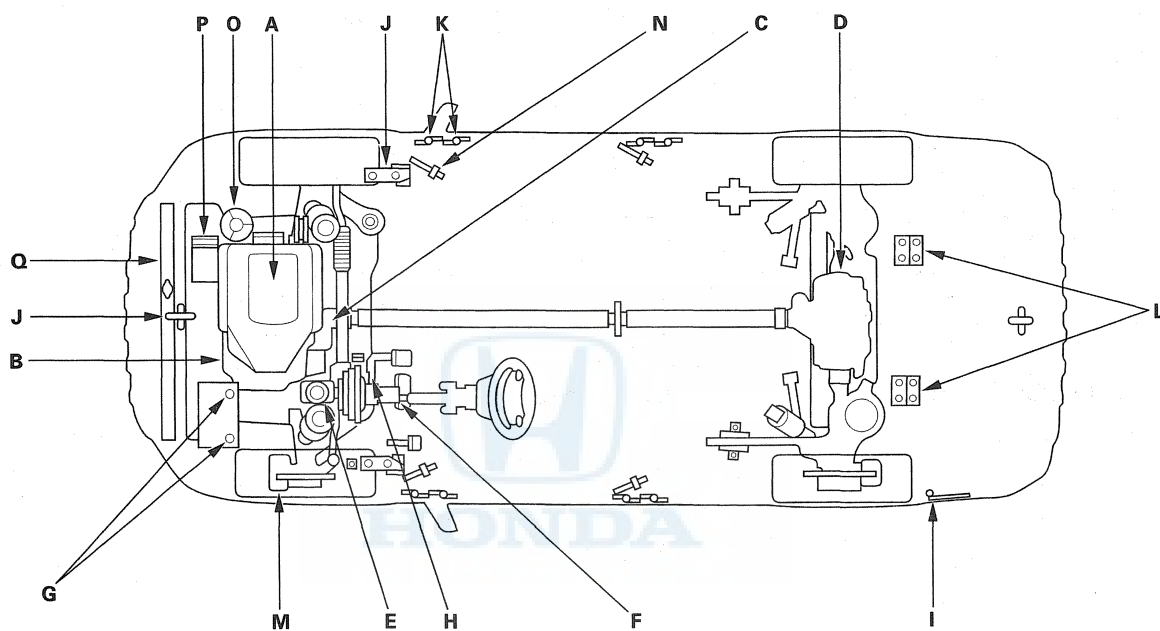
Application		Lubricant or Fluid
A	Engine	Honda Motor Oil: American Honda P/N 08798-9023 (5W-20), Honda Canada P/N CA66806 (5W-20) Look for the API certification seal on the oil container. Make sure it says "For Gasoline Engines." SAE Viscosity: See chart.
B	Automatic transmission	Honda Automatic Transmission Fluid (ATF-Z1): American Honda P/N 08200-9001, Honda Canada P/N CA66689 Always use Honda ATF-Z1. Using a non-Honda ATF can affect shift quality.
C	Transfer assembly	Hypoid Gear Oil GL4 or GL5 Use SAE 90 or SAE 80W-90 viscosity hypoid gear oil, API classified GL4 or GL5 only Viscosity: SAE 90: above 0 °F (−18 °C) SAE 80W-90: below 0 °F (−18 °C)
D	Rear differential	Honda VTM-4 Differential Fluid: P/N 08200-9003
E	Brake system (including VSA lines)	Honda DOT 3 Brake Fluid: P/N 08798-9008 Always use Honda DOT 3 Brake Fluid. Using a non-Honda brake fluid can cause corrosion and decrease the life of the system.
F	Brake booster clevis pin	Multipurpose Grease
G	Battery terminals	
H	Pedal linkage	
I	Fuel fill door	
J	Hood hinges and hood latch	
K	Door hinges: upper and lower	
L	Tailgate hinges	
M	Caliper piston boot and seal, caliper pins and boots	Honda Silicone Grease: P/N 08C30-B0234M
N	Door checker	Molykote Grease 44MA
O	Power steering system	Honda Power Steering Fluid: P/N 08206-9002 Always use Honda Power Steering Fluid. Using any other type of power steering fluid or automatic transmission fluid can cause increased wear and poor steering in cold weather.
P	Air conditioning compressor	Compressor Oil: DENSO ND-OIL 8 (P/N 38897-PR7-A01AH or 38899-PR7-A01) for refrigerant HFC-134a (R-134a)
Q	Cooling system	Honda Long Life Antifreeze /Coolant Type2 P/N OL999-9001

API CERTIFICATION SEAL



Recommended Engine Oil
Engine oil viscosity for ambient temperature ranges



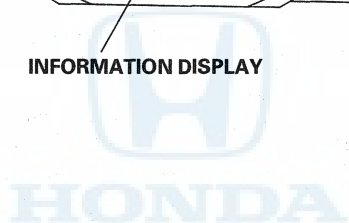
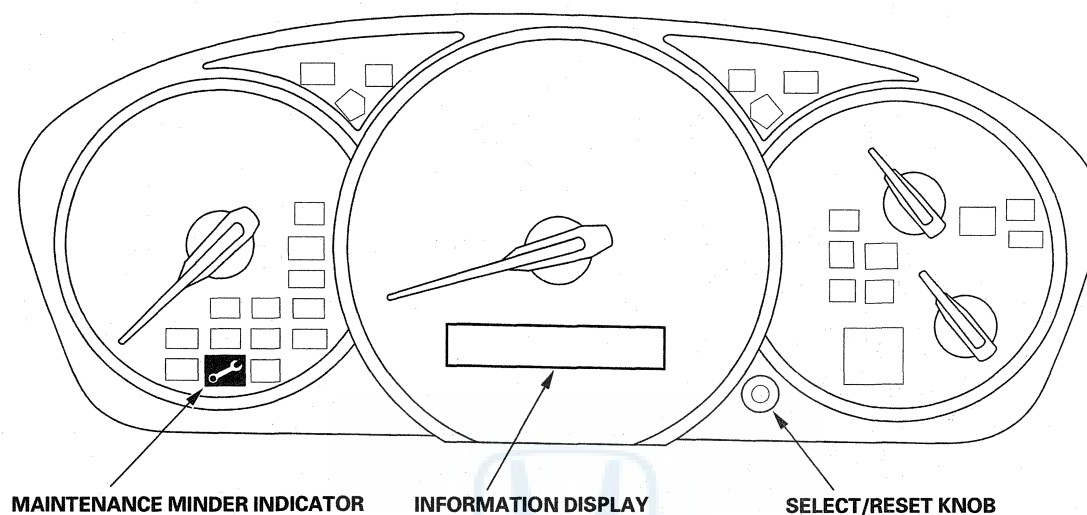


Maintenance Minder

General Information

Maintenance Display

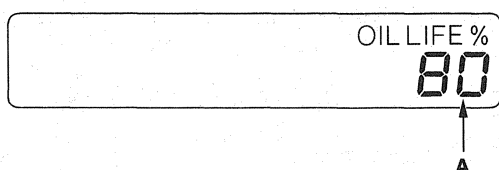
The maintenance minder is an important feature of the information display. Based on engine operating conditions and accumulated engine revolutions, the Pilot's onboard computer (PCM) calculates the remaining engine oil life. The system also displays the code for other scheduled maintenance items needing service.





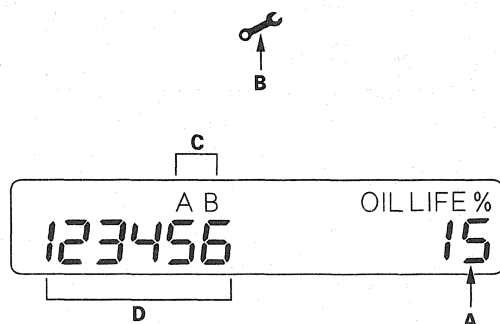
Service Information

1. The remaining engine oil life (A) is shown as a percentage on the information display. To see the current engine oil life, turn the ignition switch to the ON (II) position, then push and release the Select/Reset knob repeatedly until the engine oil life displays.

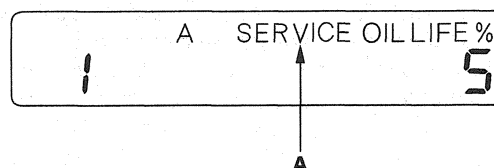


2. When the ignition switch is in the ON (II) position, and the remaining engine oil life (A) is 6 % to 15 %, the remaining engine oil life and other scheduled maintenance item(s) needing service are displayed. The maintenance minder indicator (B) also comes on when the engine oil life is 15 % or less. To cancel the display and the indicator, press the Select/Reset knob.

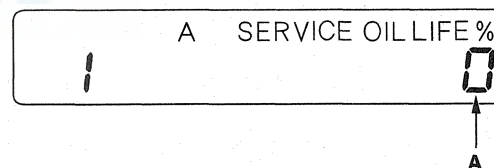
- Complete list of maintenance main items (C) (see page 3-7).
- Complete list of maintenance sub items (D) (see page 3-8).



3. When the ignition switch is in the ON (II) position, and the remaining engine oil life is 1 % to 5 %, the message "SERVICE" (A) is displayed along with engine oil life and the same maintenance item code(s).



4. When the ignition switch is in the ON (II) position, and the remaining engine oil life is 0 %, the engine oil life indicator (A) blinks. Pressing the Select/Reset knob cancels the display, but the maintenance minder indicator stays on.



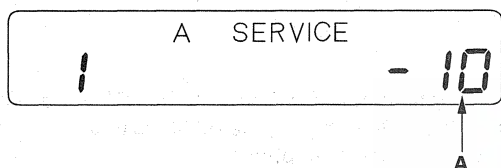
(cont'd)

Maintenance Minder

General Information (cont'd)

5. If the indicated maintenance is not done, the engine oil life indicator shows a negative mileage, for example “-10,” on the display.

If the negative mileage is between 0 and -9, the indicator is displayed for only a few seconds when the ignition switch is turned to the ON (II) position. The negative mileage remains displayed after the vehicle is driven more than 10 miles (for USA models) or 10 km (for Canada models) after 0 % oil life is reached, and the display cannot be canceled. This means the indicated maintenance item(s) should have been done more than 10 miles (or 10 km) ago.



Resetting the Maintenance Information Display

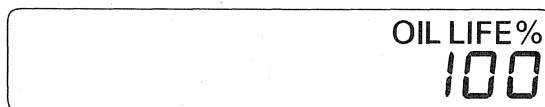
NOTE:

- The vehicle must be stopped to reset the display.
- If a required service is done and the display is not reset, or if the maintenance display is reset without doing the service, the system will not show the proper maintenance timing. This can lead to serious mechanical problems because there will be no accurate record of when the required maintenance is needed.
- The engine oil life and the maintenance item(s) can be reset independently only with the HDS.

1. Turn the ignition switch to the ON (II) position.
2. Press the Select/Reset knob repeatedly until the engine oil life indicator is displayed.
3. Press and hold the Select/Reset knob for about 10 seconds. The engine oil life indicator and the maintenance item code(s) will blink.

NOTE: If you are resetting the display when the engine oil life is more than 15 %, make sure any maintenance item(s) requiring service are done before resetting the display.

4. Press the Select/Reset knob for another 5 seconds. The maintenance item code(s) will disappear, and the engine oil life will reset to “100.”





Maintenance Main Items

If the message "SERVICE" does not appear more than 12 months after the display is reset, change the engine oil every year.

NOTE:

- Independent of the maintenance messages in the information display, replace the brake fluid every 3 years.
- Inspect idle speed every 160,000 miles (256,000 km).
- Adjust the valves during services A, B, 1, 2 or 3, only if they are noisy.

Symbol	Maintenance Main Items
A	Replace engine oil (see page 8-8). Engine oil capacity without oil filter: 4.0 L (4.2 US qt).
B	Replace engine oil and oil filter (see page 8-9). Engine oil capacity with oil filter: 4.3 L (4.5 US qt). Check front and rear brakes (see page 19-2). <ul style="list-style-type: none"> • Check pads and discs for wear (thickness), damage, and cracks. • Check calipers for damage, leaks, and tightness of mounting bolts. Check parking brake adjustment (see page 19-6). Check the number of clicks (4 to 6) when the parking brake pedal is pressed with 294 N (30 kgf, 66 lbf) of force. Inspect tie-rod ends, steering gearbox, and gearbox boots (see page 17-3). <ul style="list-style-type: none"> • Check rack grease and steering linkage. • Check boots for damage or leaking grease. • Check fluid lines for damage or leaks. Inspect suspension components (see page 18-3). <ul style="list-style-type: none"> • Check bolts for tightness. • Check condition of ball joint boots for deterioration and damage. Inspect driveshaft boots (see page 16-4). Check boots for cracks and boot bands for tightness. Inspect brake hoses and lines including VSA lines (see page 19-31). Check the master cylinder, and VSA modulator-control unit for damage and leakage. Inspect all fluid levels and condition of fluids. <ul style="list-style-type: none"> • Engine coolant (see page 10-6). • Automatic transmission fluid (ATF-Z1) (see page 14-213). • Transfer fluid (Hypoid Gear Oil) (see page 14-215). • VTM-4 rear differential fluid (VTM-4 Differential Fluid) (see page 15-46). • Power steering fluid (see page 17-13). • Brake fluid (see page 19-8). • Windshield washer fluid (see page 22-218). Inspect exhaust system* (see page 9-10). Check catalytic converter heat shields, exhaust pipes, and muffler for damage, leaks, and tightness. Inspect fuel lines* (see page 11-376) and connections* (see page 11-378). Check for loose connections, cracks, and deterioration; retighten loose connections and replace damaged parts.

NOTE: According to state and federal regulations, failure to do the maintenance items marked with an asterisk (*) will not void the customer's emissions warranties. However, Honda recommends that all maintenance services be done at the recommended interval, to ensure long-term reliability.

Maintenance Minder

Maintenance Sub Items

Number	Maintenance Sub Items
1	Rotate tires, and check tire inflation and condition. Follow the pattern shown in the Owner's Manual.
2	<p>Replace air cleaner element (see page 11-402). If the vehicle is primarily driven in dusty conditions, replace the element every 15,000 miles (24,000 km).</p> <p>Replace dust and pollen filter (see page 21-53). <ul style="list-style-type: none"> If the vehicle is driven mostly in areas that have high concentrations of dust, pollen, or soot in the air, replace every 15,000 miles (24,000 km). Replace the filter whenever airflow from the heating and air conditioning system is less than normal. </p> <p>Inspect drive belt (see page 4-31). Look for cracks and damage, then check the position of the drive belt auto-tensioner indicator.</p>
3	<p>Replace automatic transmission (see page 14-214) and transfer (see page 14-215) fluid. <ul style="list-style-type: none"> Driving in mountainous areas at very low vehicle speeds or trailer towing results in higher transmission and transfer fluid temperatures. This requires transmission and transfer fluid changes more frequently than recommended by the maintenance minder. If the vehicle is regularly driven in these conditions, have the transmission fluid and transfer fluid changed every 30,000 miles (48,000 km). Automatic transmission fluid capacity 2WD: 3.8 L (4.0 US qt), 4WD: 3.3 L (3.5 US qt), use Honda automatic transmission fluid (ATF-Z1). Transfer fluid capacity: 0.43 L (0.45 US qt), use Hypoid Gear Oil GL4 or GL5. </p>
4	<p>Replace spark plugs (see page 4-22). Use IZFR5K11 (NGK).</p> <p>Replace timing belt (see page 6-20). If the vehicle is regularly driven in very high temperatures (over 110 °F, 43 °C), or in very low temperatures (under -20 °F, -29 °C), or towing a trailer replace every 60,000 miles (USA)/100,000 km (Canada) and inspect water pump (see page 10-5).</p> <p>Inspect the valve clearance (cold) (see page 6-8). Intake: 0.20—0.24 mm (0.008—0.009 in.), Exhaust: 0.28—0.32 mm (0.011—0.013 in.).</p>
5	<p>Replace engine coolant (see page 10-6). Capacity (including the reservoir): 7.3 L (1.93 US gal), use Honda Long Life Antifreeze/Coolant Type 2.</p>
6	<p>Replace VTM-4 rear differential fluid (see page 15-46). <ul style="list-style-type: none"> Driving in mountainous areas at very low speeds, towing a trailer, or frequently driving fully loaded results in a higher level of mechanical (shear) stress to fluid. This requires differential fluid changes more frequently than recommended by the Maintenance Minder. If the vehicle is regularly driven under these conditions, replace the differential fluid changed at 7,500 miles (12,000 km), then every 15,000 miles (24,000 km). Capacity: 2.64 L (2.79 US qt), use Honda VTM-4 Differential Fluid. </p>

SUPPLEMENTAL RESTRAINT SYSTEM (SRS) (If engine electrical maintenance is required)

The Pilot SRS includes a driver's airbag in the steering wheel hub, a passenger's airbag in the dashboard above the glove box, seat belt tensioners in the front seat belt retractors, side curtain airbags in the side of the roof, and side airbags in the front seat-backs. Information necessary to safely service the SRS is included in this Service Manual. Items marked with an asterisk (*) on the contents page include or are located near SRS components. Servicing, disassembling, or replacing these items requires special precautions and tools, and should be done by an authorized Honda dealer.

- To avoid rendering the SRS inoperative, which could lead to personal injury or death in the event of a severe frontal or side collision, all SRS service work should be done by an authorized Honda dealer.
- Improper service procedures, including incorrect removal and installation of the SRS, could lead to personal injury caused by unintentional deployment of the airbags and/or side airbags.
- Do not bump or impact the SRS unit, front impact sensors, or side impact sensors when the ignition switch is ON (II), or for at least 3 minutes after the ignition switch is turned OFF; otherwise, the system may fail in a collision, or the airbags may deploy.
- SRS electrical connectors are identified by yellow color coding. Related components are located in the steering column, front console, dashboard, dashboard lower panel, in the dashboard above the glove box, in the front seats, in the roof side, and around the floor. Do not use electrical test equipment on these circuits.



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Engine Electrical

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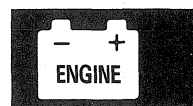
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Cruise Control

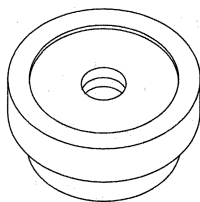
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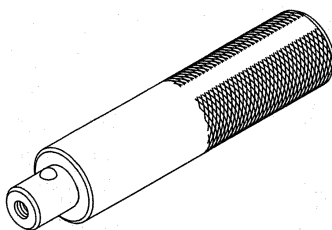
Engine Electrical

Special Tools

Ref. No.	Tool Number	Description	Qty
①	07746-0010300	Attachment, 42 x 47 mm	1
②	07749-0010000	Handle Driver	1



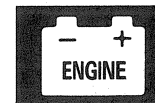
①



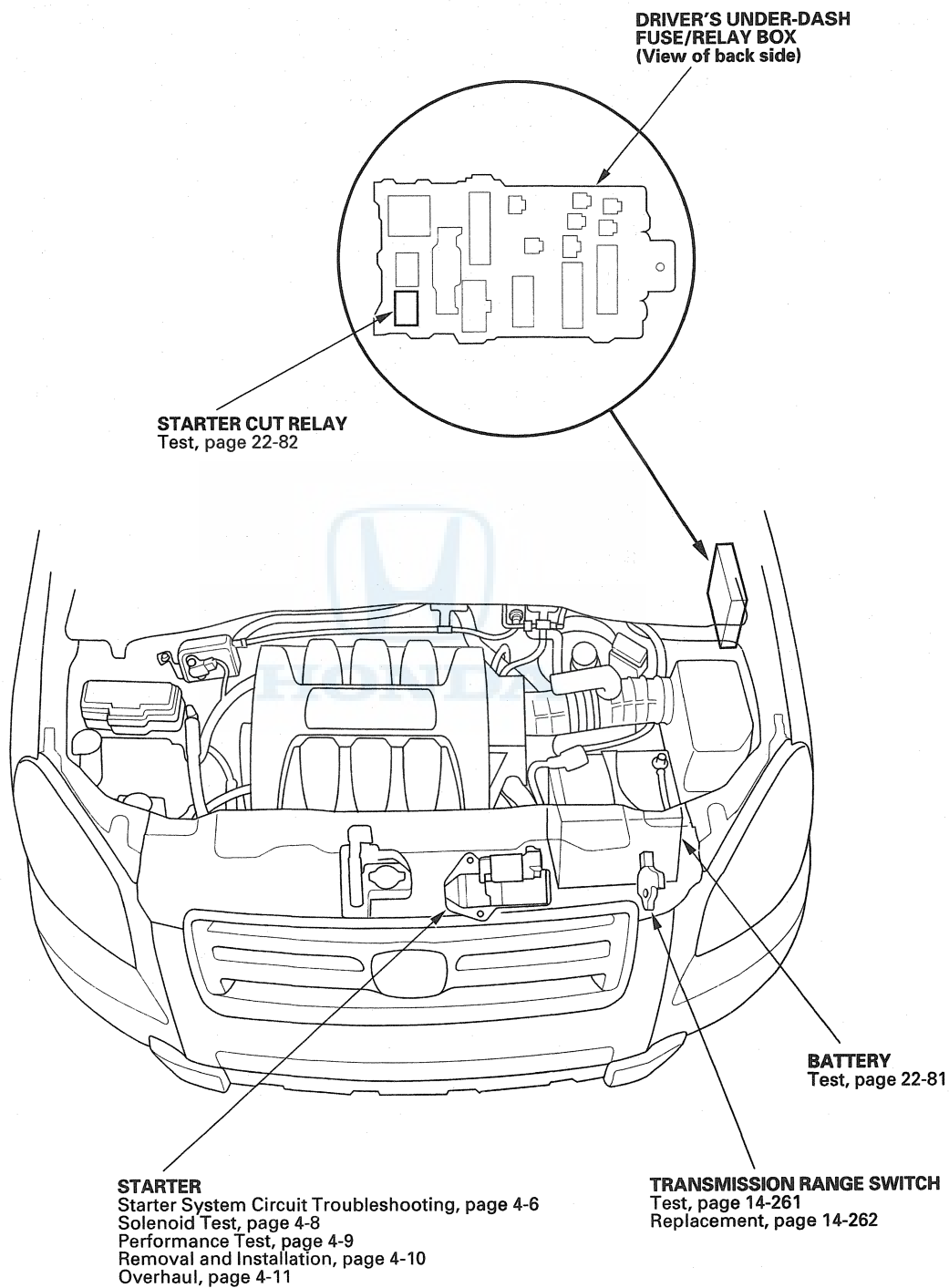
②



Starting System



Component Location Index



Starting System

Symptom Troubleshooting Index

Symptom	Diagnostic procedure	Also check for
Engine does not start (does not crank)	<ol style="list-style-type: none"> 1. Check for loose battery terminals or connections. 2. Test the battery for a low charge (see page 22-81). 3. Check the starter (see page 4-6). 4. Check the starter cut relay (see page 22-82). 5. Check the transmission range switch (see page 14-261). 6. Check the ignition switch or wire (see page 22-85). 	Poor ground at G101, G102
Engine cranks, but does not start	<ol style="list-style-type: none"> 1. Check for PGM-FI DTCs (see page 11-3). 2. Check the fuel pressure (see page 11-375). 3. Check for plugged or damaged fuel line (see page 11-376). 4. Check for a plugged fuel filter (see page 11-386). 5. Check the throttle body (see page 11-406). 6. Check for low engine compression. <ul style="list-style-type: none"> • J35A9 engine (see page 6-6) • J35Z1 engine (see page 6-61) 7. Check for damaged or broken timing belt. 	
Engine is hard to start	<ol style="list-style-type: none"> 1. Check for PGM-FI DTCs (see page 11-3). 2. Check the fuel pressure (see page 11-375). 3. Check for a plugged or damaged fuel line (see page 11-376). 4. Check for a plugged fuel filter (see page 11-386). 	
Engine cranks slowly	<ol style="list-style-type: none"> 1. Check for loose battery terminals or connections. 2. Test the battery for a low charge (see page 22-81). 3. Check the starter for binding (see page 4-11). 4. Check for excessive drag in the engine. 	

HONDA



Starting System

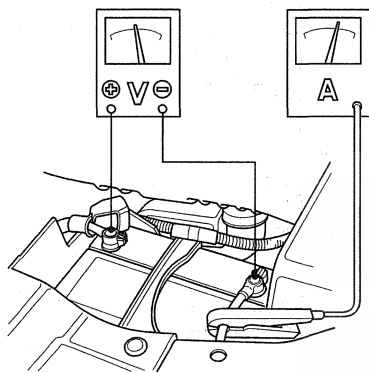
Starter System Circuit Troubleshooting

NOTE:

- Air temperature must be between 59 and 100 °F (15 and 38 °C) during this procedure.
- After the inspection, you must reset the powertrain control module (PCM). Otherwise, the PCM will continue to stop the fuel injectors from operating.
- The battery must be in good condition and fully charged.

1. Hook up the following equipment:

- Ammeter, 0—400 A
- Voltmeter, 0—20 V (accurate within 0.1 volt)



2. Connect the Honda Diagnostic System (HDS) to the data link connector (DLC) (see step 2 on page 11-3).
3. Turn the ignition switch ON (II), and select PGM-FI, INSPECTION, then ALL INJECTORS OFF on the HDS.

4. Set the parking brake, then with the shift lever in the N or P position, turn the ignition switch to START (III).

Does the starter crank the engine normally?

YES—The starting system is OK. Go to step 10.

NO—Go to step 5.

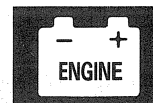
5. Check the battery condition (see page 22-81). Check the electrical connections at the battery, the negative battery cable to the body, the engine ground cables, and the starter for looseness and corrosion. Then try cranking the engine again.

Does the starter crank the engine?

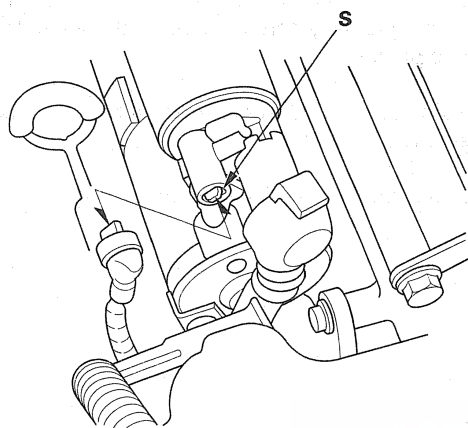
YES—Repairing the loose connection corrected the problem. The starting system is OK. Go to step 10.

NO—Based on the following symptoms, take the appropriate action:

- If the starter will not crank the engine at all, go to step 6.
- If the starter cranks the engine erratically or too slowly, go to step 8.
- If the starter does not disengage from the torque converter ring gear when you release the key, replace the starter, or remove and disassemble it, and check for the following: ■
 - Starter solenoid and switch malfunction
 - Dirty drive gear or damaged overrunning clutch



6. Make sure the shift lever is in the N or P position, and set the parking brake. Disconnect the BLK wire from the solenoid S terminal. Connect a jumper wire from the battery positive terminal to the solenoid S terminal.



Does the starter crank the engine?

YES—Go to step 7.

NO—Remove the starter, and repair or replace as necessary. ■

7. Check the following items in the order listed until you find the open circuit: ■
- The BLK/WHT wire and connectors between the driver's under-dash fuse/relay box and the ignition switch.
 - The BLK/WHT and BLK wire and connectors between the driver's under-dash fuse/relay box and the starter.
 - The ignition switch (see page 22-85).
 - The transmission range switch and connector (see page 14-261).
 - The starter cut relay (see page 22-82).

8. While cranking the engine, check the cranking voltage and the current draw.

Is the cranking voltage greater than or equal to 7.7 V and is the current draw less than or equal to 400 A?

YES—Go to step 9.

NO—Replace the starter, or remove and disassemble it, and check for these problems: ■

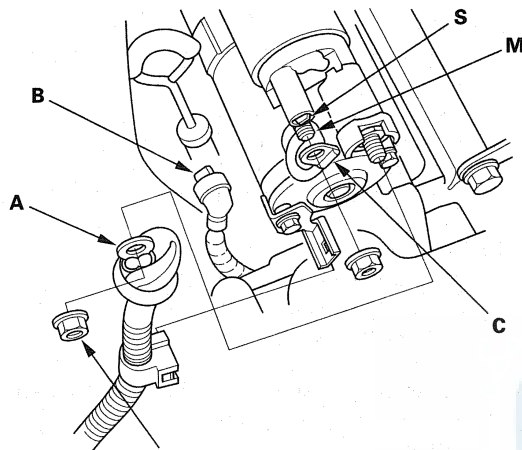
- Drag in the starter armature
- Shorted armature winding
- Excessive drag in the engine
- Open circuit in starter armature commutator segments
- Excessive worn starter brushes
- Open circuit in the starter brushes
- Dirty or damaged helical splines or drive gear
- Faulty drive gear clutch

9. Remove the starter, and inspect its drive gear and the torque converter ring gear for damage. Replace any damaged parts.
10. Select PCM reset (see page 11-4) to cancel ALL INJECTORS OFF on the HDS.

Starting System

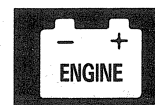
Starter Solenoid Test

1. Make sure you have the anti-theft codes for the audio system and the navigation system (if equipped), then write down the audio presets.
2. Disconnect the negative cable from the battery.
3. Disconnect the starter cable (A), BLK wire (B), and motor cable (C).



4. Check the hold-in coil for continuity between the S terminal and the armature housing (ground). There should be continuity.
 - If there is continuity, go to step 5.
 - If there is no continuity, replace the solenoid.
5. Check the pull-in coil for continuity between the S terminal and the M terminal. There should be continuity.
 - If there is continuity, the solenoid is OK.
 - If there is no continuity, replace the solenoid.

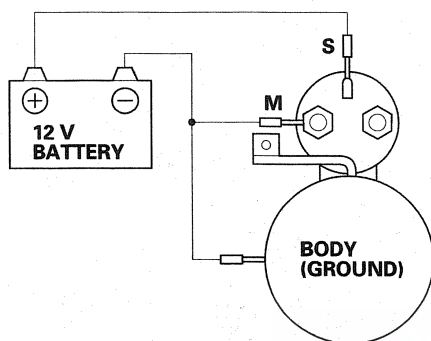
6. Connect the cables and wire in the reverse order of removal.
7. Connect the negative cable to the battery.
8. Enter the anti-theft codes for the audio system and the navigation system (if equipped), then enter the audio presets.
9. Do the power window control unit reset procedure (see page 22-255).
10. Set the clock (on vehicles without navigation).



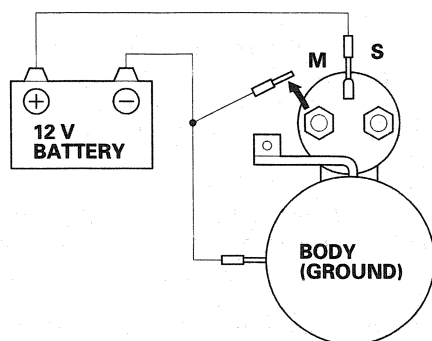
Starter Performance Test

1. Disconnect the wire from the M terminal.
2. Make a connection for this test using the thickest (gauge) wire possible (preferably the same gauge as used on the vehicle).

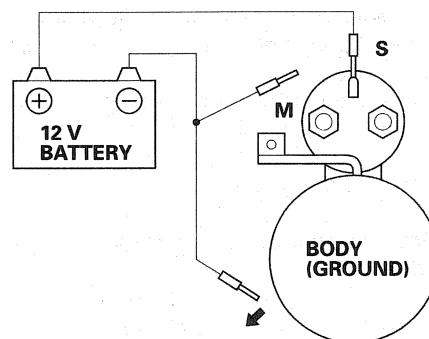
NOTE: To avoid damaging the starter, never leave the battery connected for more than 10 seconds.



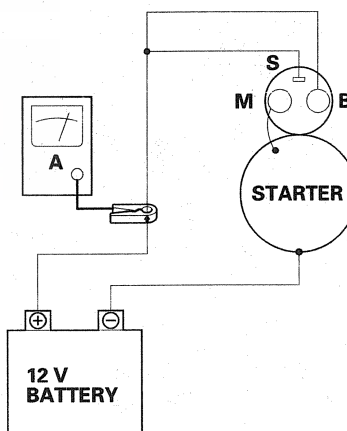
3. Connect the battery as shown. Make sure you disconnect the starter motor wire from the solenoid. If the starter pinion moves out, it is working properly.
4. Disconnect the battery from the M terminal. If the pinion does not retract, the hold-in coil of the solenoid is working properly.



5. Disconnect the battery from the starter body. If the pinion retracts immediately, it is working properly.



6. Clamp the starter firmly in a vise.
7. Reconnect the wire to the M terminal.
8. Connect the starter to the battery as shown, and confirm that the motor starts and keeps rotating.



9. If the electric current meets the specification when the battery voltage is at 11 V, the starter is working properly.

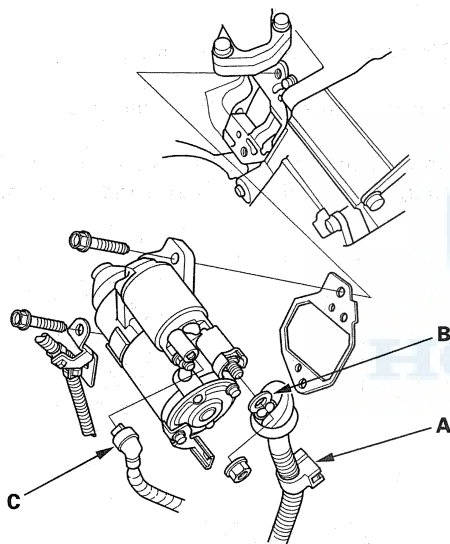
Specification
Electric Current: 90 A or less

Starting System

Starter Removal and Installation

Removal

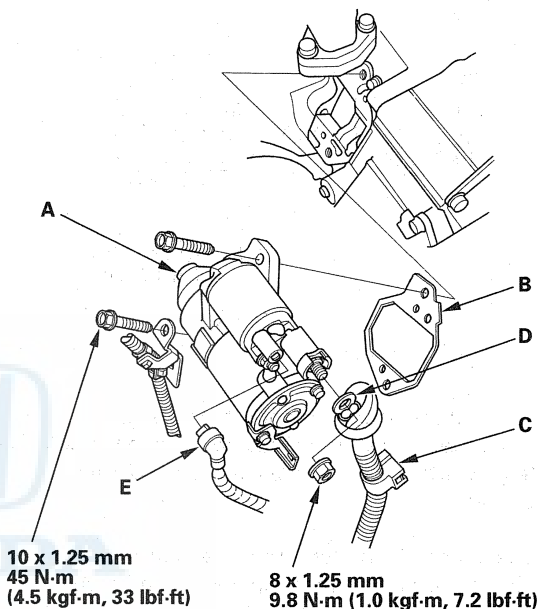
1. Make sure you have the anti-theft codes for the audio system and the navigation system (if equipped), then write down the audio presets.
2. Disconnect the negative cable from the battery first, then disconnect the positive cable.
3. Remove the battery.
4. Remove the automatic transmission fluid (ATF) dipstick.
5. Remove the harness clamp (A).



6. Disconnect the starter cable (B) from the B terminal and BLK wire (C) from the solenoid S terminal.
7. Remove the two bolts holding the starter.

Installation

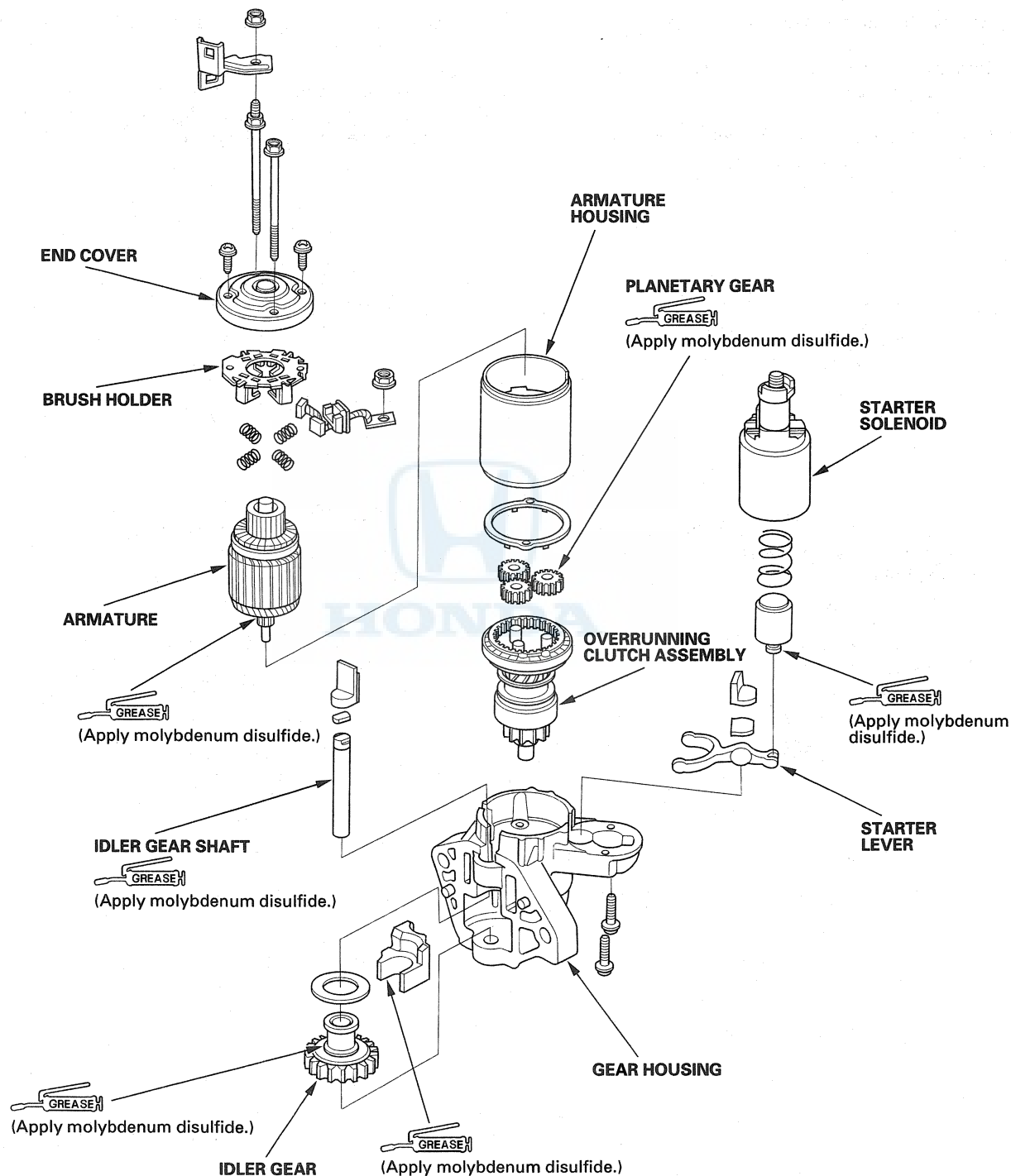
1. Install the starter (A) using a new gasket (B), then install the harness clamp (C), and connect the starter cable (D) to the B terminal and BLK wire (E) to the solenoid S terminal. Make sure the crimped side of the ring terminal faces away from the starter when you connect it.



2. Install the ATF dipstick.
3. Connect the positive cable to the battery first, then connect the negative cable.
4. Start the engine to make sure the starter works properly.
5. Enter the anti-theft codes for the audio system and the navigation system (if equipped), then enter the audio presets.
6. Do the power window control unit reset procedure (see page 22-255).
7. Set the clock (on vehicles without navigation).

Starter Overhaul

Disassembly/Reassembly



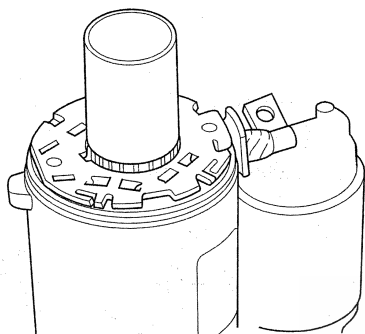
(cont'd)

Starting System

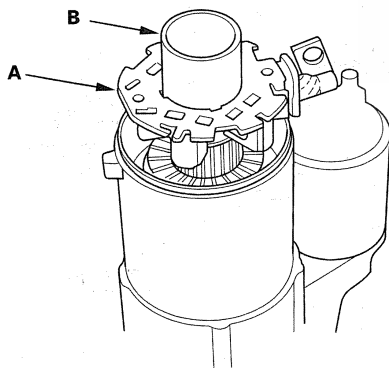
Starter Overhaul (cont'd)

Brush Holder Removal

1. Remove the starter (see page 4-10).
2. Disconnect the wire from the M terminal, and remove the end cover.
3. Place a plastic pipe with an outside diameter of 29.4 mm (1.16 in.) on the armature.

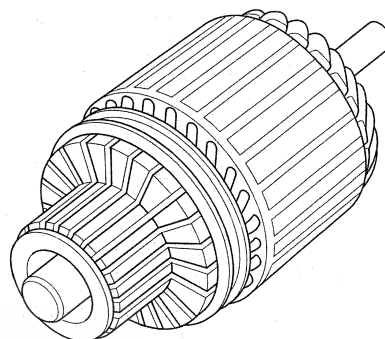


4. Move the brush holder (A) up to the pipe (B) while holding the pipe so the brushes do not pop out from the holder.

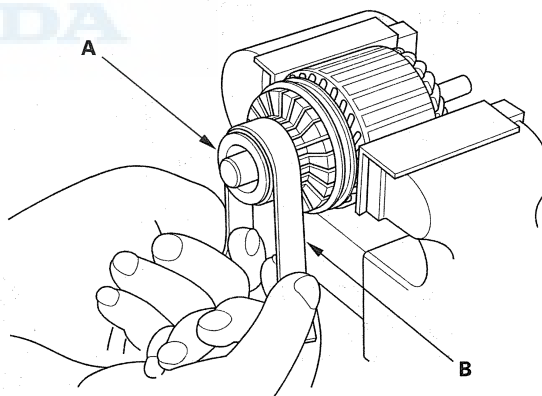


Armature Inspection and Test

5. Disassemble the starter as shown at the beginning of this procedure.
6. Inspect the armature for wear or damage from contact with the permanent magnet. If there is wear or damage, replace the armature.



7. Check the commutator (A) surface. If the surface is dirty or burnt, resurface it with an emery cloth or a lathe to the specifications in step 8, or recondition with #500 or #600 sandpaper (B).

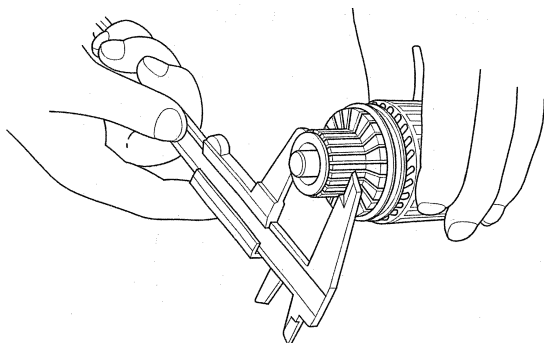


8. Check the commutator diameter. If the diameter is below the service limit, replace the armature.

Commutator Diameter

Standard (New): 29.3–29.5 mm (1.154–1.161 in.)

Service Limit: 28.8 mm (1.134 in.)



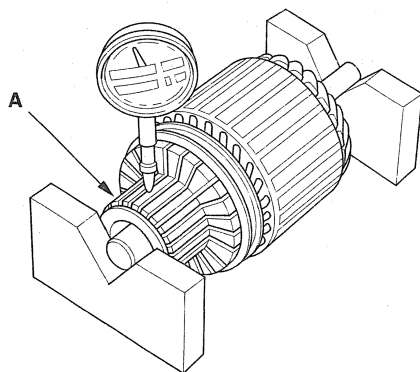
9. Measure the commutator (A) runout.

- If the commutator runout is within the service limit, check the commutator for carbon dust or brass chips between the segments.
- If the commutator runout is not within the service limit, replace the armature.

Commutator Runout

Standard (New): 0.05 mm (0.002 in.) max.

Service Limit: 0.1 mm (0.004 in.)

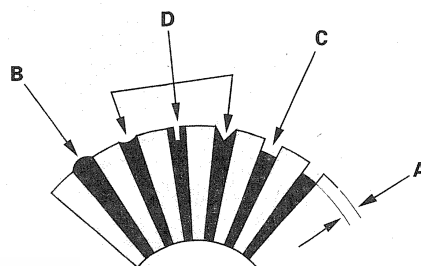


10. Check the mica depth (A). If the mica is too high (B), undercut the mica with a hacksaw blade to the proper depth. Cut away all the mica (C) between the commutator segments. The undercut should not be too shallow, too narrow, or V-shaped (D).

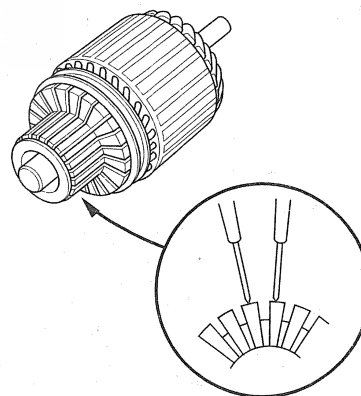
Commutator Mica Depth

Standard (New): 0.40–0.50 mm (0.016–0.020 in.)

Service Limit: 0.20 mm (0.008 in.)



11. Check for continuity between the segments of the commutator. If there is an open circuit between any segments, replace the armature.

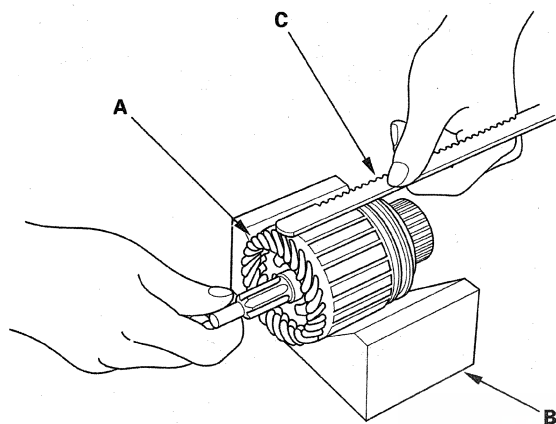


(cont'd)

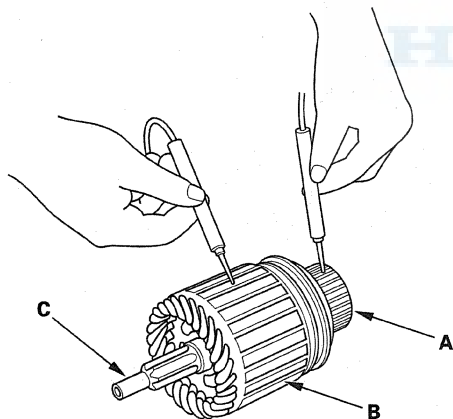
Starting System

Starter Overhaul (cont'd)

12. Place the armature (A) on an armature tester (B). Hold a hacksaw blade (C) on the armature core. If the blade is attracted to the core or vibrates while the core is turned, the armature is shorted. Replace the armature.



13. Use an ohmmeter to check for continuity between the commutator (A) and the armature coil core (B), and between the commutator and the armature shaft (C). If there is continuity, replace the armature.



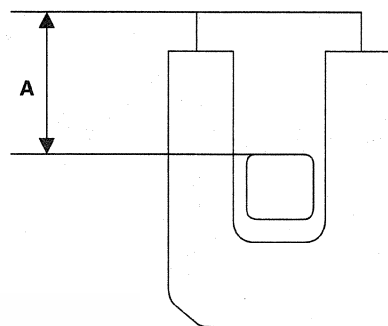
Starter Brush Inspection

14. Measure the brush length (A). If it is shorter than the service limit, replace the brush holder assembly.

Brush Length

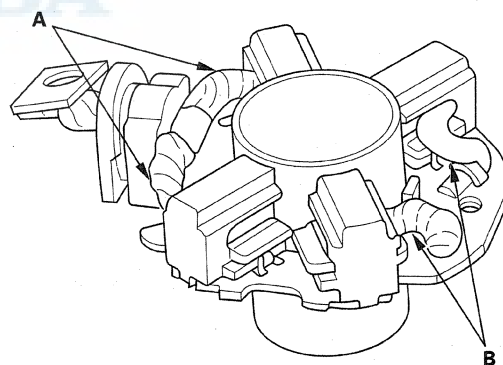
Standard (New): 7.7—8.0 mm (0.30—0.31 in.)

Service Limit: 0.9 mm (0.04 in.)



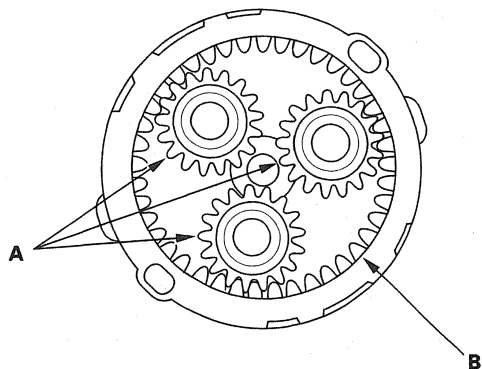
Starter Brush Holder Test

15. Check for continuity between the (+) brush (A) and (−) brush (B). If there is continuity, replace the brush holder assembly.



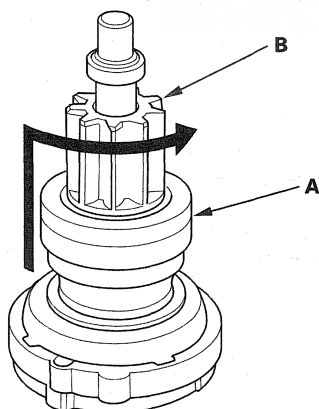
Planetary Gear Inspection

16. Check the planetary gears (A) and internal gear (B). Replace them if they are worn or damaged.



Overrunning Clutch Inspection

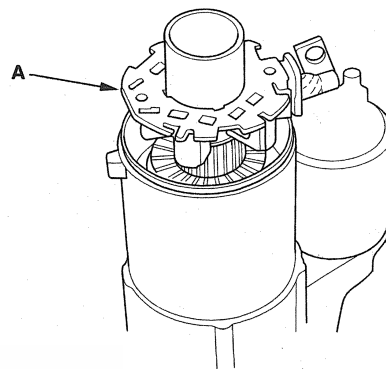
17. Slide the overrunning clutch along the shaft. Replace it if it does not slide smoothly.
18. Rotate the overrunning clutch (A) in both directions. It should lock and move upward in one direction and rotate smoothly in the other direction. If it does not lock in either direction, or if it locks both directions, then replace it.



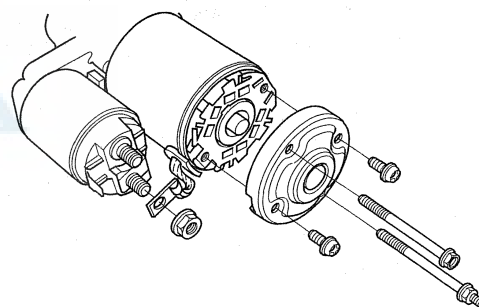
19. If the starter drive gear (B) is worn or damaged, replace the overrunning clutch assembly; the gear is not available separately. Check the condition of the idler gear and torque converter ring gear to see if the starter drive gear teeth are damaged.

Starter Reassembly

20. Install the armature in the housing.
21. Place the brush holder assembly on the armature, then move the brush holder (A) down to the armature.

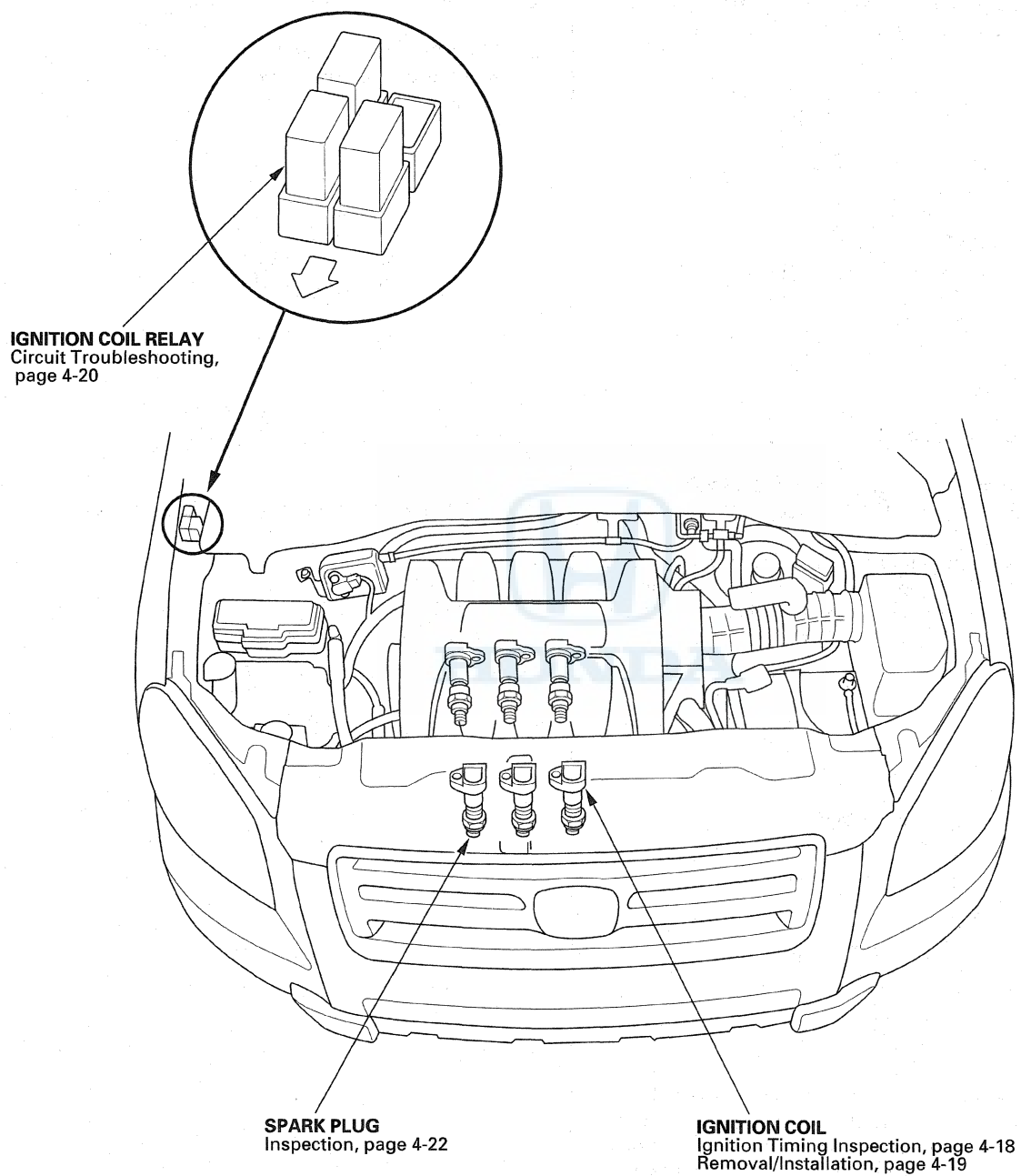


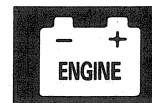
22. Install the end cover to retain the brush holder.



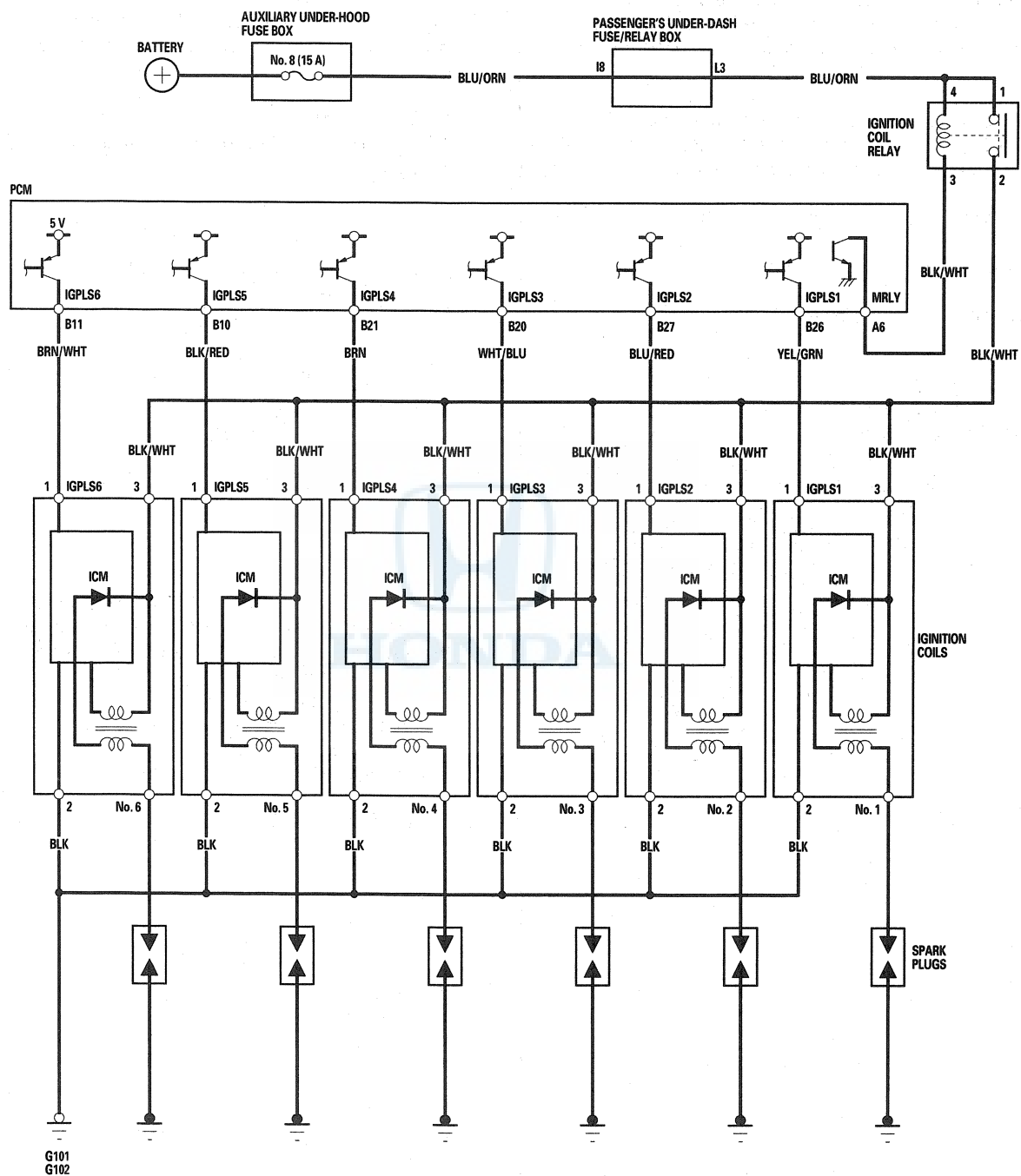
Ignition System

Component Location Index





Circuit Diagram

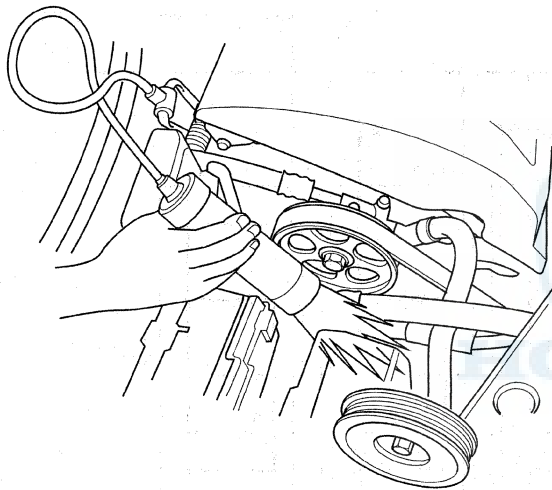


ICM: Ignition Control Module

Ignition System

Ignition Timing Inspection

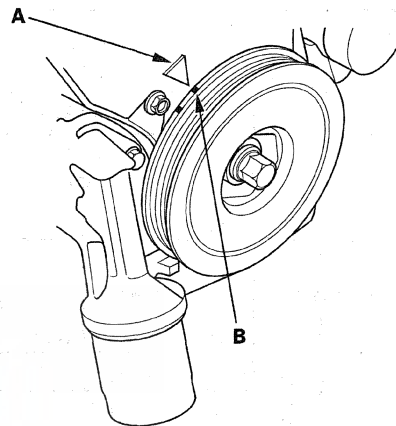
1. Connect the Honda Diagnostic System (HDS) to the data link connector (DLC), and check for DTCs (see step 2 on page 11-3). If a DTC is present, diagnose and repair the cause before inspecting the ignition timing.
2. Start the engine. Hold the engine speed at 3,000 rpm with no load (in the N or P position) until the radiator fan comes on, then let it idle.
3. Check the idle speed (see page 11-358).
4. Jump the SCS line with the HDS.
5. Connect the timing light to the service loop.



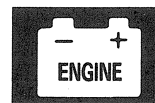
6. Aim the light toward the pointer (A) on the timing belt cover. Check the ignition timing under a no load condition. (headlights, blower fan, rear window defogger, and air conditioner are turned off)

Ignition Timing:

10° ± 2° BTDC (RED mark (B)) at idle in the N or P position

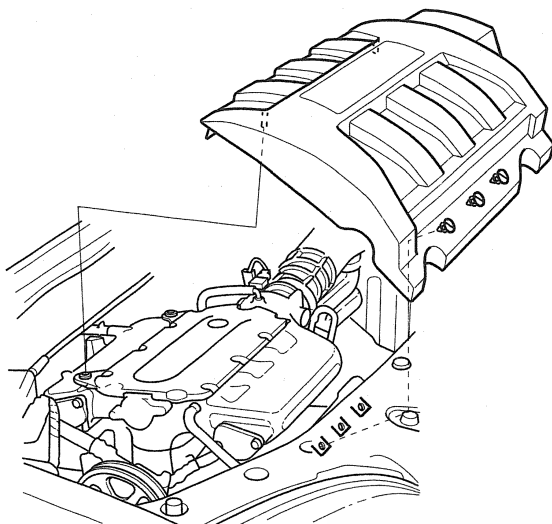


7. If the ignition timing differs from the specification, check the cam timing. If the timing is OK, update the powertrain control module (PCM) if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8), then recheck. If the ignition system works properly, and the PCM was substituted, replace the original PCM (see page 11-230).
8. Disconnect the HDS and the timing light.

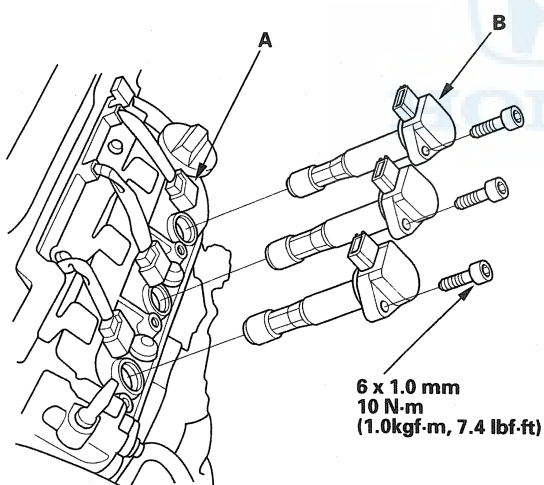


Ignition Coil Removal/Installation

1. Remove the engine cover.

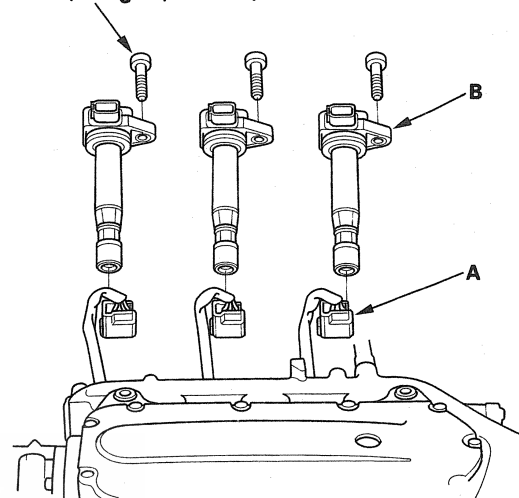


2. Disconnect the ignition coil connectors (A), then remove the front bank ignition coils (B).



3. Disconnect the ignition coil connectors (A), then remove the rear bank ignition coils (B).

6 x 1.0 mm
10 N·m (1.0 kgf·m, 7.4 lbf·ft)



4. Install the ignition coils in the reverse order of removal.

Ignition System

Ignition Coil Relay Circuit Troubleshooting

1. Check the No. 8 (15 A) fuse in the auxiliary under-hood fuse box.

Is the fuse OK?

YES—Reinstall the fuse, then go to step 2.

NO—Replace the fuse. If the fuse continues to blow, locate and repair the short in the circuit between the ignition coil relay and the ignition coils. ■

2. Remove the ignition coil relay from the relay block, and test it (see page 22-82).

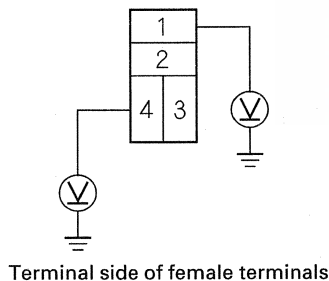
Is the relay OK?

YES—Go to step 3.

NO—Replace the ignition coil relay. ■

3. Measure the voltage between ignition coil relay 4P socket terminal No. 1 and body ground, then terminal No. 4 and body ground.

IGNITION COIL RELAY 4P SOCKET



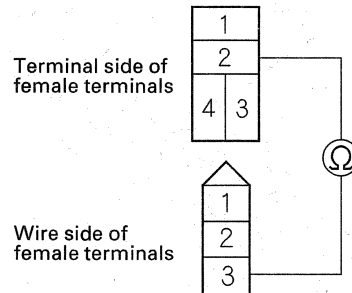
Is there battery voltage?

YES—Go to step 4.

NO—Repair open in the wire between ignition coil relay 4P socket terminal No. 1 and the auxiliary under-hood fuse box or terminal No. 4 and the auxiliary fuse box. ■

4. Check for continuity between ignition coil relay 4P socket terminal No. 2 and the each ignition coil 3P connector terminal No. 3.

IGNITION COIL RELAY 4P SOCKET



IGNITION COIL 3P CONNECTOR

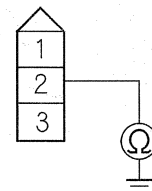
Is there continuity?

YES—Go to step 5.

NO—Repair open in the wire between ignition coil relay 4P socket terminal No. 2 and each ignition coil 3P connector terminal No. 3. ■

5. Check for continuity between each ignition coil 3P connector terminal No. 2 and body ground.

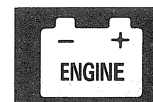
IGNITION COIL 3P CONNECTOR



Is there continuity?

YES—Go to step 6.

NO—Repair open in the wire between each ignition coil 3P connector terminal No. 2 and body ground. ■

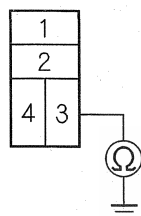


6. Connect the Honda Diagnostic System (HDS) to the data link connector (DLC) (see step 2 on page 11-3). Turn the ignition switch ON (II), and jump the SCS line with the HDS, then turn the ignition switch OFF.

NOTE: This step must be done to protect the powertrain control module (PCM) from damage.

7. Disconnect PCM connector A (44P).
8. Check for continuity between ignition coil relay 4P socket terminal No. 3 and body ground.

IGNITION COIL RELAY 4P SOCKET



Terminal side of female terminals

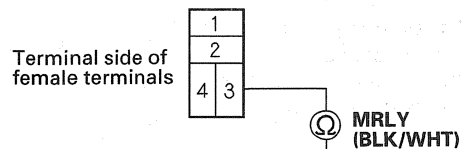
Is there continuity?

YES—Repair short in the wire between ignition coil relay 4P socket terminal No. 3 and the PCM (A6). ■

NO—Go to step 9.

9. Check for continuity between ignition coil relay 4P socket terminal No. 3 and PCM connector terminal A6.

IGNITION COIL RELAY 4P SOCKET



PCM CONNECTOR A (44P)

Is there continuity?

YES—The system is OK at this time. Check for loose or poor connections at the ignition coil relay and the PCM (A6). ■

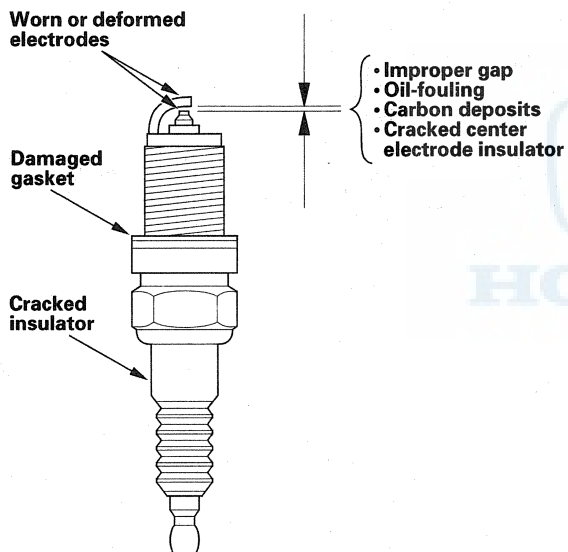
NO—Repair open in the wire between ignition coil relay 4P socket terminal No. 3 and the PCM (A6). ■

Ignition System

Spark Plug Inspection

1. Remove the spark plugs, and inspect the electrodes and the ceramic insulator.

- Burned or worn electrodes may be caused by these conditions:
 - Advanced ignition timing
 - Loose spark plug
 - Plug heat range too hot
 - Insufficient cooling
- Fouled plugs may be caused by these conditions:
 - Retarded ignition timing
 - Oil in combustion chamber
 - Incorrect spark plug gap
 - Plug heat range too cold
 - Excessive idling/low speed running
 - Clogged air cleaner element
 - Deteriorated ignition coils



2. If the spark plug electrode is dirty or contaminated, clean the electrode with a plug cleaner.

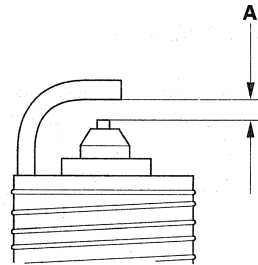
NOTE:

- Do not use a wire brush or scrape the iridium electrode since this will damage the electrode.
- When using a sand blaster spark plug cleaner, do not clean for more than 20 seconds to avoid damaging the electrode.

3. Do not adjust the gap (A) of iridium tip plugs, replace the spark plug if the gap is out of specification.

Electrode Gap

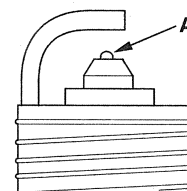
Standard (New): 1.0–1.1 mm (0.039–0.043 in.)



4. Replace the plug at the specified interval or if the center electrode is rounded (A). Use only the spark plugs listed.

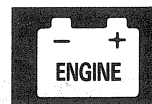
Spark Plugs

NGK: IZFR5K11

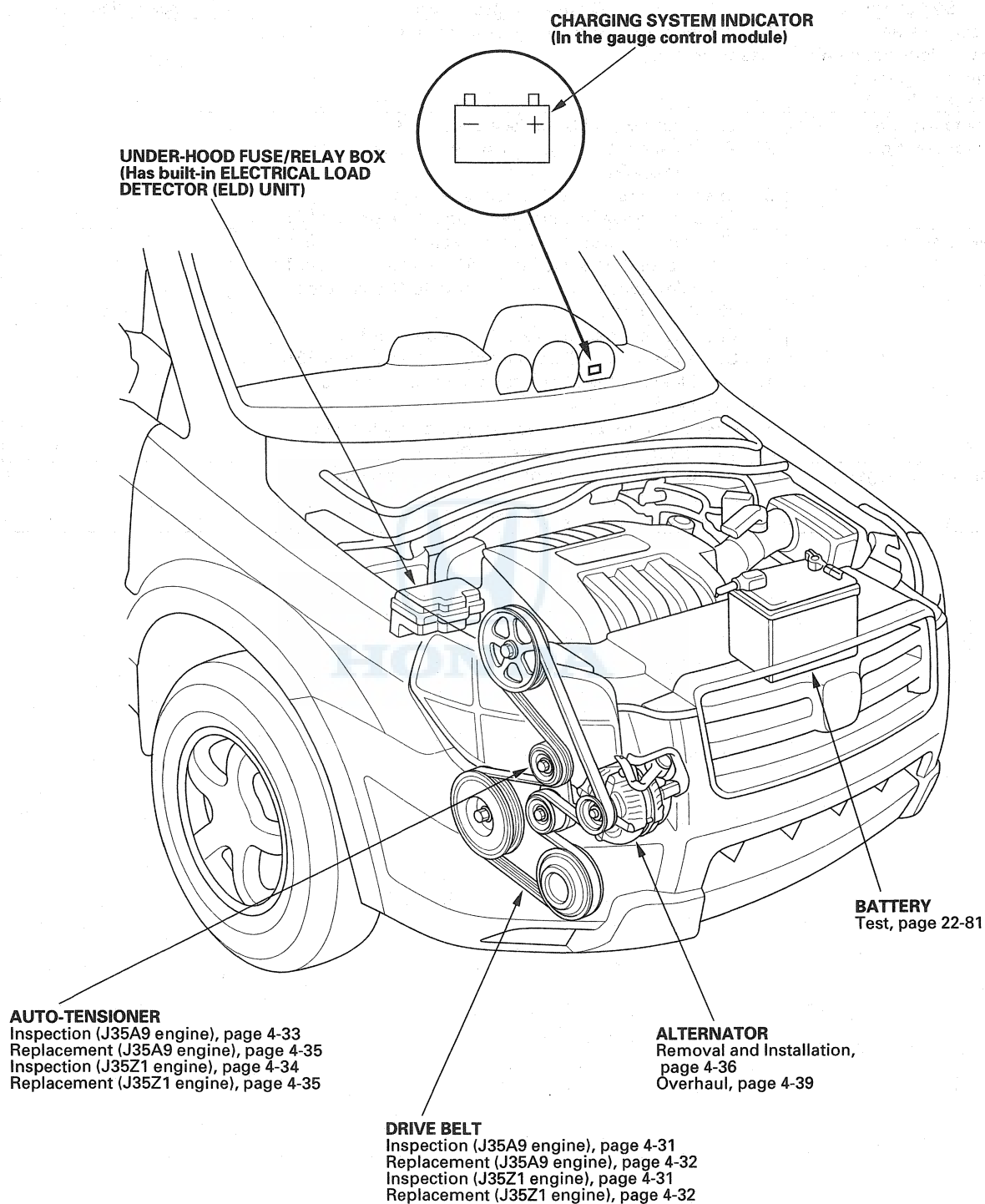


5. Apply a small amount of anti-seize compound to the plug threads, and screw the plugs into the cylinder head, finger-tight. Torque them to 18 N·m (1.8 kgf·m, 13 lbf·ft).

Charging System



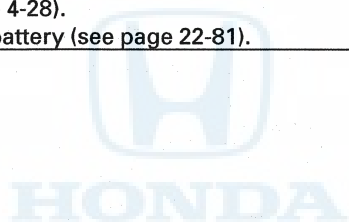
Component Location Index



Charging System

Symptom Troubleshooting Index

Symptom	Diagnostic procedure	Also check for
Charging system indicator does not come on with the ignition switch ON (II)	Troubleshoot the charging system indicator circuit (see page 4-26).	
Charging system indicator stays on	<ol style="list-style-type: none">1. Check for PGM-FI DTCs (see page 11-3).2. Troubleshoot the charging system indicator circuit (see page 4-26).3. Check for a broken drive belt (see page 4-31).4. Check the drive belt auto-tensioner (see page 4-33).	
Battery discharged	<ol style="list-style-type: none">1. Check for excessive parasitic electrical current draw with the ignition switch off, and the key removed. The multiplex control unit may take up to 10 minutes to turn off (sleep mode) for some models.2. Check for a broken drive belt (see page 4-31).3. Check the drive belt auto-tensioner (see page 4-33).4. Troubleshoot the alternator and regulator circuit (see page 4-28).5. Check for poor connection at the battery terminal.6. Test the battery (see page 22-81).	
Battery overcharged	<ol style="list-style-type: none">1. Troubleshoot the alternator and regulator circuit (see page 4-28).2. Test the battery (see page 22-81).	



Charging System

Charging System Indicator Circuit Troubleshooting

1. Turn the ignition switch ON (II).

Does the charging system indicator come on?

YES—Go to step 2.

NO—Go to step 11.

2. Start the engine. Hold the engine speed at 2,000 rpm for 1 minute.

Does the charging system indicator go off?

YES—Charging system indicator circuit is OK. Go to the alternator and regulator circuit troubleshooting (see page 4-28). ■

NO—Go to step 3.

3. Do the gauge control module self-diagnostic function procedure (see page 22-90).

Does the charging system indicator flash?

YES—Go to step 4.

NO—Replace the gauge control module (see page 22-102). ■

4. Turn the ignition switch OFF.

5. Disconnect the alternator 4P connector.

6. Turn the ignition switch ON (II).

Does the charging system indicator go off?

YES—Replace the alternator (see page 4-36), or repair the alternator (see page 4-39). ■

NO—Go to step 7.

7. Turn the ignition switch OFF.

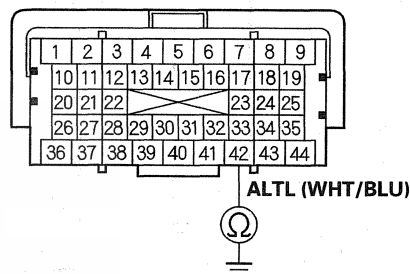
8. Connect the Honda Diagnostic System (HDS) to the data link connector (DLC) (see step 2 on page 11-3). Turn the ignition switch ON (II), and jump the SCS line with the HDS, then turn the ignition switch OFF.

NOTE: This step must be done to protect the powertrain control module (PCM) from damage.

9. Disconnect PCM connector B (44P).

10. Check for continuity between PCM connector terminal B42 and body ground.

PCM CONNECTOR B (44P)

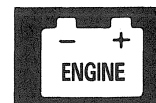


Terminal side of female terminals

Is there continuity?

YES—Repair short in the wire between the alternator and the PCM. ■

NO—Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM (see page 11-230). ■



11. Do the gauge control module self-diagnostic function procedure (see page 22-90).

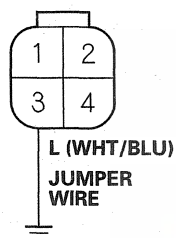
Does the charging system indicator flash?

YES—Go to step 12.

NO—Replace the gauge control module (see page 22-102). ■

12. Turn the ignition switch OFF.
13. Disconnect the alternator 4P connector.
14. Connect alternator 4P connector terminal No. 3 and body ground with a jumper wire.

ALTERNATOR 4P CONNECTOR



Wire side of female terminals

15. Turn the ignition switch ON (II).

Does the charging system indicator come on?

YES—Replace the alternator (see page 4-36), or repair the alternator (see page 4-39). ■

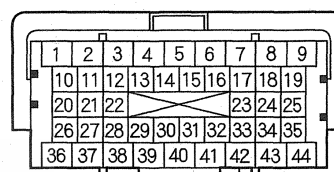
NO—Disconnect the jumper wire, then go to step 16.

16. Connect the HDS to the DLC (see step 2 on page 11-3). Turn the ignition switch ON (II), and jump the SCS line with the HDS, then turn the ignition switch OFF.

NOTE: This step must be done to protect the PCM from damage.

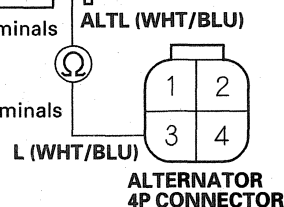
17. Disconnect the PCM connector B (44P).
18. Check for continuity between PCM connector terminal B42 and the alternator 4P connector terminal No. 3.

PCM CONNECTOR B (44P)



Terminal side of female terminals

Wire side of female terminals



Is there continuity?

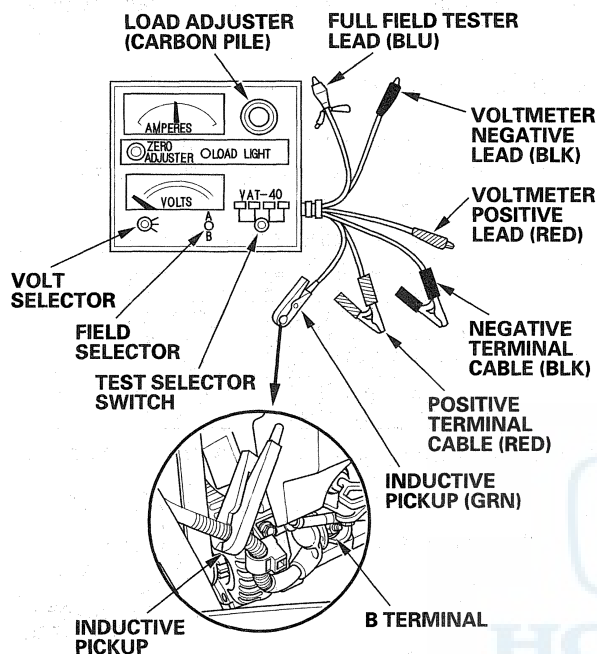
YES—Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM (see page 11-230). ■

NO—Repair open in the wire between the alternator and the PCM. ■

Charging System

Alternator and Regulator Circuit Troubleshooting

1. Make sure the battery connections are good and the battery is sufficiently charged (see page 22-81).
2. Connect a VAT-40 (or equivalent tester), and turn the selector switch to position 1 (starting).



3. Start the engine. Hold the engine speed at 3,000 rpm, with no load until the radiator fan comes on, then let it idle.
4. Raise the engine speed to 2,000 rpm, and hold it there.

Is the voltage over 15.1 V?

YES—Replace the alternator (see page 4-36), or rear housing assembly (see page 4-39). ■

NO—Go to step 5.

5. Release the accelerator pedal, and let the engine idle.
6. Turn off all the accessories. Select the charging test on the tester.
7. Remove the inductive pickup, and zero the ammeter.
8. Place the inductive pickup over the B terminal wire of the alternator so the arrow points away from the alternator.
9. Raise the engine speed to 2,000 rpm, and hold it there.

Is the voltage less than 13.5 V?

YES—Go to alternator control circuit troubleshooting (see page 4-29). ■

NO—Go to step 10.

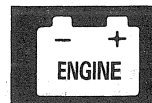
10. Apply a load with the VAT-40 until the battery voltage drops to between 12—13.5 V.

Is the amperage 87.5 A or more?

YES—The charging system is OK. ■

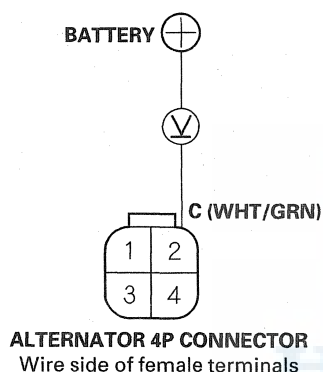
NOTE: If the charging system indicator is still on, replace the alternator (see page 4-36).

NO—Replace the alternator (see page 4-36), or repair the alternator (see page 4-39). ■



Alternator Control Circuit Troubleshooting

1. Connect the Honda Diagnostic System (HDS) to the data link connector (DLC), and check for DTCs (see step 2 on page 11-3). If a DTC is present, diagnose and repair the cause before continuing with this test.
2. Disconnect the alternator 4P connector from the alternator.
3. Start the engine, and turn on the headlights to high beam.
4. Measure the voltage between alternator 4P connector terminal No. 2 and the positive terminal of the battery.



Is there less than 1 V?

YES—Go to step 8.

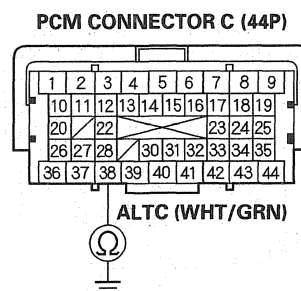
NO—Go to step 5.

5. Jump the SCS line with the HDS, then turn the ignition switch OFF.

NOTE: This step must be done to protect the powertrain control module (PCM) from damage.

6. Disconnect PCM connector C (44P).

7. Check for continuity between PCM connector terminal C38 and body ground.



Is there continuity?

YES—Repair short in the wire between the alternator and the PCM. ■

NO—Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM (see page 11-230). ■

8. Jump the SCS line with the HDS, then turn the ignition switch OFF.

NOTE: This step must be done to protect the PCM from damage.

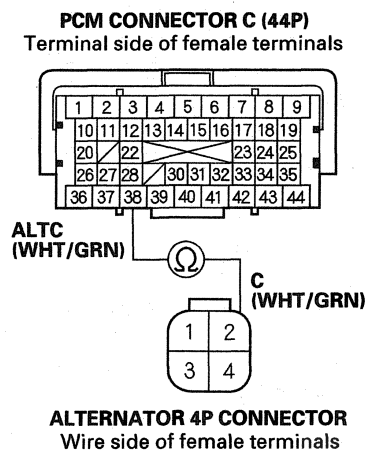
9. Disconnect PCM connector C (44P).

(cont'd)

Charging System

Alternator Control Circuit Troubleshooting (cont'd)

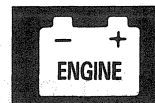
10. Check for continuity between PCM connector terminal C38 and alternator 4P connector terminal No. 2.



Is there continuity?

YES—Replace the alternator (see page 4-36), or repair the alternator (see page 4-39). ■

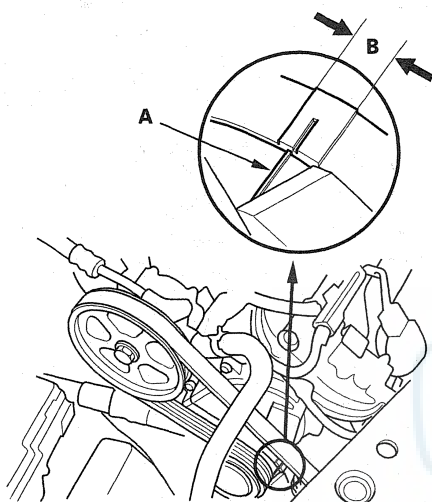
NO—Repair open in the wire between the alternator and the PCM. ■



Drive Belt Inspection

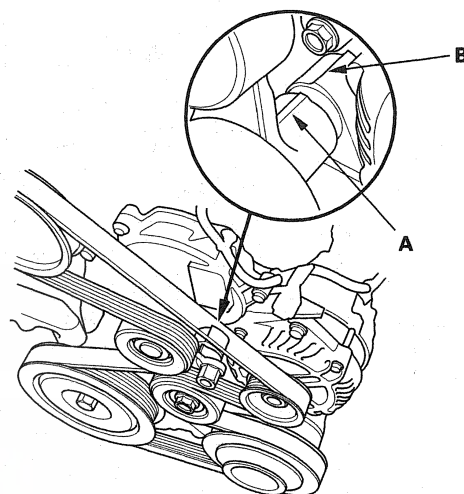
J35A9 engine

1. Inspect the belt for cracks or damage. If the belt is cracked or damaged, replace it.
2. Check that the auto-tensioner indicator (A) is within the standard range (B) as shown. If it is out of the standard range, replace the drive belt (see page 4-32).



J35Z1 engine

1. Inspect the belt for cracks or damage. If the belt is cracked or damaged, replace it.
2. Check that the auto-tensioner indicator (A) on the oil pump is not beyond the edge of the indicator rib (B) on the auto-tensioner. If the pointer is beyond the indicator rib, replace the indicator rib, replace the drive belt (see page 4-32).



Charging System

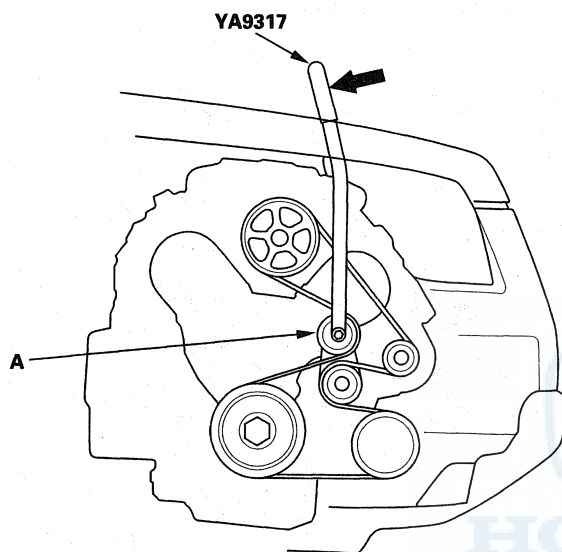
Drive Belt Replacement

Special Tools Required

Belt tension release tool Snap-on YA9317 or equivalent, commercially available.

J35A9 engine

1. Move the auto-tensioner (A) using the belt tension release tool to relieve tension from the drive belt, then remove the drive belt.

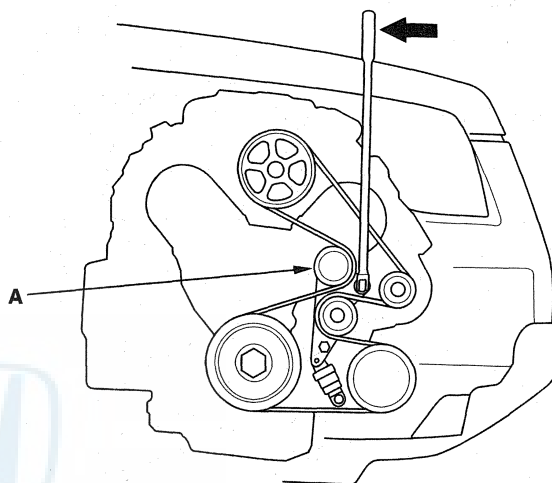


2. Install the new belt in the reverse order of removal.

J35Z1 engine

1. Set a socket wrench in to the drive belt auto-tensioner (A), and slowly turn the wrench in the direction shown, then remove the drive belt.

NOTE: This is a hydraulic type auto-tensioner, so you must turn the wrench slowly.



2. Install the new belt in the reverse order of removal.

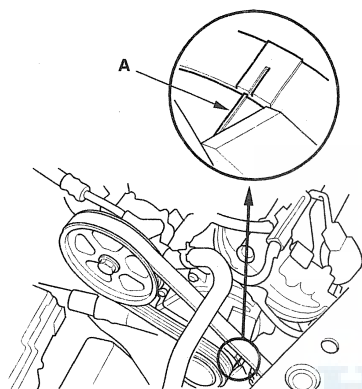
Drive Belt Auto-tensioner Inspection

Special Tools Required

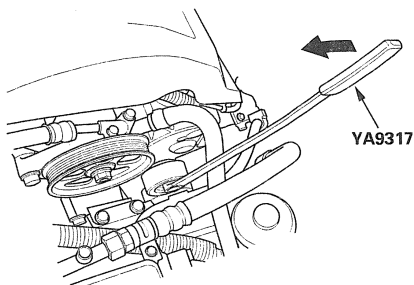
Belt tension release tool Snap-on YA9317 or equivalent, commercially available.

J35A9 engine

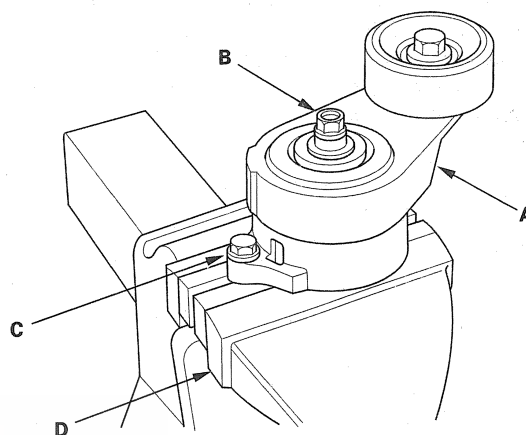
1. Turn the ignition switch ON (II), and make sure the A/C switch is OFF. Turn the ignition switch OFF.
2. Check the position of the auto-tensioner indicator's pointer (A). Start the engine, then check the position again with the engine idling. If the position of the indicator moves or fluctuates a lot, replace the auto-tensioner (see page 4-35).



3. Check for abnormal noise from the tensioner pulley. If you hear abnormal noise, replace the auto-tensioner pulley (see page 4-36).
4. Remove the drive belt (see page 4-32).
5. Move the auto-tensioner within its limit using the belt tension release tool in the direction shown. Check that the tensioner moves smoothly and without any abnormal noise. If the tensioner does not move smoothly, or you hear abnormal noise, replace the auto-tensioner (see page 4-35).

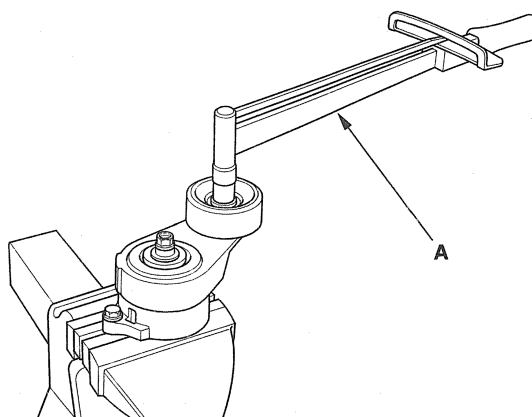


6. Remove the auto-tensioner (see page 4-35).
7. Clamp the auto-tensioner (A) by using a 10 mm bolt (B), 8 mm bolt (C), and a vise (D) as shown. Do not clamp the auto-tensioner itself.



8. Attach a torque wrench (A) to the pulley bolt. Measure the torque when the tensioner is turned counterclockwise. If the torque is less than the specified value, replace the auto-tensioner (see page 4-35).

Auto-tensioner Spring Torque:
50.5 N·m (5.15 kgf·m, 37.2 lbf·ft)

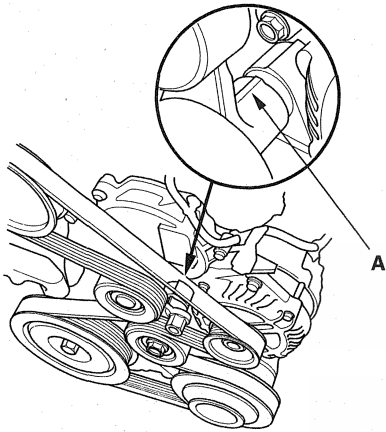


Charging System

Drive Belt Auto-tensioner Inspection (cont'd)

J35Z1 engine

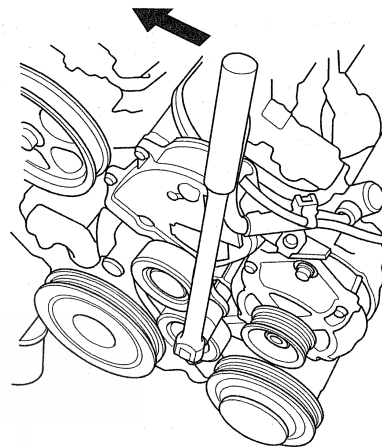
1. Turn the ignition switch ON (II), and make sure the A/C switch is OFF. Turn the ignition switch OFF.
2. Check the position of the auto-tensioner indicator's pointer (A). Start the engine, then check the position again with the engine idling. If the position of the indicator moves or fluctuates a lot, replace the auto-tensioner (see page 4-35).

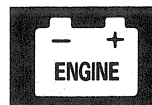


3. Check for abnormal noise from the tensioner pulley. If you hear abnormal noise, replace the auto-tensioner (see page 4-35).
4. Remove the drive belt (see page 4-32).

5. Set a socket wrench into the drive belt auto-tensioner, and slowly turn the wrench in the direction of the rotation arrow. If the tensioner does not move smoothly, or you hear abnormal noise, replace the auto-tensioner (see page 4-35).

NOTE: This is a hydraulic type auto-tensioner, so you must turn the wrench slowly.

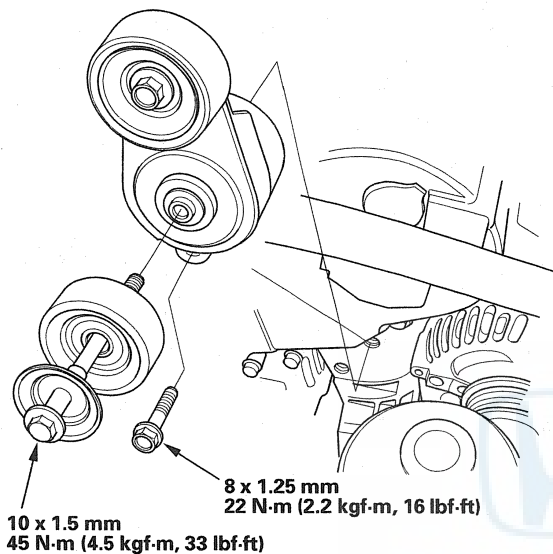




Drive Belt Auto-tensioner Replacement

J35A9 engine

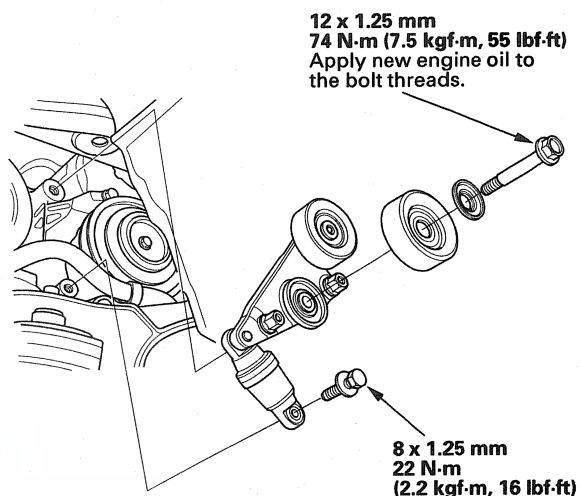
1. Remove the drive belt (see page 4-32).
2. Remove the splash shield (see step 30 on page 5-5).
3. Remove the auto-tensioner.



4. Install the auto-tensioner in the reverse order of removal.

J35Z1 engine

1. Remove the drive belt (see page 4-32).
2. Remove the splash shield (see step 30 on page 5-5).
3. Remove the auto-tensioner.



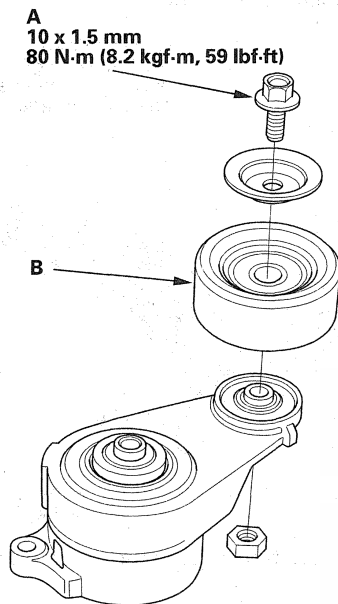
4. Install the auto-tensioner in the reverse order of removal.

Charging System

Tensioner Pulley Replacement

J35A9 engine

1. Remove the auto-tensioner (see page 4-35).
2. Remove the pulley bolt (A) (left-hand threads), and remove the tensioner pulley (B).

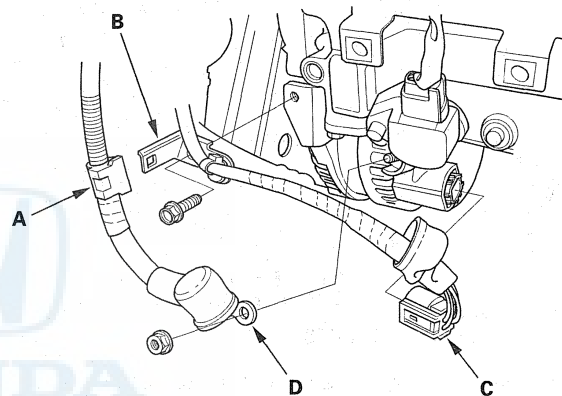


3. Install the tensioner pulley in the reverse order of removal.

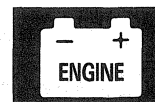
Alternator Removal and Installation

Removal

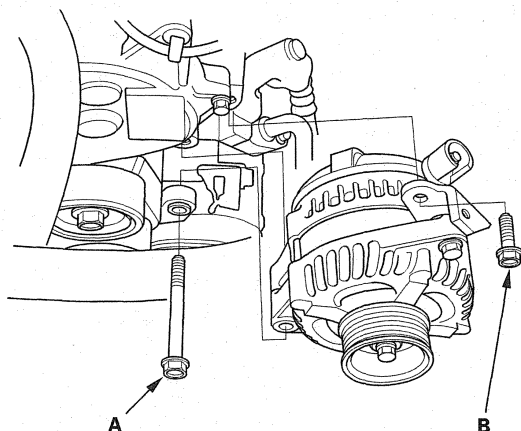
1. Make sure you have the anti-theft codes for the audio system and the navigation system (if equipped), then write down the audio presets.
2. Disconnect the negative cable from the battery.
3. Remove the engine cover (see step 1 on page 4-19).
4. Remove the drive belt (see page 4-32).
5. Remove the harness clamp (A), then remove the bracket (B).



6. Disconnect the alternator connector (C) and the BLK wire (D) from the alternator.

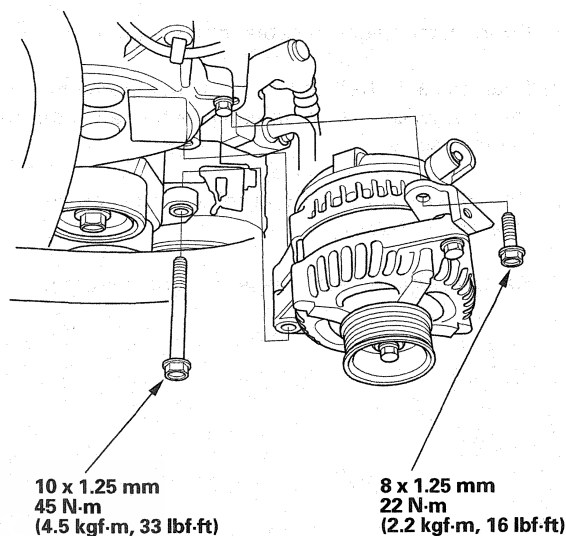


7. Remove the mounting bolt (A) and alternator bracket mounting bolt (B), then remove the alternator.

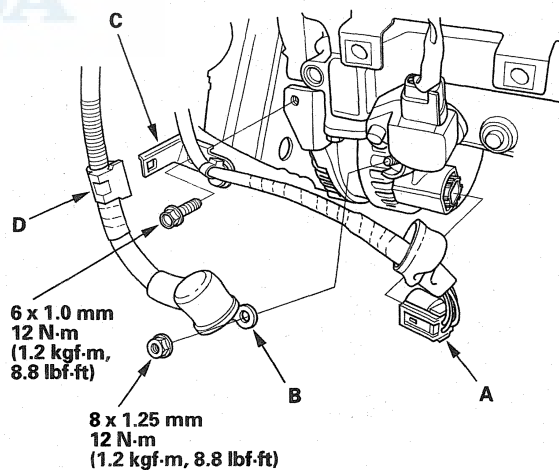


Installation

1. Install the alternator.



2. Connect the alternator connector (A) and the BLK wire (B) to the alternator. Make sure the crimped side of the ring terminal faces away from the alternator when you connect it.



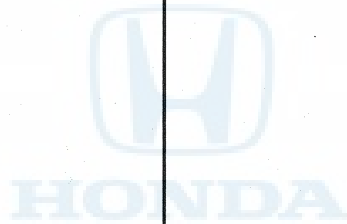
3. Install the bracket (C), then install the harness clamp (D).

(cont'd)

Charging System

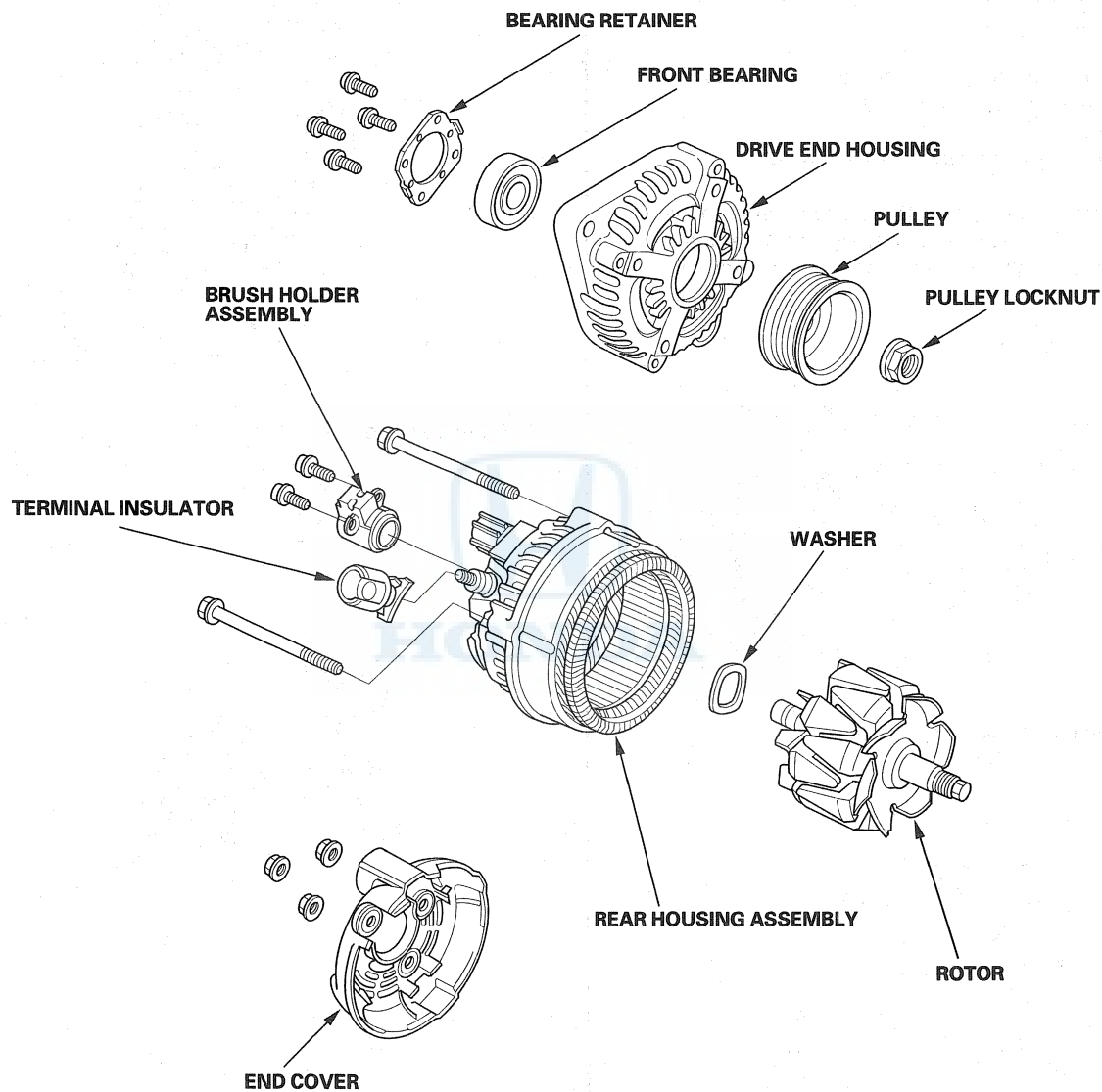
Alternator Removal and Installation (cont'd)

4. Install the drive belt (see page 4-32).
5. Install the engine cover (see step 1 on page 4-19).
6. Connect the negative cable to the battery.
7. Enter the anti-theft codes for the audio system and the navigation system (if equipped), then enter the audio presets.
8. Do the power window control unit reset procedure (see page 22-255).
9. Set the clock (on vehicles without navigation).



Alternator Overhaul

Exploded View



(cont'd)

Charging System

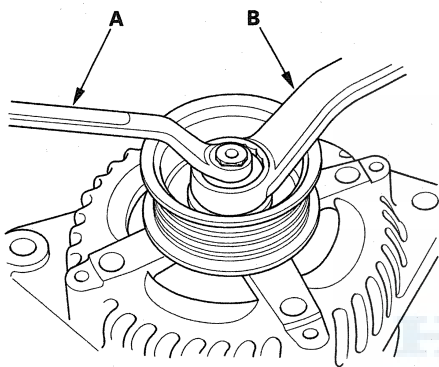
Alternator Overhaul (cont'd)

Special Tools Required

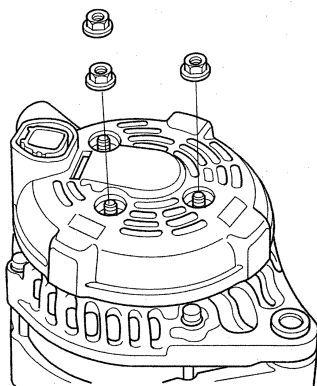
- Handle driver 07749-0010000
- Attachment, 42 x 47 mm 07746-0010300

NOTE: Refer to the Exploded View as needed during this procedure.

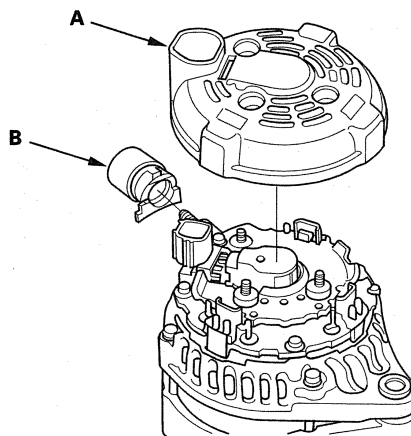
1. Test the alternator and regulator before you remove them (see page 4-26).
2. Remove the alternator (see page 4-36).
3. If the front bearing needs replacing, remove the pulley locknut with a 10 mm wrench (A) and a 22 mm wrench (B). If necessary, use an impact wrench.



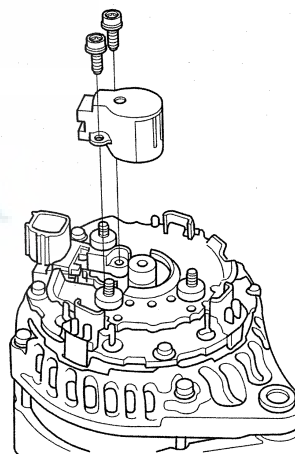
4. Remove the three flange nuts.



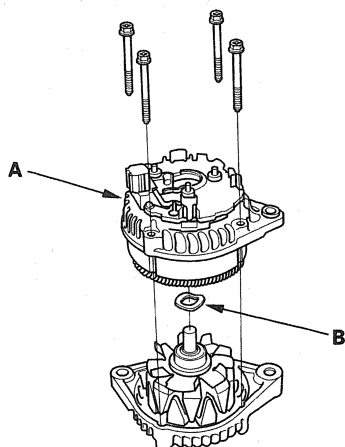
5. Remove the end cover (A) and the terminal insulator (B).



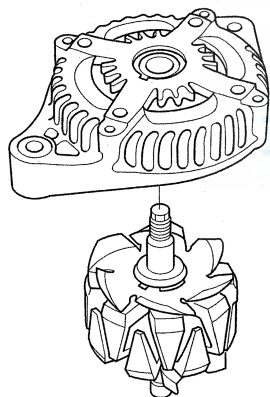
6. Remove the brush holder.



7. Remove the four bolts, then remove the rear housing assembly (A) and washer (B).



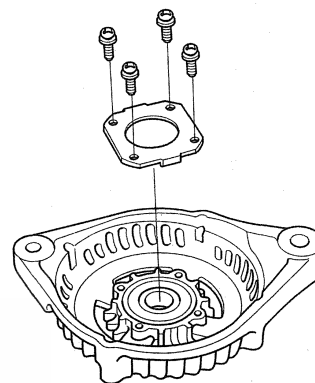
8. If you are not replacing the front bearing, go to step 13. Remove the rotor from the drive end housing.



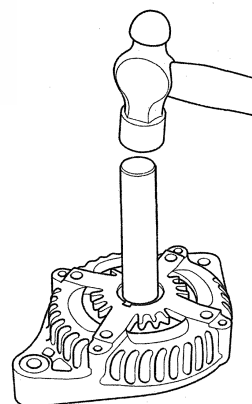
9. Inspect the rotor shaft for scoring, and inspect the bearing journal surface in the drive end housing for seizure marks.

- If the rotor is damaged, replace the rotor assembly.
- If the rotor is OK, go to step 10.

10. Remove the front bearing retainer.



11. Drive out the front bearing with a brass drift and hammer.

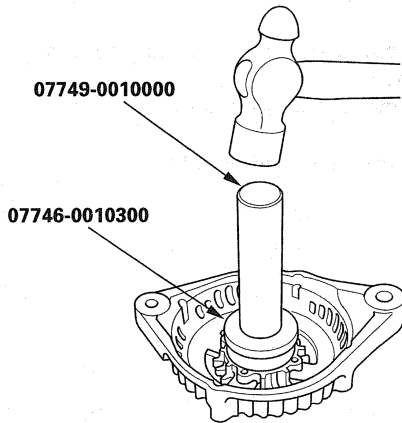


(cont'd)

Charging System

Alternator Overhaul (cont'd)

12. Install a new front bearing in the drive end housing with a hammer, the handle driver, and attachment.



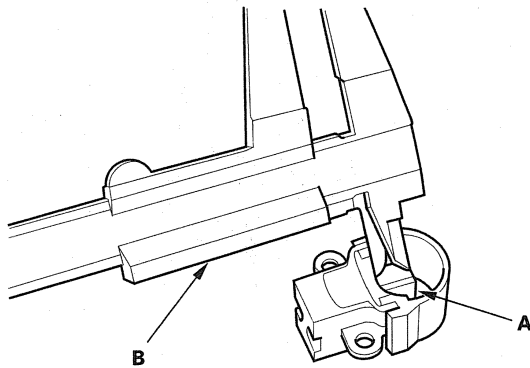
Alternator Brush Inspection

13. Measure the length of both brushes (A) with a vernier caliper (B).
- If either brush is shorter than the service limit, replace the brush holder assembly.
 - If the brush length is OK, go to step 14.

Alternator Brush Length

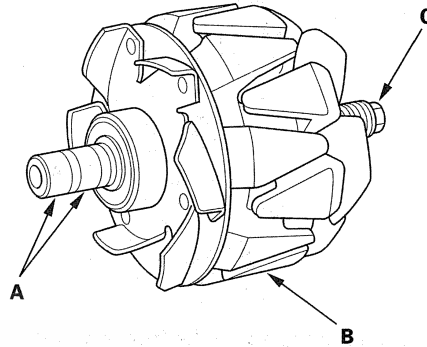
Standard (New): 10.5 mm (0.41 in.)

Service Limit: 1.5 mm (0.06 in.)



Rotor Slip Ring Test

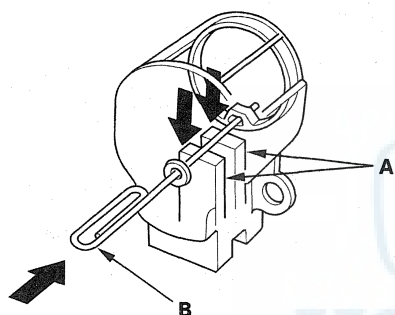
14. Check for continuity between the slip rings (A).
- If there is continuity, go to step 15.
 - If there is no continuity, replace the rotor assembly.



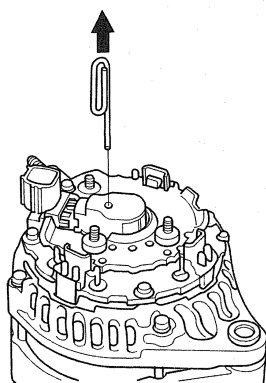
15. Check for continuity between each slip ring and the rotor (B) and the rotor shaft (C).
- If there is no continuity, replace the rear housing assembly, and go to step 16.
 - If there is continuity, replace the rotor assembly.

Alternator Reassembly

16. If you removed the pulley, put the rotor in the drive end housing, then torque its locknut to 110 N·m (11.2 kgf·m, 81.0 lbf·ft).
17. Remove any grease or any oil from the slip rings.
18. Put the rear housing assembly and drive end housing/rotor assembly together, torque the four through bolts.
19. Push the brushes (A) in, then insert a pin or drill bit (B) (about 1.6 mm (0.06 in.) diameter) to hold them there.



20. Install the brush holder, and pull out the pin.

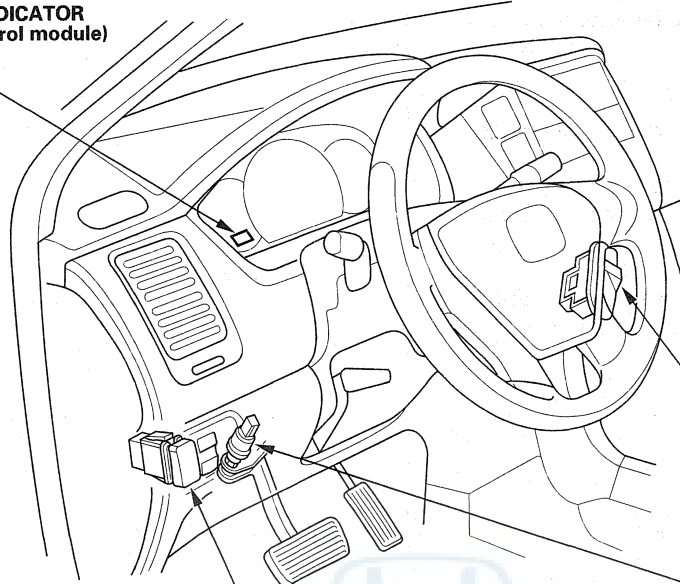


21. Install the end cover.
22. After assembling the alternator, turn the pulley by hand to make sure the rotor turns smoothly and without noise.
23. Install the alternator (see page 4-37) and drive belt (see page 4-32).

Cruise Control

Component Location Index

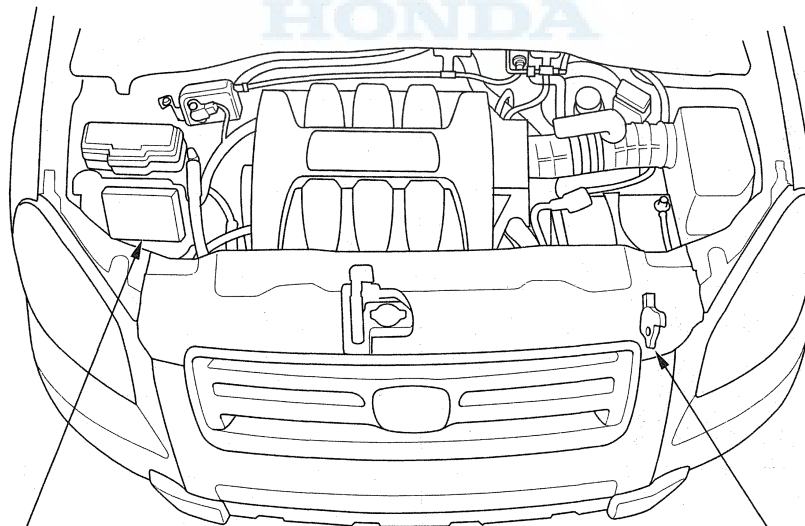
CRUISE CONTROL INDICATOR
(Built into gauge control module)



CRUISE CONTROL SET/DECEL, RESUME/ACCEL, CANCEL SWITCH
Test/Replacement, page 4-50

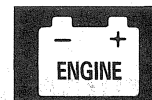
CRUISE CONTROL MAIN SWITCH
Test/Replacement, page 4-50

BRAKE PEDAL POSITION SWITCH
Test, page 22-148
Pedal Height Adjustment, page 19-5



POWERTRAIN CONTROL MODULE (PCM)
Cruise Control Input Test, page 4-48

TRANSMISSION RANGE SWITCH
Test, page 14-261
Replacement, page 14-262



Symptom Troubleshooting Index

Symptom	Diagnostic procedure	Also check for
Cruise control cannot be set	<ol style="list-style-type: none"> 1. Check for PGM-FI DTCs (see page 11-3) and body DTCs (see page 22-3). 2. Check the No. 47 (20 A) fuse in the under-hood fuse/relay box, and No. 6 (15 A) fuse in the driver's under-dash fuse/relay box. 3. Do the cruise control input test (see page 4-48). 4. Do the cruise control main switch test (see page 4-50). 5. Do the cruise control set/decel, resume/accel, cancel switch test (see page 4-50). 	Faulty cruise control main switch
Cruise control can be set, but the cruise control main switch indicator does not come on	<ol style="list-style-type: none"> 1. Do the cruise control main switch test (see page 4-50). 2. Check for a faulty cruise control main switch indicator bulb. 	<ul style="list-style-type: none"> • Faulty cruise control main switch • Poor ground G401
Cruise control can be set, but the cruise control indicator does not come on	<ol style="list-style-type: none"> 1. Check for PGM-FI DTCs (see page 11-3) and body DTCs (see page 22-3). 2. Do the gauge control module self-diagnostic function (see page 22-90). 3. Do the cruise control input test (see page 4-48). Test the cruise control indicator signal input. 	Faulty gauge control module
Vehicle does not decelerate or accelerate accordingly when the set/decel or resume/accel switch is pressed	<ol style="list-style-type: none"> 1. Check for PGM-FI DTCs (see page 11-3) and body DTCs (see page 22-3). 2. Do the cruise control input test (see page 4-48). Test the cruise control set/decel, resume/accel switch signal input. 3. Do the cruise control set/decel, resume/accel, cancel switch test (see page 4-50). 	Open circuit, loose or disconnected terminals: LT GRN/RED or GRY/PNK
Set speed does not cancel when the brake pedal is pressed	<ol style="list-style-type: none"> 1. Check for PGM-FI DTCs (see page 11-3) and body DTCs (see page 22-3). 2. Do the cruise control input test (see page 4-48). Test the brake pedal position switch signal input. 3. Do the brake pedal position switch test (see page 22-148). 	<ul style="list-style-type: none"> • Short to power on the GRY wire • Faulty brake pedal position switch
Set speed does not cancel when the cruise control main switch is pressed	<ol style="list-style-type: none"> 1. Check for PGM-FI DTCs (see page 11-3) and body DTCs (see page 22-3). 2. Do the cruise control input test (see page 4-48). Test the cruise control main switch signal input. 3. Do the cruise control main switch test (see page 4-50). 	Short to power on the LT GRN wire
Set speed does not cancel when the cancel switch is pressed	<ol style="list-style-type: none"> 1. Check for PGM-FI DTCs (see page 11-3) and body DTCs (see page 22-3). 2. Do the cruise control input test (see page 4-48). Test the cruise control cancel switch signal input. 3. Do the cruise control set/decel, resume/accel, cancel switch test (see page 4-50). 	Open circuit, loose or disconnected terminals: LT GRN/RED or GRY/PNK

(cont'd)

Cruise Control

Symptom Troubleshooting Index (cont'd)

Symptom	Diagnostic procedure	Also check for
Set speed will not resume when the resume/accel switch is pressed (with the cruise control main switch turned on, and set speed temporarily canceled by pressing the brake pedal)	<ol style="list-style-type: none">1. Check for PGM-FI DTCs (see page 11-3) and body DTCs (see page 22-3).2. Check the brake pedal position switch adjustment (see page 19-5).3. Do the cruise control input test (see page 4-48). Test the cruise control resume/accel switch signal input. Test the brake pedal position switch signal input.4. Do the cruise control set/decel, resume/accel, cancel switch test (see page 4-50).	<ul style="list-style-type: none">• Faulty brake pedal position switch• Open circuit, loose or disconnected terminals: GRY/PNK
With the ignition switch ON (II), and the lighting switch turned on, the cruise control main switch illumination does not come on	<ol style="list-style-type: none">1. Replace the cruise control main switch illumination bulb (see page 4-50).2. Do the cruise control main switch test (see page 4-50).	



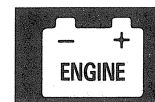
Cruise Control

Cruise Control Input Test

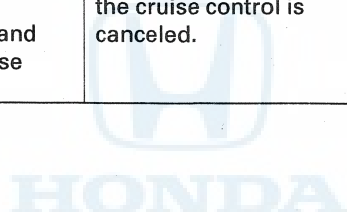
1. Connect the Honda Diagnostic System (HDS) to the data link connector (DLC) (see step 2 on page 11-3).
2. Turn the ignition switch ON (II).
3. Go to PGM-FI, and check for DTCs (see page 11-3).
4. Do the following tests while monitoring parameters in the PGM-FI DATA LIST with the HDS.

NOTE: Intermittent failures are often caused by loose circuit connections. While monitoring cruise control inputs, flex their circuits, and note if any of the test results change.

Signal to be tested	Test condition	Parameter: Desired result	Possible cause if result is not obtained
Brake switch signal	Brake pedal pressed, then released	CRUISE BRAKE SW should indicate OFF when the brake pedal is pressed and ON when the brake pedal is released.	<ul style="list-style-type: none">• Faulty brake pedal position switch• Blown No. 6 (15 A) fuse in the driver's under-dash fuse/relay box• An open in the wire between the powertrain control module (PCM) and the brake pedal position switch• A wire shorted to ground between the PCM and the brake pedal position switch
Transmission range switch signal	Shift lever in D, D3, or 2	SHIFT/CLUTCH SW should indicate ON in P, R, N and 1 and OFF in D, D3, or 2.	<ul style="list-style-type: none">• Faulty transmission range switch• An open in the wire between the PCM and the transmission range switch• A wire shorted to ground between the PCM and the transmission range switch• Poor ground G101 and G102
Cruise control main switch signal	Cruise control main switch ON and OFF	CRUISE CONTROL MAIN SW should indicate ON when the cruise control main switch is turned ON and OFF when the cruise control main switch is turned OFF.	<ul style="list-style-type: none">• Faulty cruise control main switch• An open in the wire between the gauge control module and the cruise control main switch• A wire shorted to ground between the gauge control module and the cruise control main switch
Set switch signal	Set/decel switch pressed and released	CRUISE CONTROL SET SW should indicate ON when the set/decel switch is pressed and OFF when the set/decel switch is released.	<ul style="list-style-type: none">• Faulty cruise control set/decel, resume/accel, cancel switch• An open in the wire between the gauge control module and the cruise control set/decel, resume/accel, cancel switch• A wire shorted to ground between the gauge control module and the cruise control set/decel, resume/accel, cancel switch



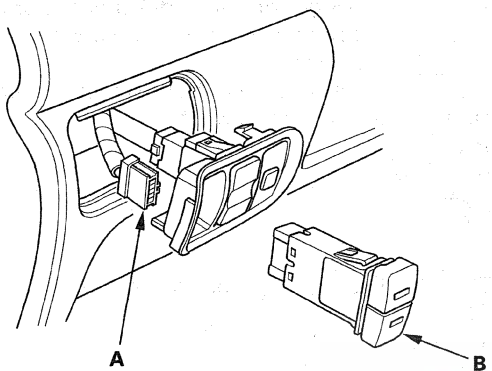
Signal to be tested	Test condition	Parameter: Desired result	Possible cause if result is not obtained
Resume switch signal	Resume/accel switch pressed and released	CRUISE CONTROL RESUME SW should indicate ON when the resume/accel switch is pressed and OFF when the resume/accel switch is released.	<ul style="list-style-type: none">Faulty cruise control set/decel, resume/accel, cancel switchAn open in the wire between the gauge control module and the cruise control set/decel, resume/accel, cancel switchA wire shorted to ground between the gauge control module and the cruise control set/decel, resume/accel, cancel switch
Cancel switch signal	Cancel switch pressed and released	CRUISE CONTROL CANCEL SW should indicate ON when the cancel switch is pressed and OFF when the cancel switch is released.	Faulty cruise control set/decel, resume/accel, cancel switch
Cruise control indicator signal	Start the engine, turn the cruise control main switch on, and drive the vehicle above 25 mph (40 km/h). Set and cancel the cruise control.	CRUISE INDICATOR should indicate ON when the cruise control is set and OFF when the cruise control is canceled.	Faulty gauge control module



Cruise Control

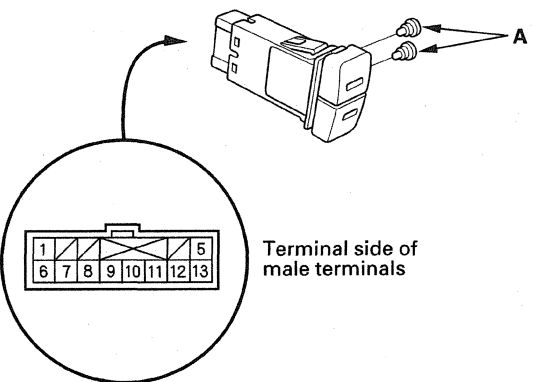
Cruise Control Main Switch Test/Replacement

- 1. Remove the driver's switch panel (see page 20-92).
- 2. Disconnect the 13P connector (A), then release the clips of the cruise control main switch, and push the cruise control main switch (B) out of the panel.



- 3. Check for continuity between the terminals in each switch position according to the table. If there is no continuity, replace indicator bulbs (A) or the switch.

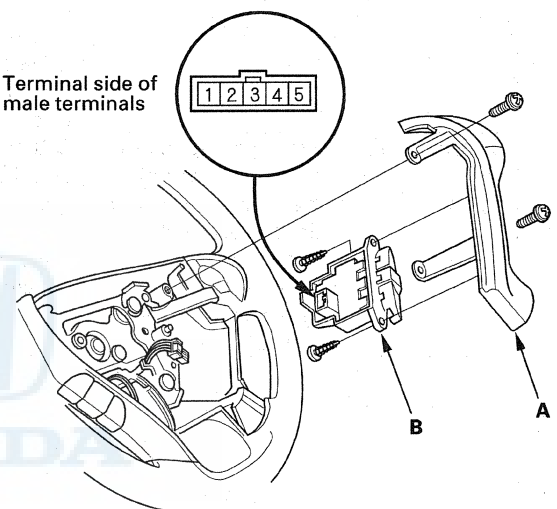
Terminal	9	7	8	1	5
Position					
OFF					
ON					



Cruise Control Set/decel, Resume/accel, Cancel Switch Test/Replacement

SRS components are located in this area. Review the SRS component locations (see page 23-17), and the precautions and procedures (see page 23-19), in the SRS before doing repairs or service.

- 1. Remove the driver's airbag (see page 23-201).
- 2. Remove the cover (A), then remove the set/decel, resume/accel, cancel switch (B).



- 3. Check for continuity between the terminals in each switch position according to the table.

- If there is continuity, and it matches the table, but switch failure occurred on the cruise control input test, check and repair the wire harness on this switch circuit.
- If there is no continuity in one or both positions, replace the switch.

Terminal	4	2	3
Position			
Set/decel (PRESSED)			
Resume/accel (PRESSED)			
Cancel (PRESSED)			

Engine Mechanical



Engine Assembly

Engine Removal	5-2
Engine Installation	5-14
Engine Mount Replacement	5-26
Front Engine Mount Replacement	5-27
Rear Engine Mount Replacement	5-27

Cylinder Head	6-1
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Engine Block	7-1
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Engine Lubrication	8-1
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Intake Manifold and Exhaust System	9-1
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Engine Assembly

Engine Removal

Special Tools Required

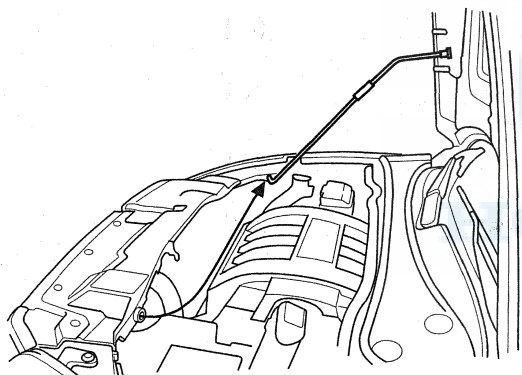
- Engine support hanger, A and Reds AAR-T-12566
- Engine hanger balance bar VSB02C000019
- Engine hanger adapter VSB02C000014
- Front subframe adapter VSB02BX0

These special tools are available through the Honda Tool and Equipment Program, 1-888-424-6857

NOTE:

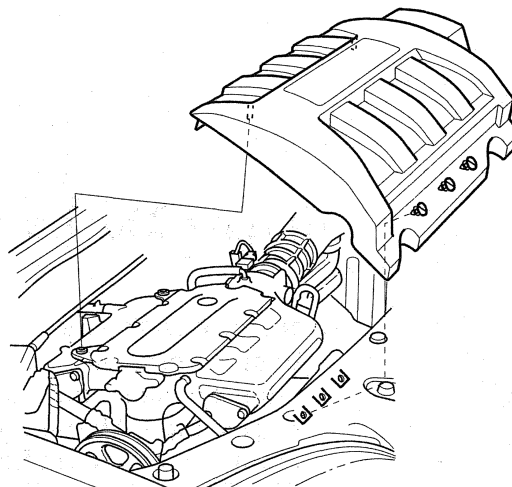
- Use fender covers to avoid damaging painted surfaces.
- To avoid damaging wire and terminals, unplug the wiring connectors carefully while holding the connector portion.
- Mark all wiring and hoses to avoid misconnection. Also, be sure that they do not contact other wiring or hoses, or interfere with other parts.

1. Secure the hood in the wide open position by using the support rod as shown.

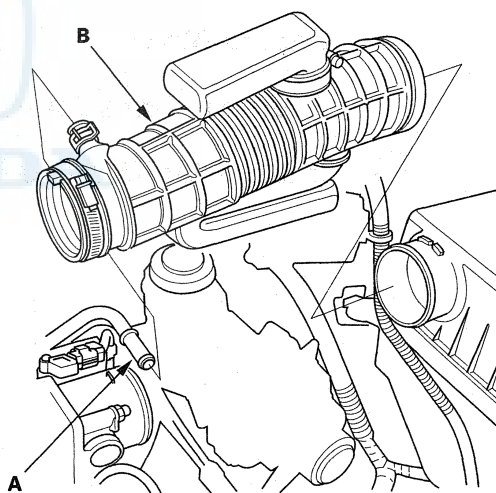


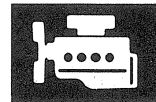
2. Make sure you have the anti-theft codes for the audio system and the navigation system (if equipped), then write down the audio presets.
3. Drain the power steering system fluid (see page 17-13).
4. Relieve the fuel pressure (see page 11-372).
5. Disconnect the negative cable from the battery first, then disconnect the positive cable.
6. Remove the battery.

7. Remove the engine cover.

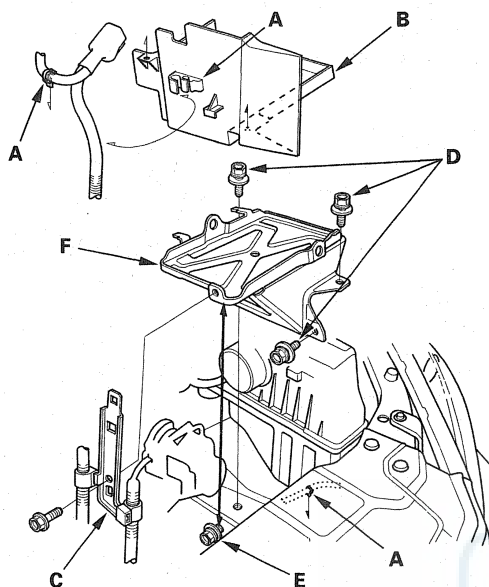


8. Disconnect the breather pipe (A), then remove the intake air duct (B).





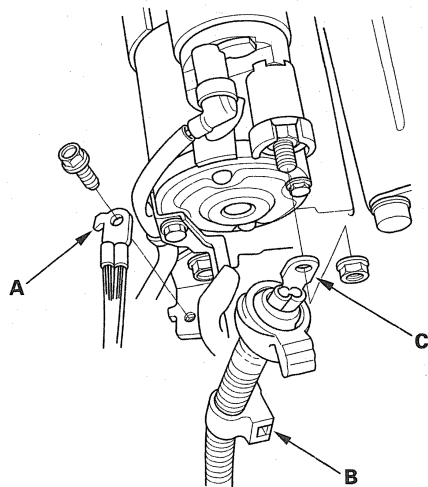
9. Remove the harness clamps (A), then remove the battery tray (B).



10. Remove the harness bracket (C).

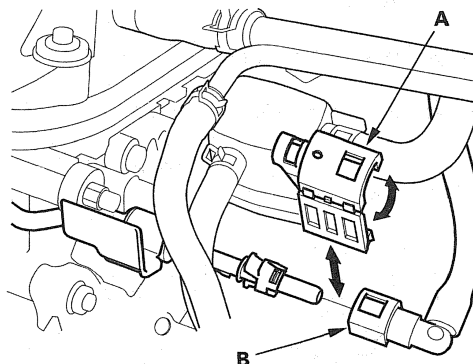
11. Remove the three mounting bolts (D), and loosen the mounting bolt (E), then remove the battery base (F).

12. Remove the ground cable (A), harness clamp (B), and starter cable (C).

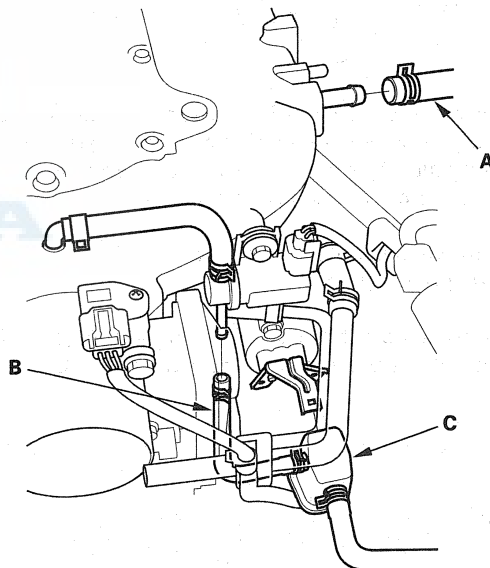


13. Remove the shift cable. Do not bend the shift cable excessively (see step 20 on page 14-223).

14. Remove the quick-connect fitting cover (A), then disconnect the fuel feed hose (B) (see page 11-380).



15. Remove the brake booster vacuum hose (A), evaporative emission (EVAP) canister hose (B), and the EVAP canister purge valve joint (C).

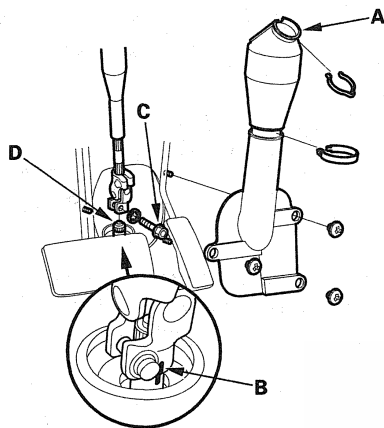


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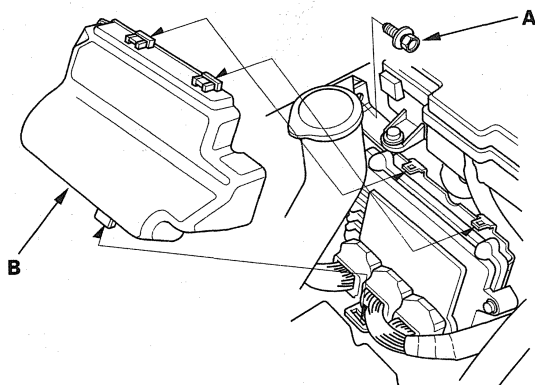
Engine Assembly

Engine Removal (cont'd)

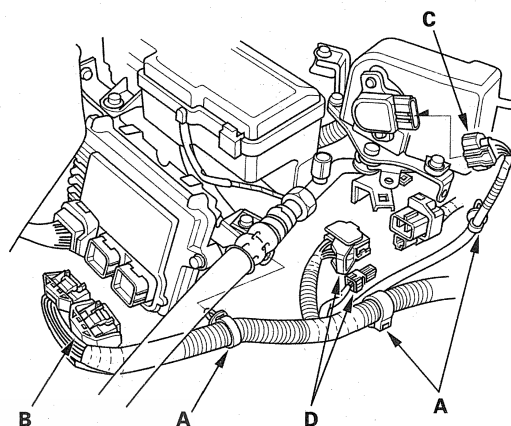
16. Remove the driver's side console lower panel, and pull the carpet to expose the steering joint cover (see page 20-87).
17. Remove the steering wheel (see page 17-22).
18. Remove the steering joint cover (A).



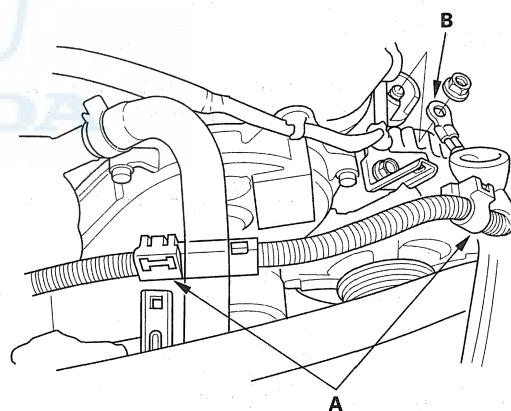
19. Make a reference mark (B) across the steering joint and gearbox pinion shaft. Remove the steering joint bolt (C), and disconnect the steering joint from the steering gearbox pinion shaft (D).
20. Remove the coolant reservoir, without disconnecting hoses.
21. Remove the bolt (A) securing the washer tank, then remove the powertrain control module (PCM) cover (B).



22. Remove the harness clamps (A), then disconnect the PCM connectors (B), accelerator pedal position (APP) sensor connector (C), and engine wire harness connectors (D) on the right side of the engine compartment.

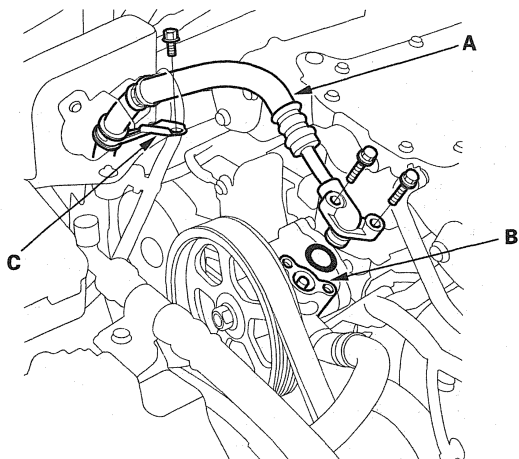


23. Remove the harness clamps (A), then remove the alternator cable (B).

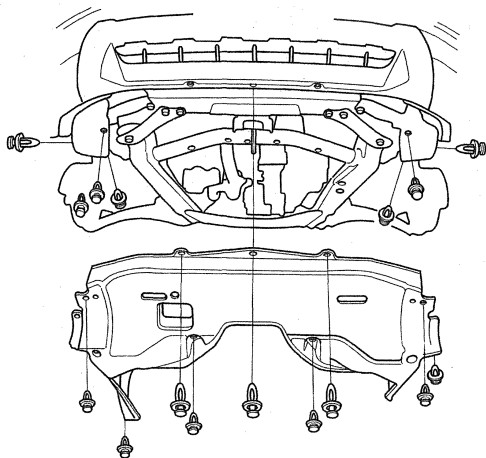




24. Remove the power steering (P/S) pump outlet hose (A) from the P/S pump (B).



25. Remove the P/S hose clamp (C).
26. Remove the drive belt (see page 4-32).
27. Remove the radiator cap.
28. Raise the vehicle on the lift to full height.
29. Remove the front wheels.
30. Remove the splash shield.

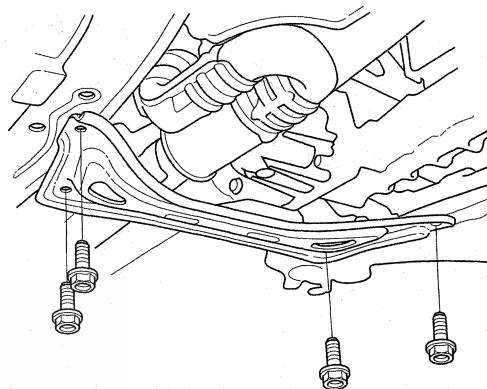


31. Loosen the drain plug in the radiator, and drain the engine coolant (see page 10-6).

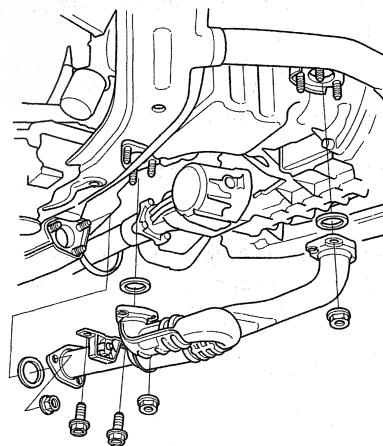
32. Drain the automatic transmission fluid (ATF) (see page 14-214).

33. Drain the engine oil (see page 8-8).

34. Remove the front subframe stiffener.



35. Remove exhaust pipe A.

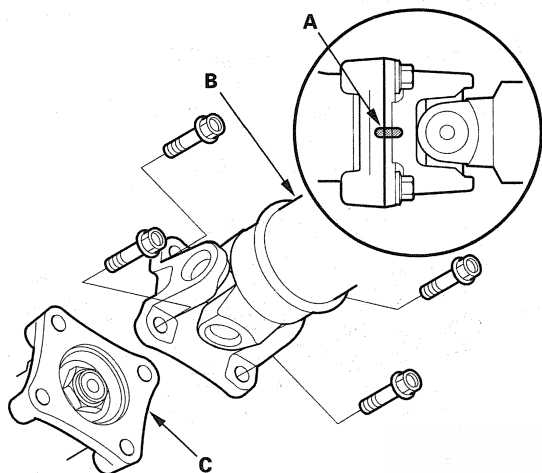


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Engine Assembly

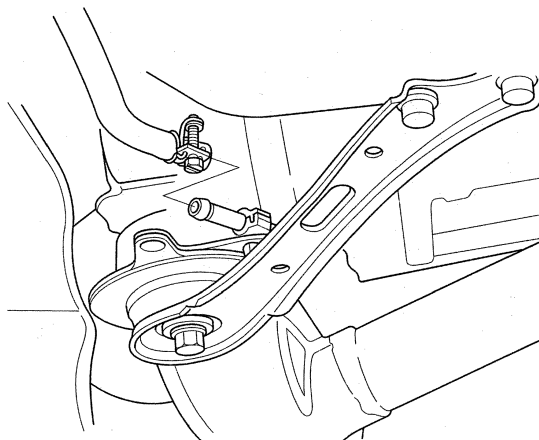
Engine Removal (cont'd)

36. Make a reference mark (A) on the propeller shaft (B) and transfer companion flange (C), then separate the propeller shaft from the transfer companion flange (4WD).

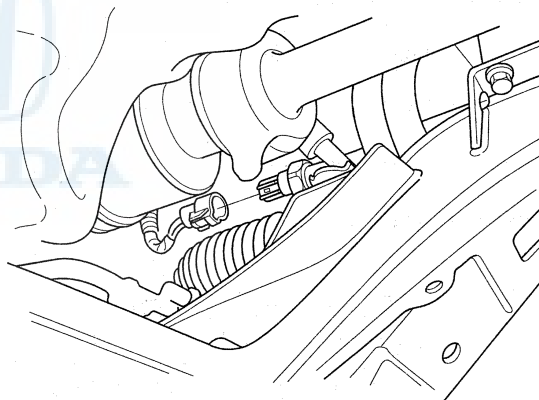


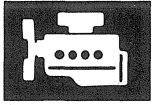
37. Remove the transfer assembly (4WD) (see step 9 on page 14-218).
38. Separate the stabilizer links from the dampers (see page 18-19).
39. Separate the tie-rod end ball joints from the knuckles (see step 16 on page 17-33).
40. Separate the knuckles from the suspension lower arm ball joints (see page 18-21).
41. Remove the driveshafts (see page 16-4). Coat all precision-finished surfaces with new engine oil. Tie plastic bags over the driveshaft ends.

42. Remove the P/S hose, then plug the line and the hose.

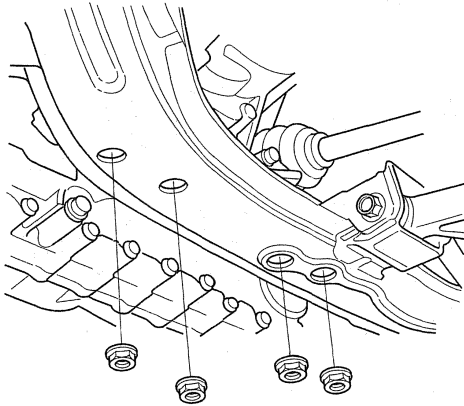


43. Disconnect the power steering pressure switch connector.

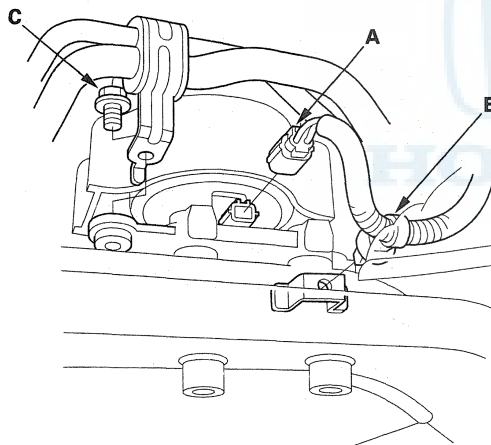




44. Remove the transmission lower front mount nuts and transmission lower rear mount nuts.

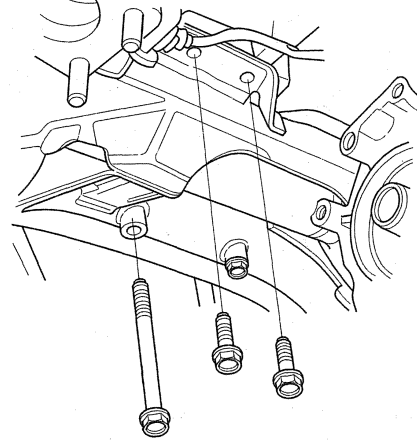


45. Disconnect the active control engine mount (ACM) actuator connector (A) from the rear engine mount, then remove the harness clamp (B). Remove the bolt (C) securing the P/S line (J35Z1 engine).

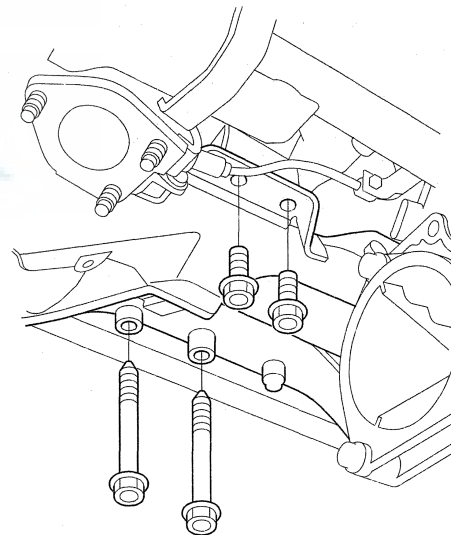


46. Remove the rear engine mount bolts.

J35A9 engine



J35Z1 engine

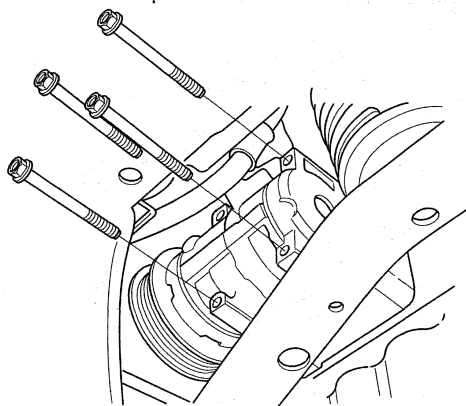


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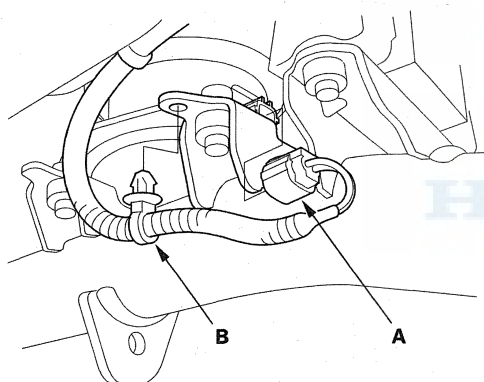
Engine Assembly

Engine Removal (cont'd)

47. Remove the A/C compressor without disconnecting the A/C hoses.

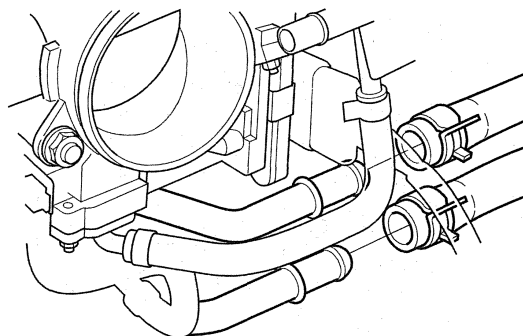


48. Disconnect the ACM actuator connector (A) from the front engine mount, then remove the harness clamp (B) (J35Z1 engine).

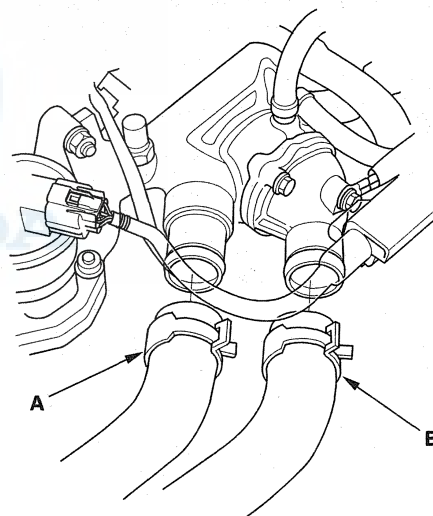


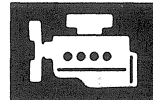
49. Lower the vehicle on the lift.

50. Remove the heater hoses.

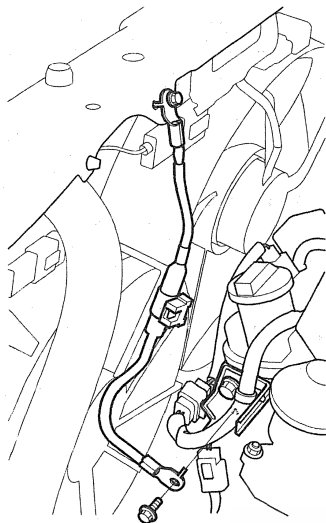


51. Remove the upper radiator hose (A), and the lower radiator hose (B).

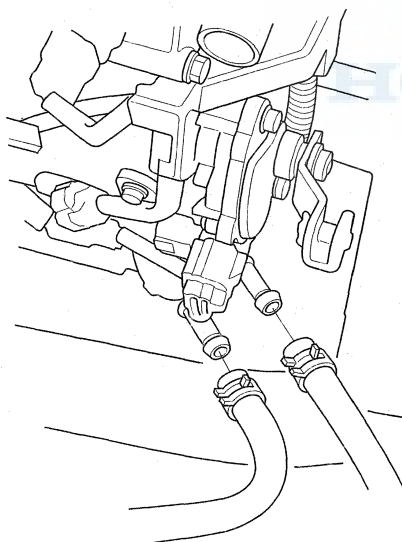




52. Remove the ground cable.

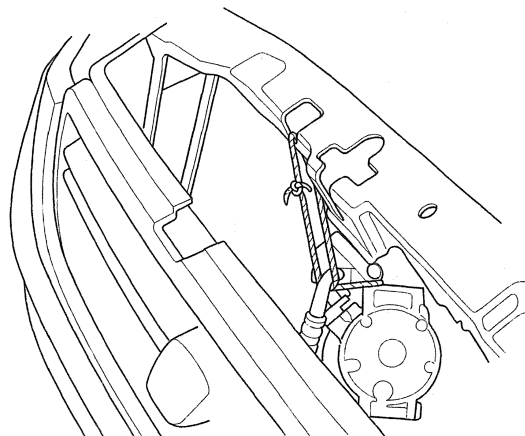


53. Remove the ATF cooler hoses from the transmission, then plug the ATF cooler hoses and lines.



54. Remove the radiator (see page 10-13).

55. Hang the A/C compressor with a rope as shown.

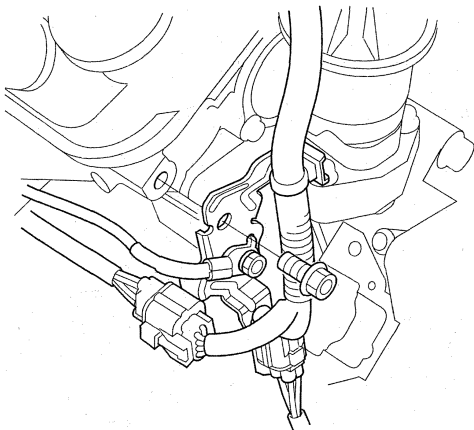


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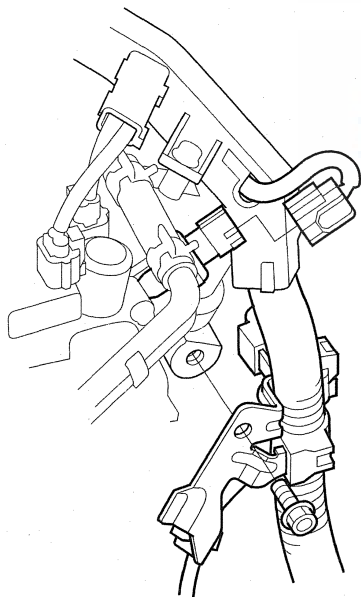
Engine Assembly

Engine Removal (cont'd)

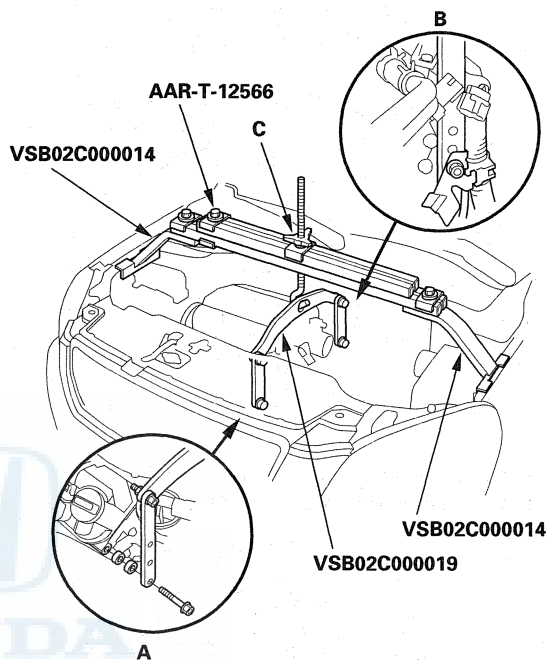
56. Remove the connector bracket from the front cylinder head; use the bracket bolt hole to attach engine hanger balance bar front arm.



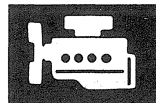
57. Remove the harness clamp bracket from the rear cylinder head; use the bracket bolt hole to attach engine hanger balance bar rear arm.



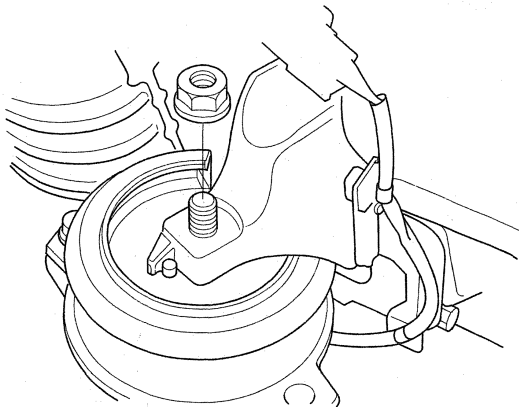
58. Install the engine hanger balance bar (VSB02C000019); attach the front arm (A) to the front cylinder head with a spacer and the 10 mm bolt, and attach the rear arm (B) to the rear cylinder head with the 8 mm bolt.



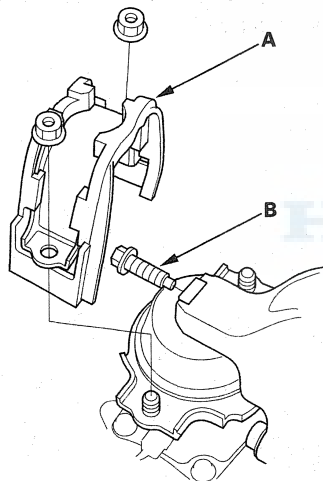
59. Install the engine hanger adapters (VSB02C000014) on the ends of the support beams of the engine support hanger (AAR-T-12566). Install the engine support hanger and adapters to the vehicle, and attach the hook to the slotted hole in the engine hanger balance bar. Torque the wing nut (C) by hand to lift and support the engine.



60. Remove the front engine mount nut (J35A9 engine).

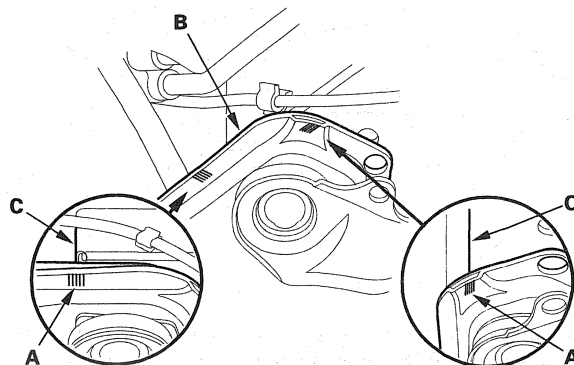


61. Remove the front engine mount stop (A), then remove the front engine mount bolt (B) (J35Z1 engine).



62. Make sure the hoist brackets are positioned properly. Raise the vehicle on the lift to full height.

63. Make the appropriate reference marks (A) at both ends of the front subframe (B) that line up with the edge (C) of the body.

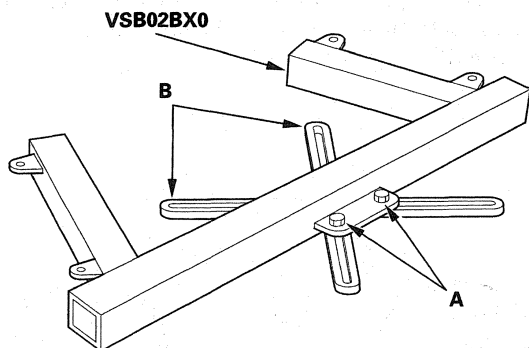


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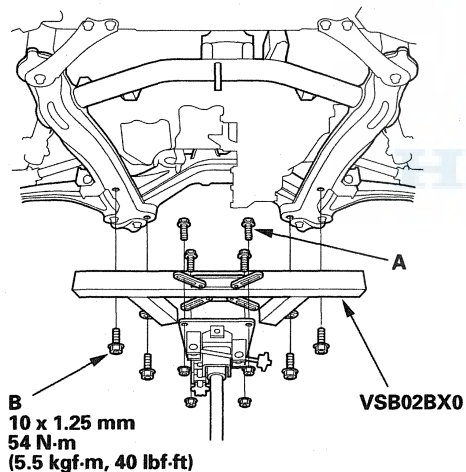
Engine Assembly

Engine Removal (cont'd)

64. Loosen the four bolts (A) holding the adjustable arms (B) of the front subframe adapter (VSB02BX0) to its center plate.

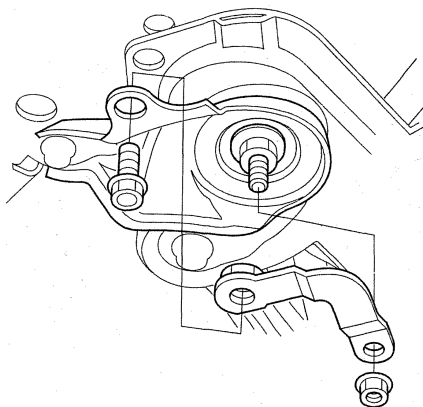


65. Line up the slots in the arms with the bolt holes on the corner of the jack base, then attach the front subframe adapter to the jack base with the bolts (A) that came with the jack. Torque all bolts securely.

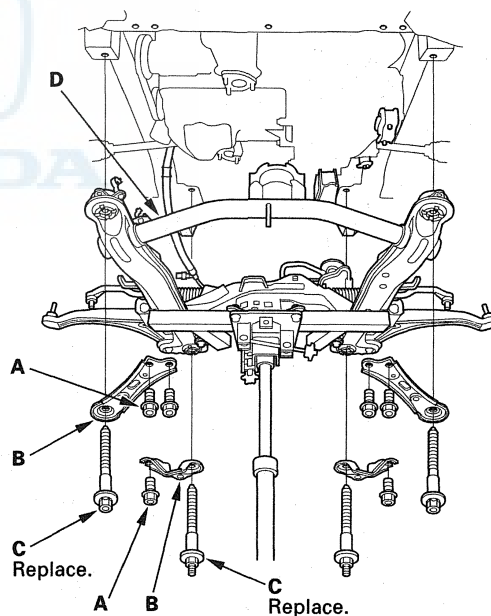


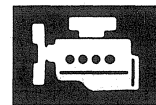
66. Raise the jack to vehicle height, then attach the front subframe adapter to the front subframe using the subframe stiffener mounting bolts (B) and bolt holes.

67. Remove the bolt retainers from both ends of the subframe.



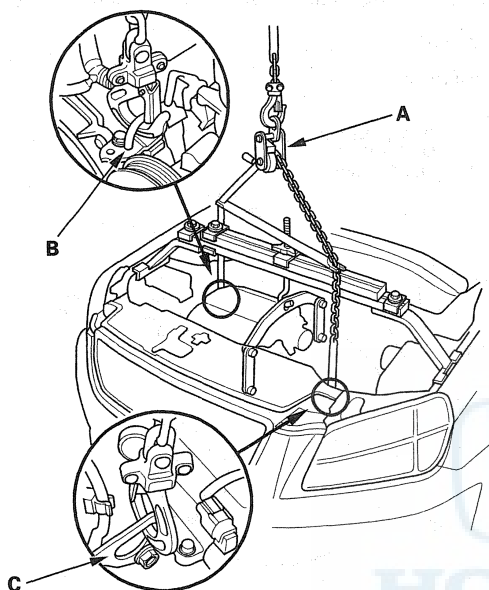
68. Remove the six 12 x 1.25 mm bolts (A) securing the subframe stiffeners (B), the four subframe mounting bolts (C), and the stiffeners, then lower the front subframe (D).



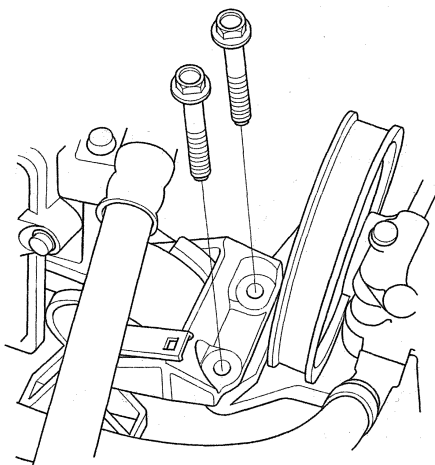


69. Lower the vehicle on the lift.

70. Attach a chain hoist (A) to the engine hook (B) and the transmission hook (C), then lift up the engine/transmission until it is securely supported by the chain hoist, and remove the engine support hanger and engine hanger adapters.



71. Remove the mounting bolts from the upper half of the side engine mount bracket.



72. Check that the engine/transmission is completely free of vacuum hoses, fuel and coolant hoses, and electrical wiring.

73. Slowly lower the engine/transmission about 150 mm (6 in.). Check once again that all hoses and wires are disconnected and free from the engine/transmission.

74. Lower the engine/transmission all the way. Remove the chain hoist from the engine/transmission.

75. Raise the vehicle all the way on the lift, and remove the engine/transmission from under the vehicle.

Engine Assembly

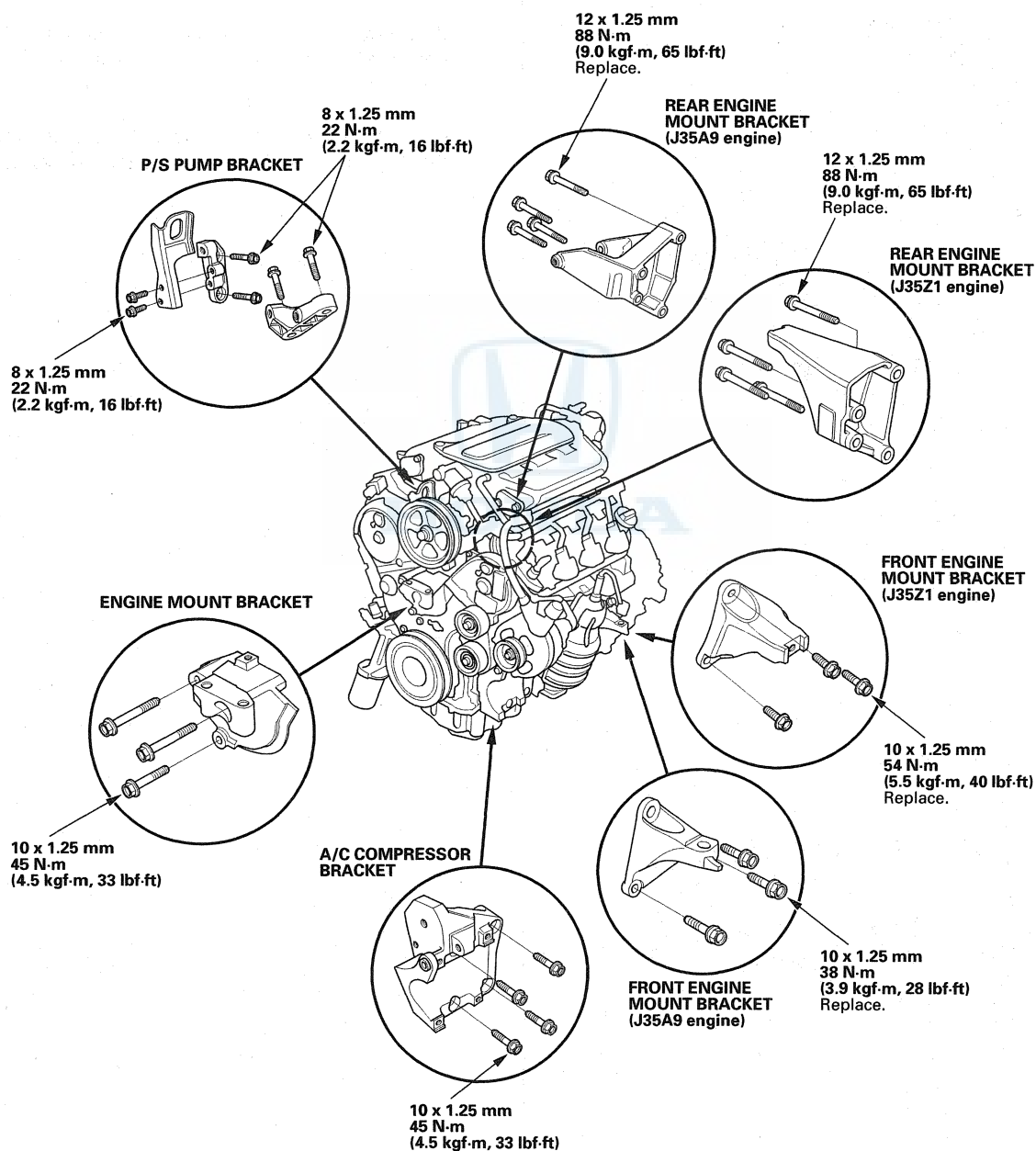
Engine Installation

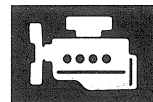
Special Tools Required

- Engine support hanger, A and Reds AAR-T-12566
- Engine hanger balance bar VSB02C000019
- Engine hanger adapter VSB02C000014
- Front subframe adapter VSB02BX0

These special tools are available through the Honda Tool and Equipment Program, 1-888-424-6857

1. Install the engine mount bracket and accessory brackets, and torque their bolts to the specified torque.

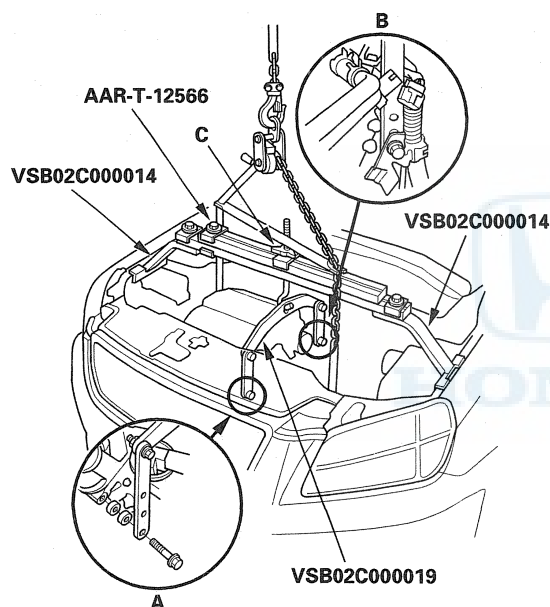




2. Position the engine/transmission under the vehicle. Attach the chain hoist to the engine, then lift the engine into position in the vehicle.

NOTE: Reinstall the mounting bolts/support nuts in the sequence given. Failure to follow this sequence may cause excessive noise and vibration, and reduce bushing life.

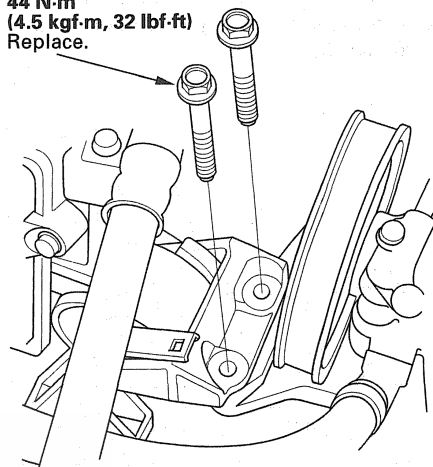
3. Install the engine hanger balance bar (VSB02C000019); attach the front arm (A) to the front cylinder head with a spacer and the 10 mm bolt, and attach the rear arm (B) to the rear cylinder head with the 8 mm bolt.



4. Install the engine hanger adapters (VSB02C000014) on the ends of the support beams of the engine support hanger (AAR-T-12566). Install the engine support hanger and adapters to the vehicle, and attach the hook to the slotted hole in the engine hanger balance bar. Tighten the wing nut (C) by hand to lift and support the engine.

5. Install new mounting bolts into the upper half of the side engine mount bracket. Tighten the bolts to the specified torque.

10 x 1.25 mm
44 N·m
(4.5 kgf-m, 32 lbf-ft)
Replace.



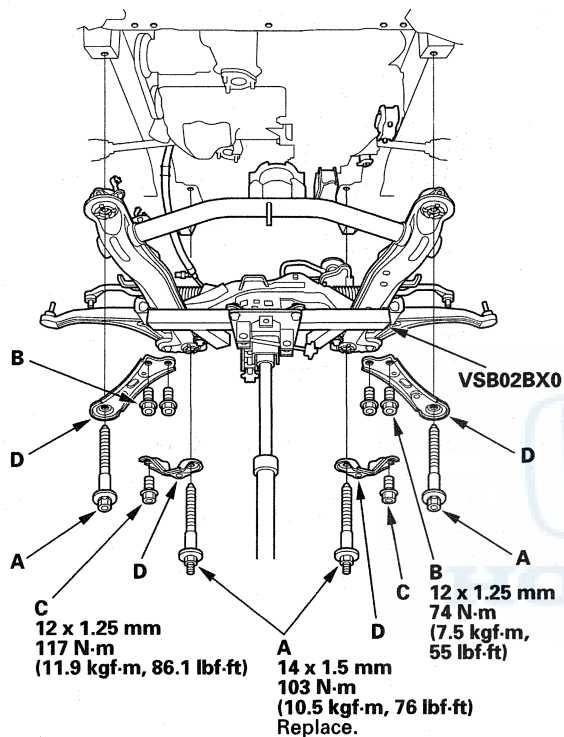
6. Remove the chain hoist, then raise the vehicle on the lift to full height.

(cont'd)

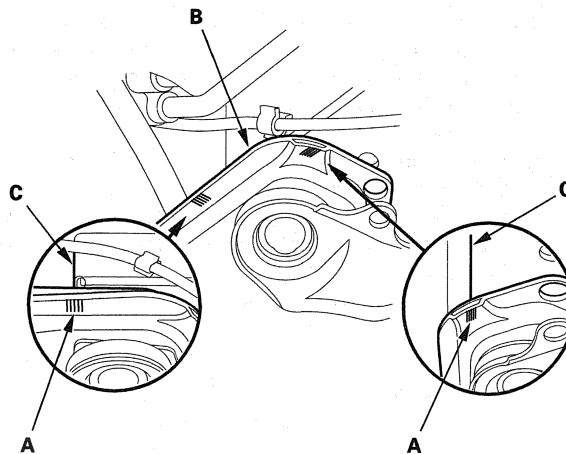
Engine Assembly

Engine Installation (cont'd)

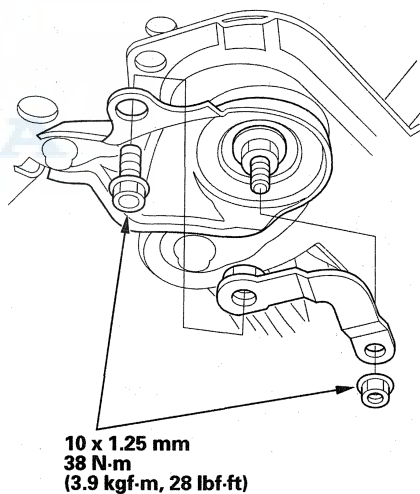
7. Support the front subframe with the front subframe adapter (VSB02BX0) and a jack, then lift it up to the body.
8. Loosely install the four front subframe mounting bolts (A) and the six 12 x 1.25 mm bolts (B), (C) with the stiffeners (D).



9. Align all reference marks (A) on the front subframe (B) with the edge (C) of the body, then tighten the bolts on the front subframe to the specified torque.



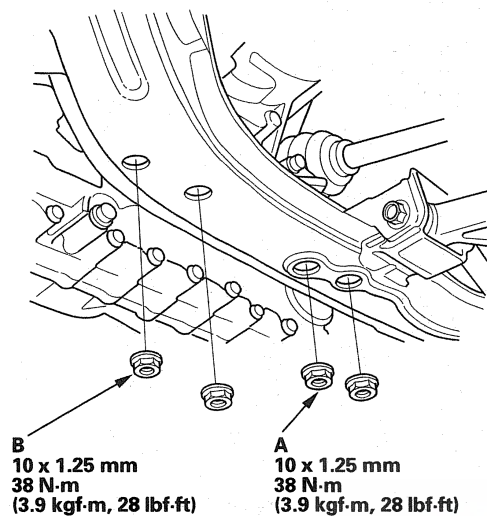
10. Install the bolt retainers on both ends of the subframe.



11. Remove the front subframe adapter and jack.

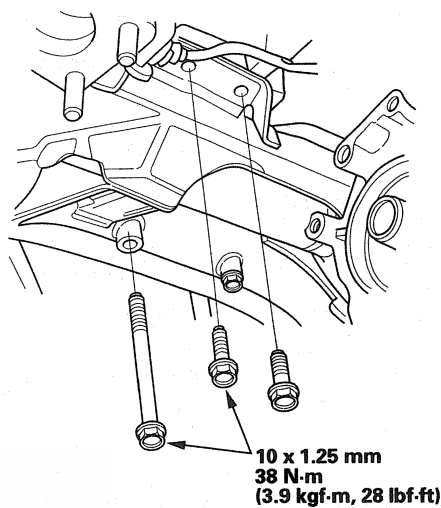


12. Torque the transmission lower rear mount nuts (A) and transmission lower front mount nuts (B).

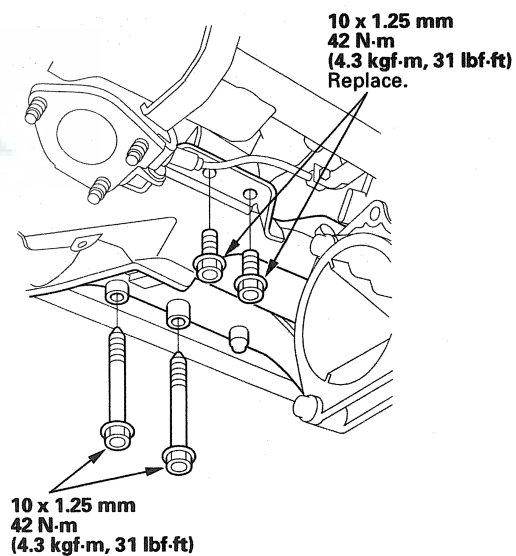


13. Torque the rear engine mount bolts.

J35A9 engine



J35Z1 engine



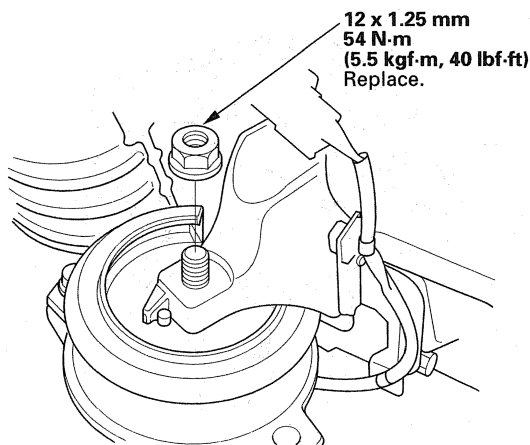
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Engine Assembly

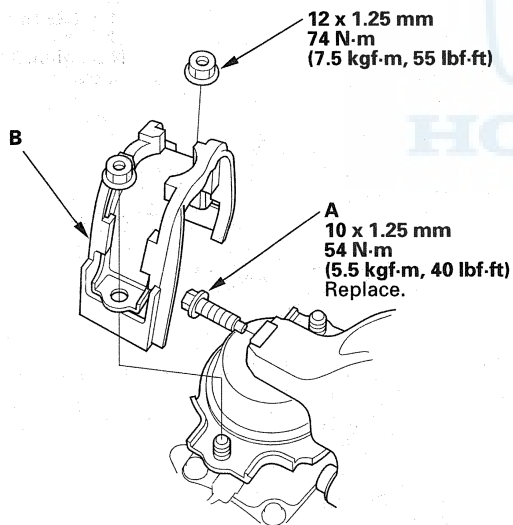
Engine Installation (cont'd)

14. Lower the vehicle on the lift.

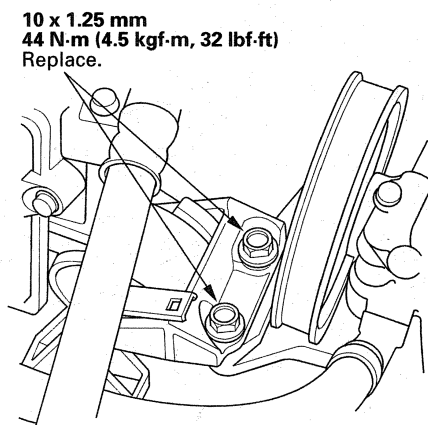
15. Torque the front engine mount nut (J35A9 engine).



16. Torque the front engine mount bolt (A), then install the front engine mount stop (B) (J35Z1 engine).



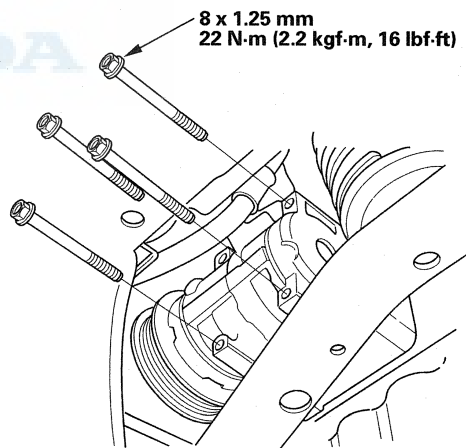
17. Loosen the mounting bolts for the upper half of the side engine mount bracket, then retorque them to the specified torque.



18. Remove the engine support hanger, engine hanger balance bar, and engine hanger adapters.

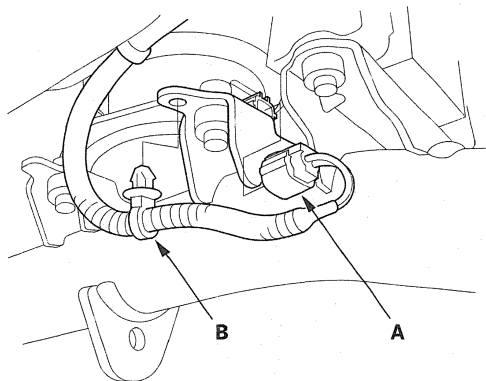
19. Raise the vehicle on the lift to full height.

20. Install the A/C compressor.



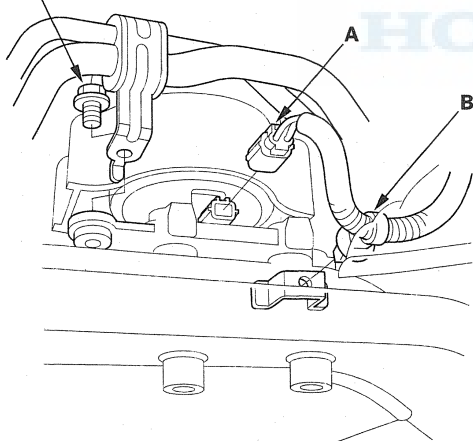


21. Connect the active control engine mount (ACM) actuator connector (A) to the front engine mount, then install the harness clamp (B) (J35Z1 engine).

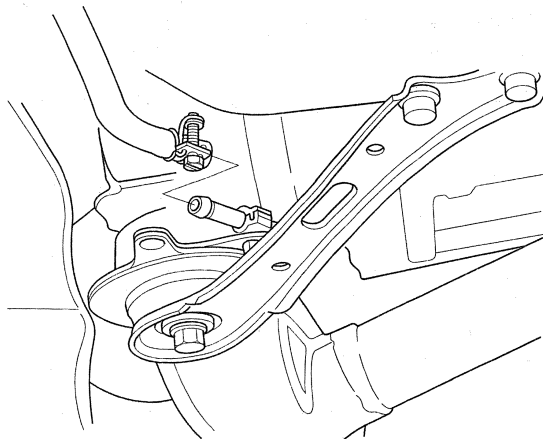


22. Connect the ACM actuator connector (A) to the rear engine mount, then install the harness clamp (B). Install the bolt (C) securing the power steering (P/S) line (J35Z1 engine).

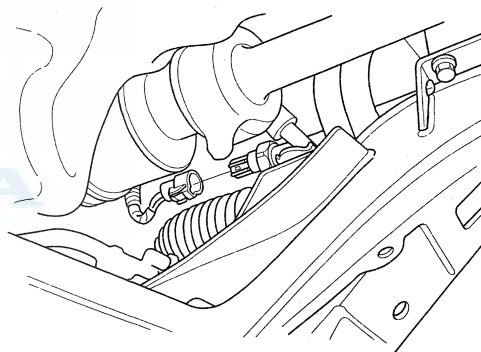
C
6 x 1.0 mm
10 N·m
(1.0 kgf-m, 7.4 lbf-ft)



23. Install the P/S hose.



24. Connect the power steering pressure switch connector.

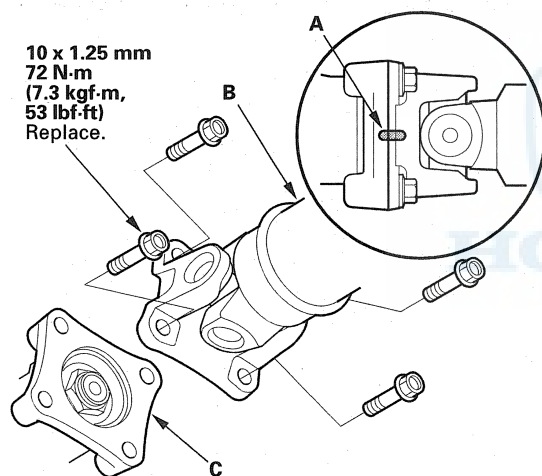


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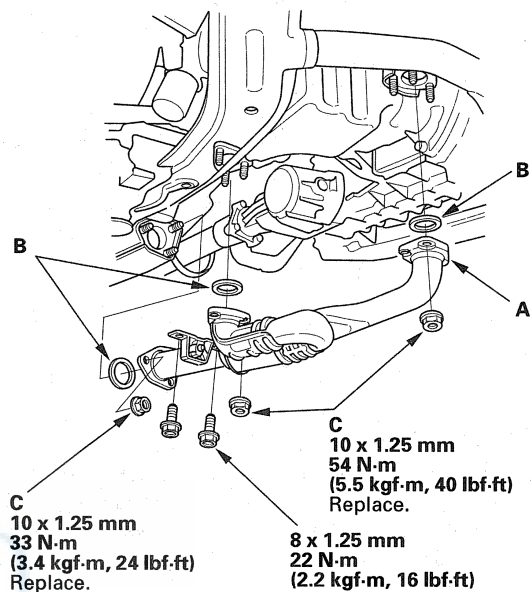
Engine Assembly

Engine Installation (cont'd)

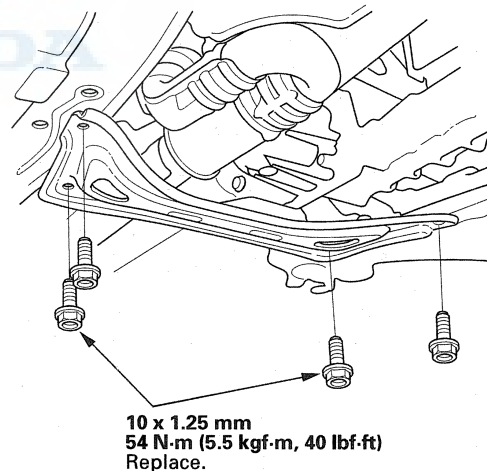
25. Install a new set ring on the end of each driveshaft, then install the driveshafts. Make sure each ring "clicks" into place on the differential and intermediate shaft.
26. Connect the suspension lower arm ball joints (see page 18-21).
27. Connect the tie-rod end ball joints (see step 23 on page 17-57).
28. Connect the stabilizer links (see page 18-19).
29. Install the transfer assembly (4WD) (see step 29 on page 14-240).
30. Align the reference marks (A) on the propeller shaft (B) and transfer companion flange (C), then install the propeller shaft (4WD).

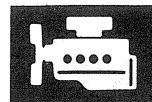


31. Install exhaust pipe A using new gaskets (B) and new self locking nuts (C).

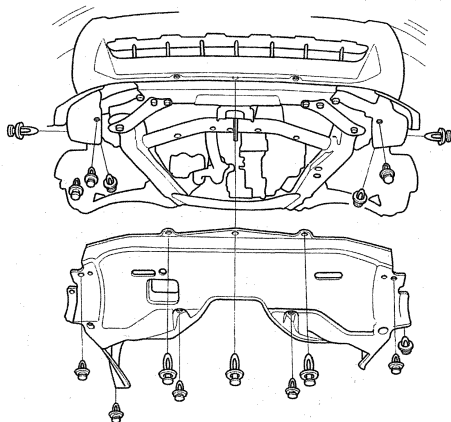


32. Install the front subframe stiffener.





33. Install the splash shield.



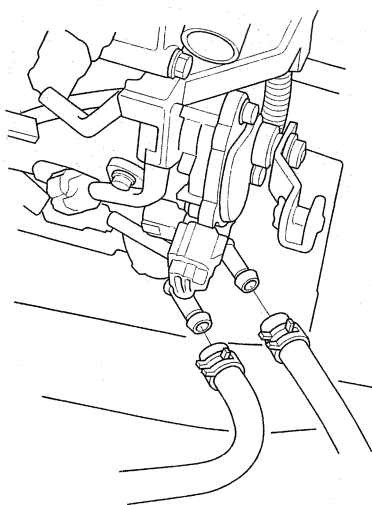
34. Install the front wheels.

35. Lower the vehicle on the lift.

36. Install the radiator (see page 10-13).

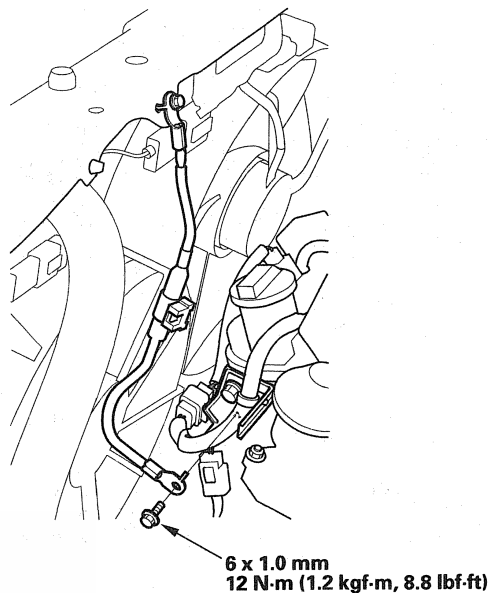
37. Install the automatic transmission fluid (ATF) cooler hoses to the transmission, and secure the hoses with the clamps.

NOTE: Check the installation location of the clamps (see step 1 on page 14-248).

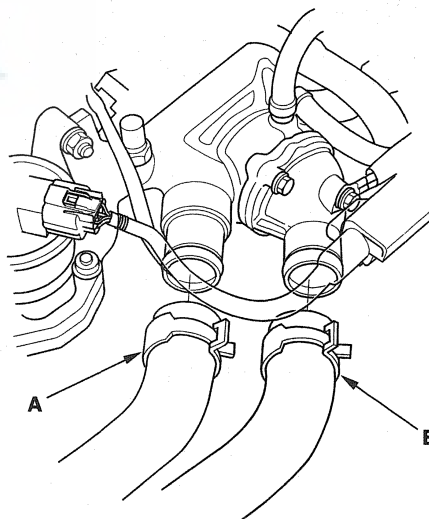


38. Install the drive belt (see page 4-32).

39. Install the ground cable.



40. Install the upper radiator hose (A) and the lower radiator hose (B).

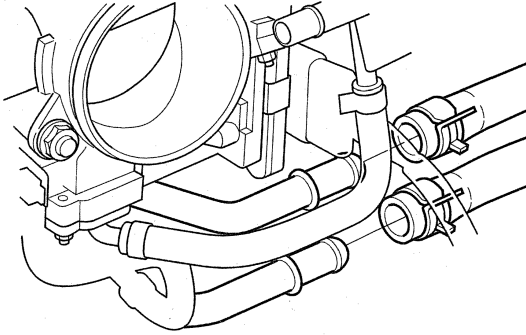


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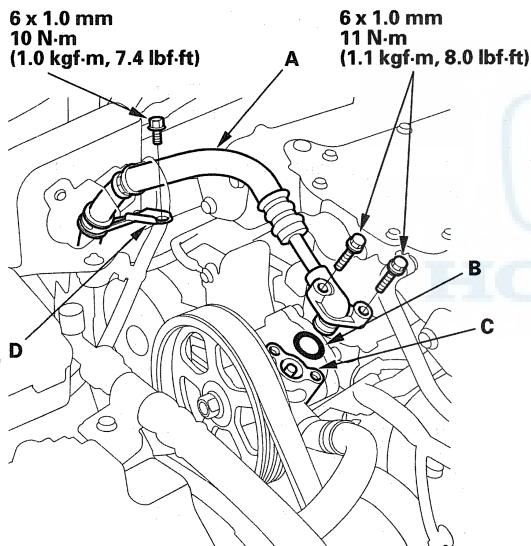
Engine Assembly

Engine Installation (cont'd)

41. Install the heater hoses.

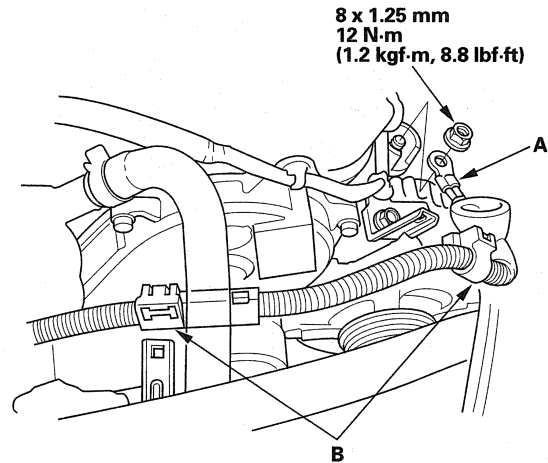


42. Install the P/S pump outlet hose (A) with a new O-ring (B) to the P/S pump (C).

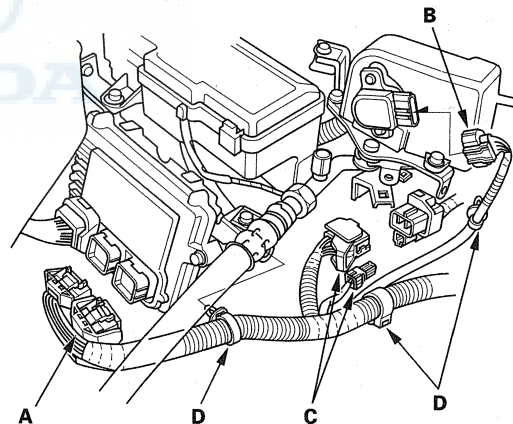


43. Secure the P/S hose clamp (D).

44. Install the alternator cable (A), then install the harness clamps (B).

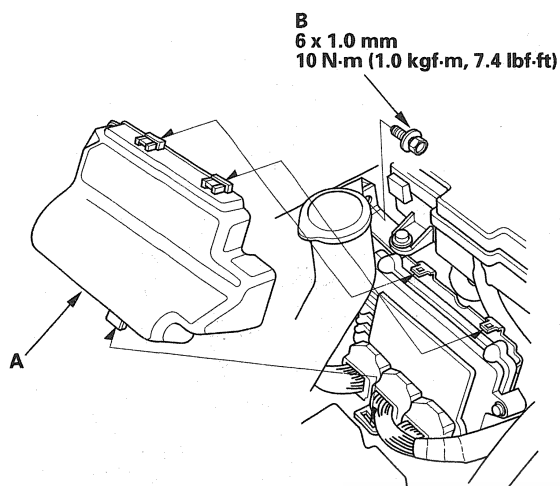


45. Connect the powertrain control module (PCM) connectors (A), accelerator pedal position (APP) sensor connector (B), and engine wire harness connectors (C) on the right side of the engine compartment, then install the harness clamps (D).



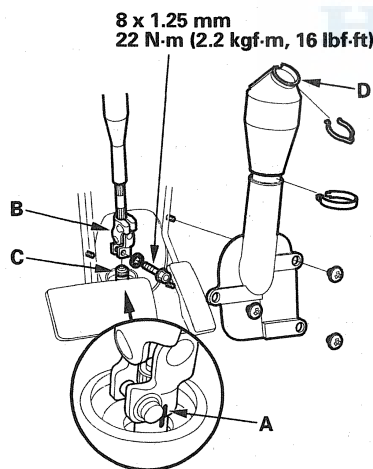


46. Install the PCM cover (A), then install the bolt (B) securing the washer tank.



47. Install the coolant reservoir.

48. Align the reference marks (A) on the steering joint and steering gearbox pinion shaft. Connect the steering joint (B) to the steering gearbox pinion shaft (C). Torque the steering joint bolt.

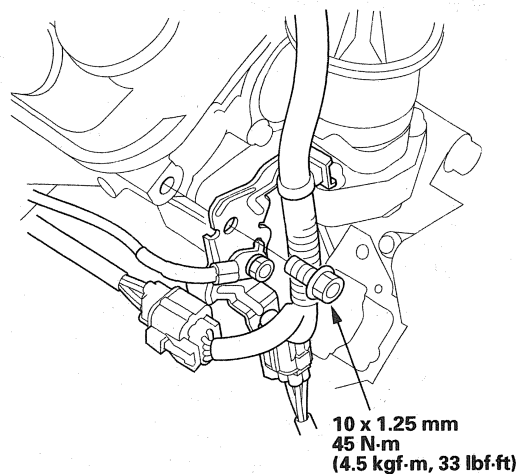


49. Install the steering joint cover (D).

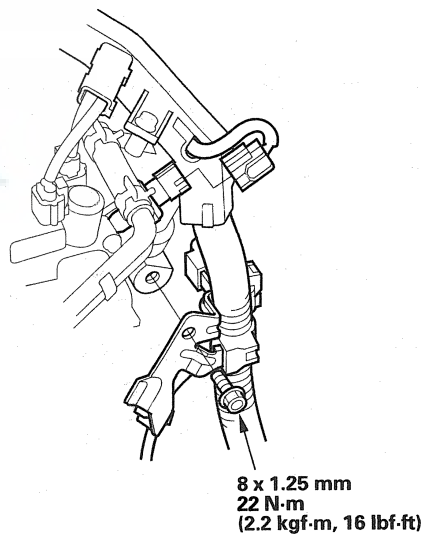
50. Install the steering wheel (see page 17-24).

51. Install the carpet (see page 20-87) and driver's side console lower panel.

52. Install the connector bracket on the front cylinder head.



53. Install the harness clamp brackets on the rear cylinder head.

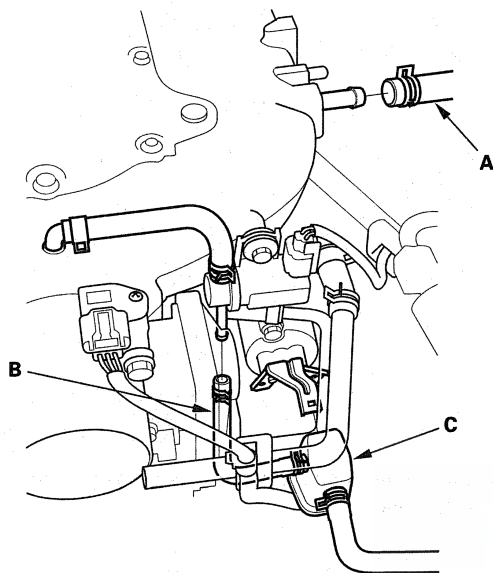


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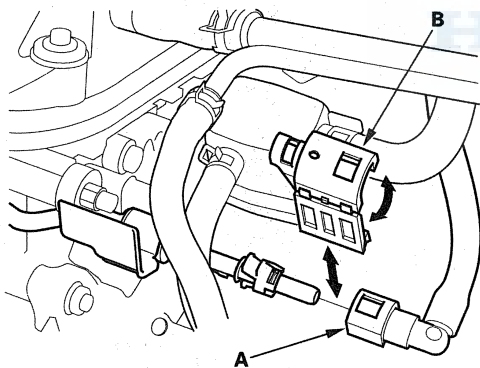
Engine Assembly

Engine Installation (cont'd)

54. Install the brake booster vacuum hose (A), evaporative emission (EVAP) canister hose (B), and the EVAP canister purge valve joint (C).

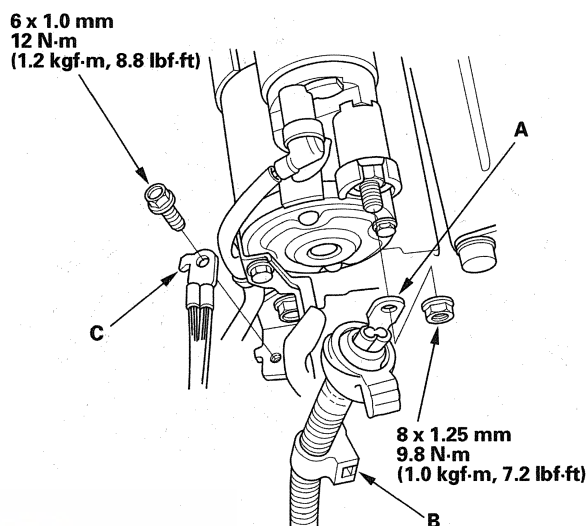


55. Connect the fuel feed hose (A) (see page 11-381), then install the quick-connect fitting cover (B).

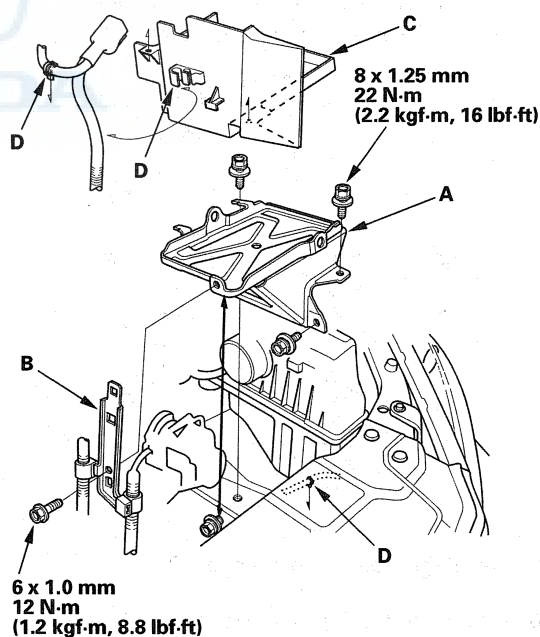


56. Install the shift cable (see step 16 on page 14-254).

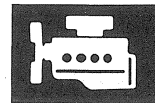
57. Install the starter cable (A), harness clamp (B), and ground cable (C).



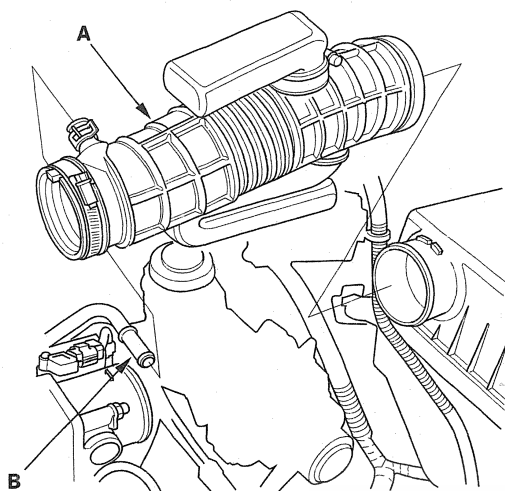
58. Install the battery base (A), then install the harness bracket (B).



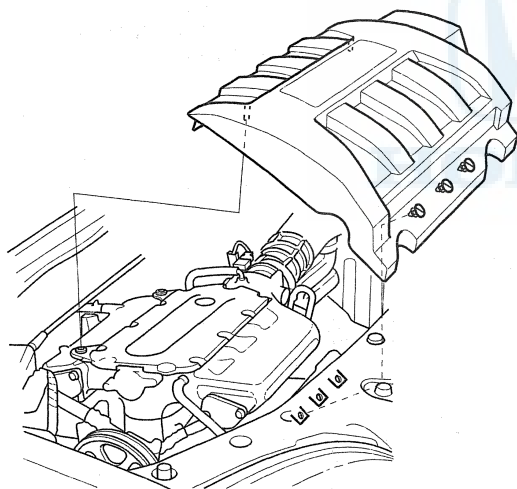
59. Install the battery tray (C), then install the harness clamps (D).



60. Install the intake air duct (A), then install the breather pipe (B).



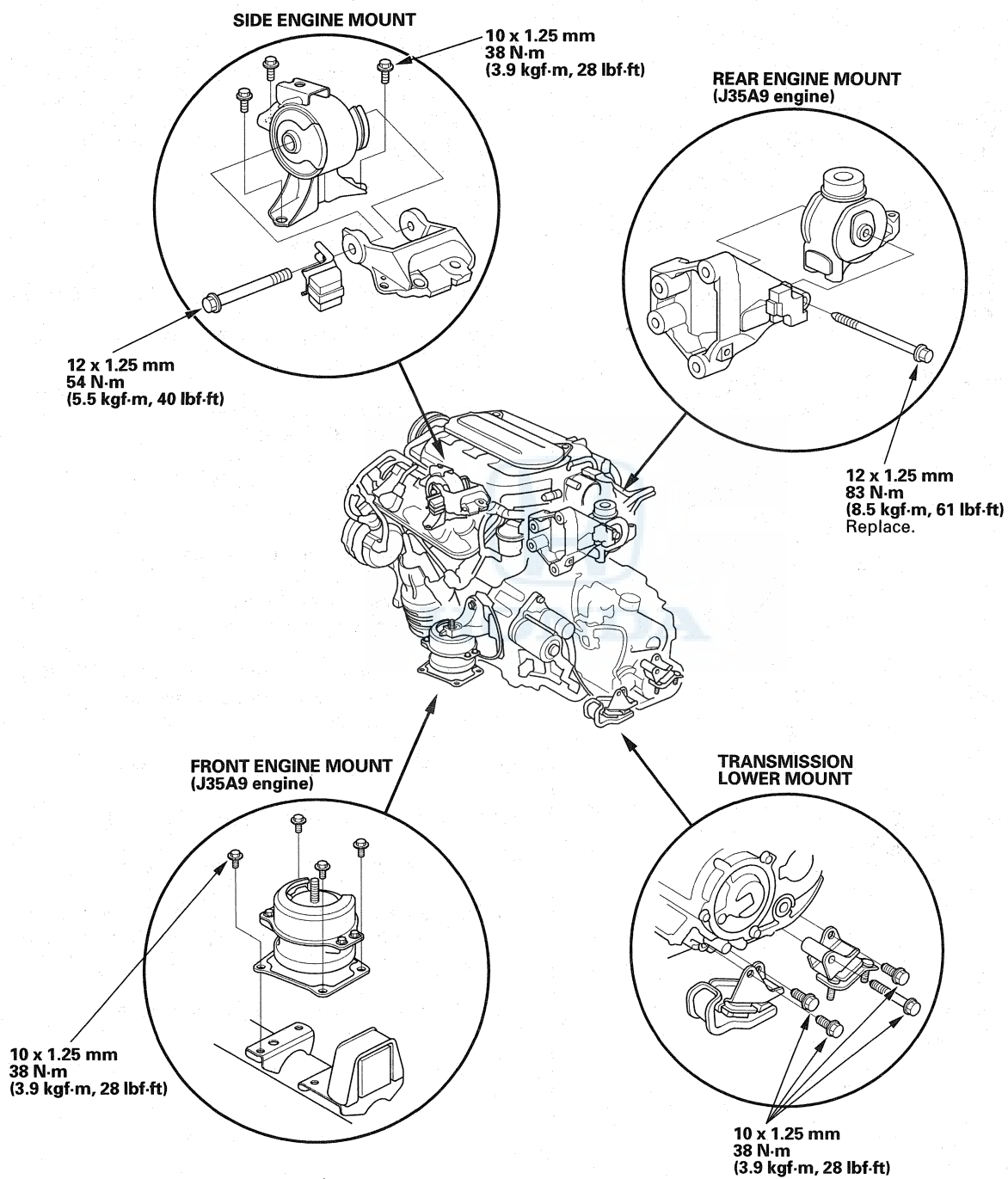
61. Install the engine cover.



62. Install the battery. Clean the battery posts and cable terminals, then assemble them and apply grease to prevent corrosion.
63. Inspect for fuel leaks. Turn the ignition switch ON (II) (do not operate the starter) so the fuel pump runs for about 2 seconds and pressurizes the fuel line. Repeat this operation three times, then check for fuel leakage at any point in the fuel line.
64. Move the shift lever to each gear, and verify that the A/T gear position indicator follows the transmission range switch.
65. Refill the engine with new engine oil (see page 8-8).
66. Refill the transmission with ATF (see page 14-214).
67. Refill the radiator with engine coolant, and bleed air from the cooling system with the heater valve open (see step 8 on page 10-7).
68. Refill the power steering system fluid (see page 17-13).
69. Do the PCM reset procedure (see page 11-4).
70. Do the crankshaft position (CKP) pattern clear/CKP pattern learn procedure (see page 11-5).
71. Do the PCM idle learn procedure (see page 11-359) and power window control unit reset procedure (see page 22-255).
72. Inspect the idle speed (see page 11-358).
73. Inspect the ignition timing (see page 4-18).
74. Check the wheel alignment (see page 18-5).
75. Enter the anti-theft codes for the audio system and the navigation system (if equipped), then enter the audio presets.
76. Set the clock (on vehicles without navigation).

Engine Assembly

Engine Mount Replacement

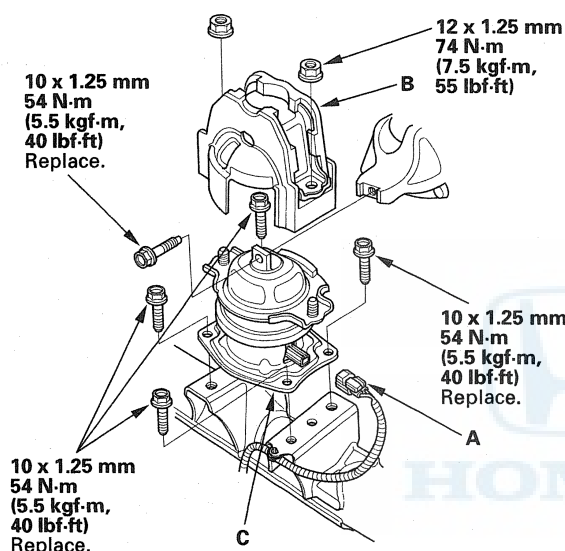




Front Engine Mount Replacement

J35Z1 Engine

1. Remove the battery.
2. Remove the battery base (see step 11 on page 5-3).
3. Support the engine with a jack and wood block under the oil pan.
4. Disconnect the active control engine mount (ACM) actuator connector (A).

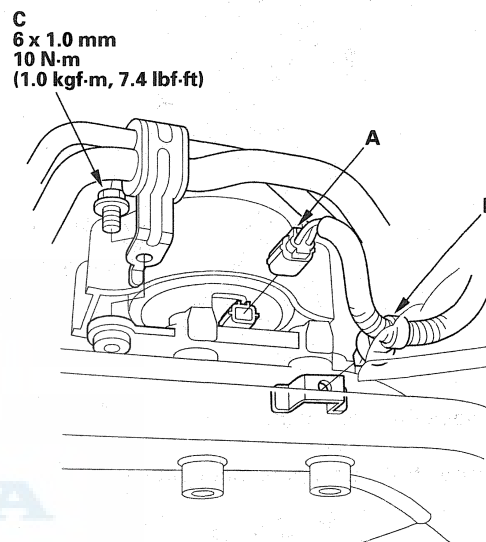


5. Remove the front engine mount stop (B), then remove the front engine mount (C).
6. Install the front engine mount in the reverse order of removal.

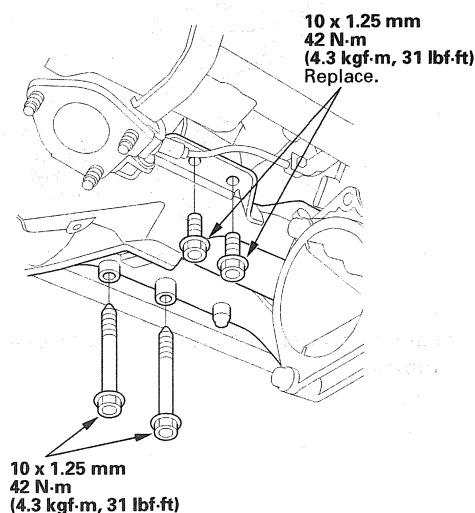
Rear Engine Mount Replacement

J35Z1 Engine

1. Remove the air cleaner assembly (see page 11-402).
2. Raise the vehicle on the lift to full height.
3. Disconnect the active control engine mount (ACM) actuator connector (A) from the rear engine mount, then remove the harness clamp (B). Remove the bolt (C) securing the power steering (P/S) line.



4. Remove the rear engine mount bolts.

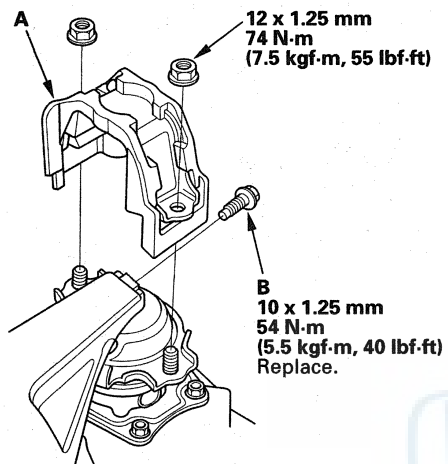


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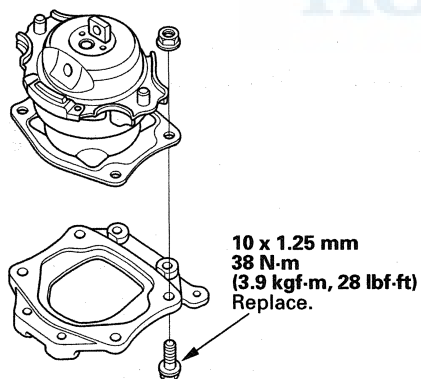
Engine Assembly

Rear Engine Mount Replacement (cont'd)

5. Lower the vehicle on the lift.
6. Support the engine with a jack and wood block under the oil pan.
7. Remove the rear engine mount stop (A), then remove the rear engine mount bolt (B).



8. Remove the rear engine mount.
9. Remove the rear engine mount base.



10. Install the rear engine mount in the reverse order of removal.

Engine Mechanical

Cylinder Head (J35A9 engine)

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Camshaft Seal, and Pulley Installation	6-47
Cylinder Head Installation	6-48
Camshaft Oil Seal Installation - In Car	6-53
Sealing Bolt Installation	6-53

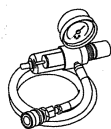
Cylinder Head (J35Z1 engine)	6-55
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Cylinder Head

Special Tools

Ref. No.	Tool Number	Description	Qty
①	07AAJ-PNAA101	Air Pressure Regulator	1
②	07HAH-PJ7A100	Valve Guide Reamer, 5.5 mm	1
③	07JAA-001020A	Socket, 19 mm	1
④	07JAB-001020A	Holder Handle	1
⑤	07MAB-PY3010A	Holder Attachment, 50 mm, Offset	1
⑥	07PAD-0010000	Stem Seal Driver	1
⑦	07PAF-0030100	Camshaft Oil Seal Driver	1
⑧	07VAJ-P8A010A	VTEC Air Adapter	1
⑨	070AJ-0030100	VTEC Air Stopper	1
⑩	07742-0010100	Valve Guide Driver, 5.5 mm	1
⑪	07757-PJ1010A	Valve Spring Compressor Attachment	1



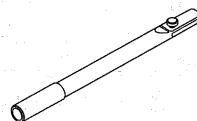
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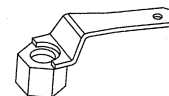
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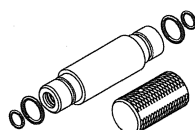
③



④



⑤



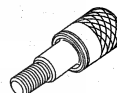
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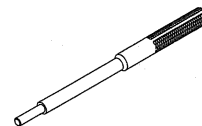
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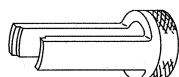
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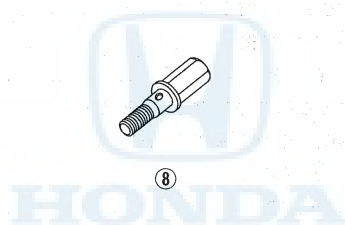
⑨

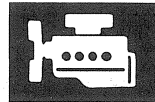


⑩

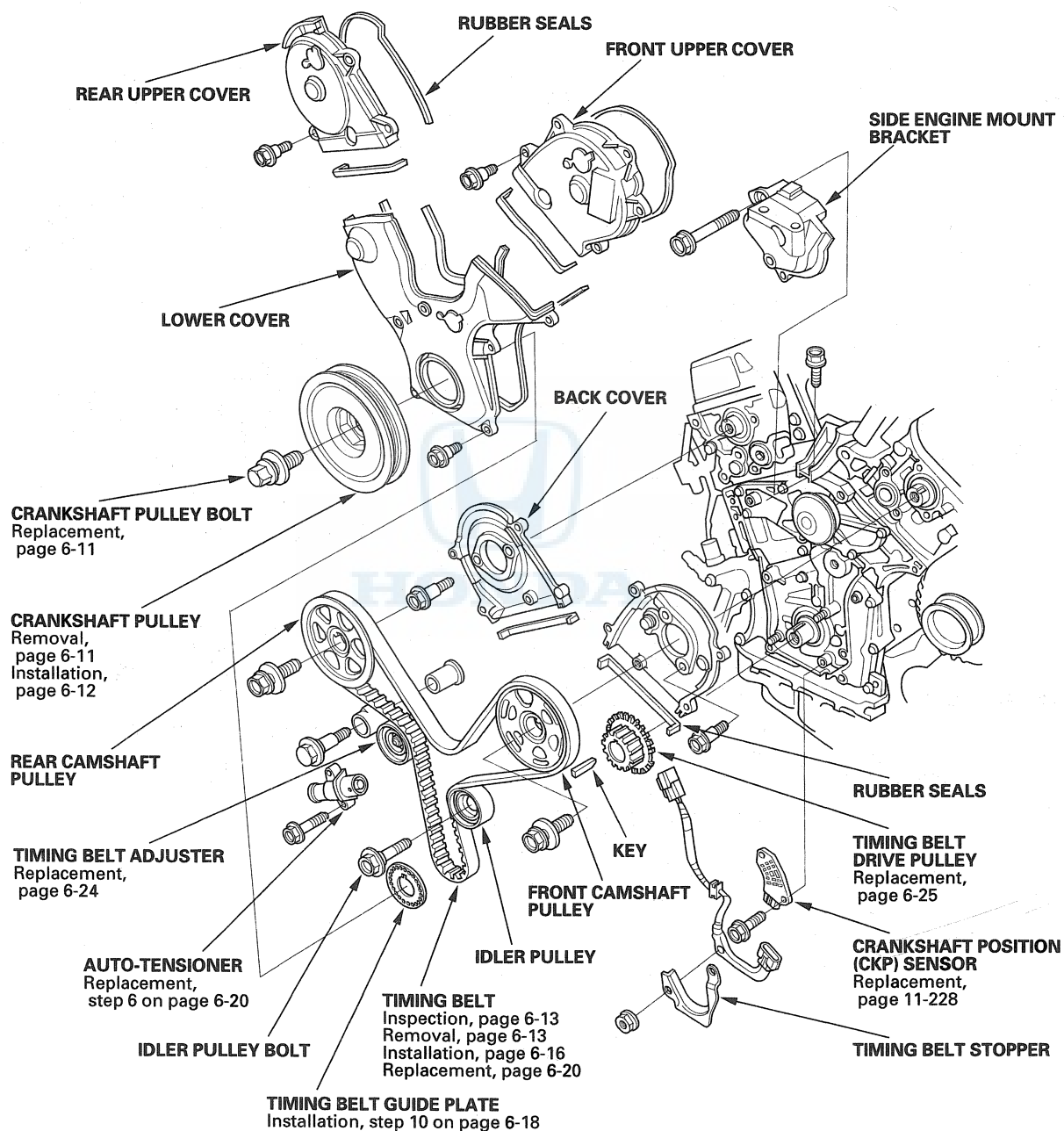


⑪





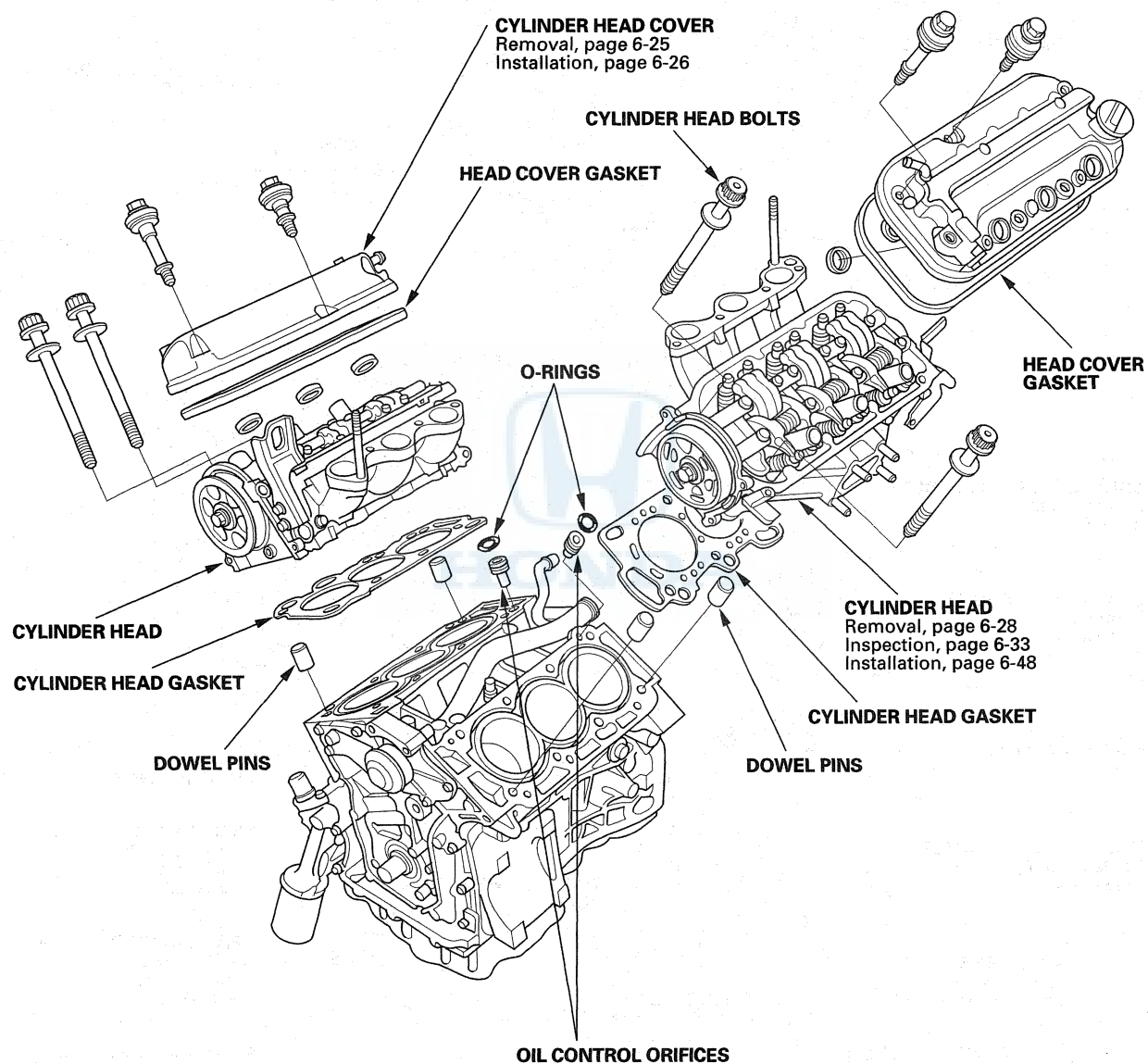
Component Location Index

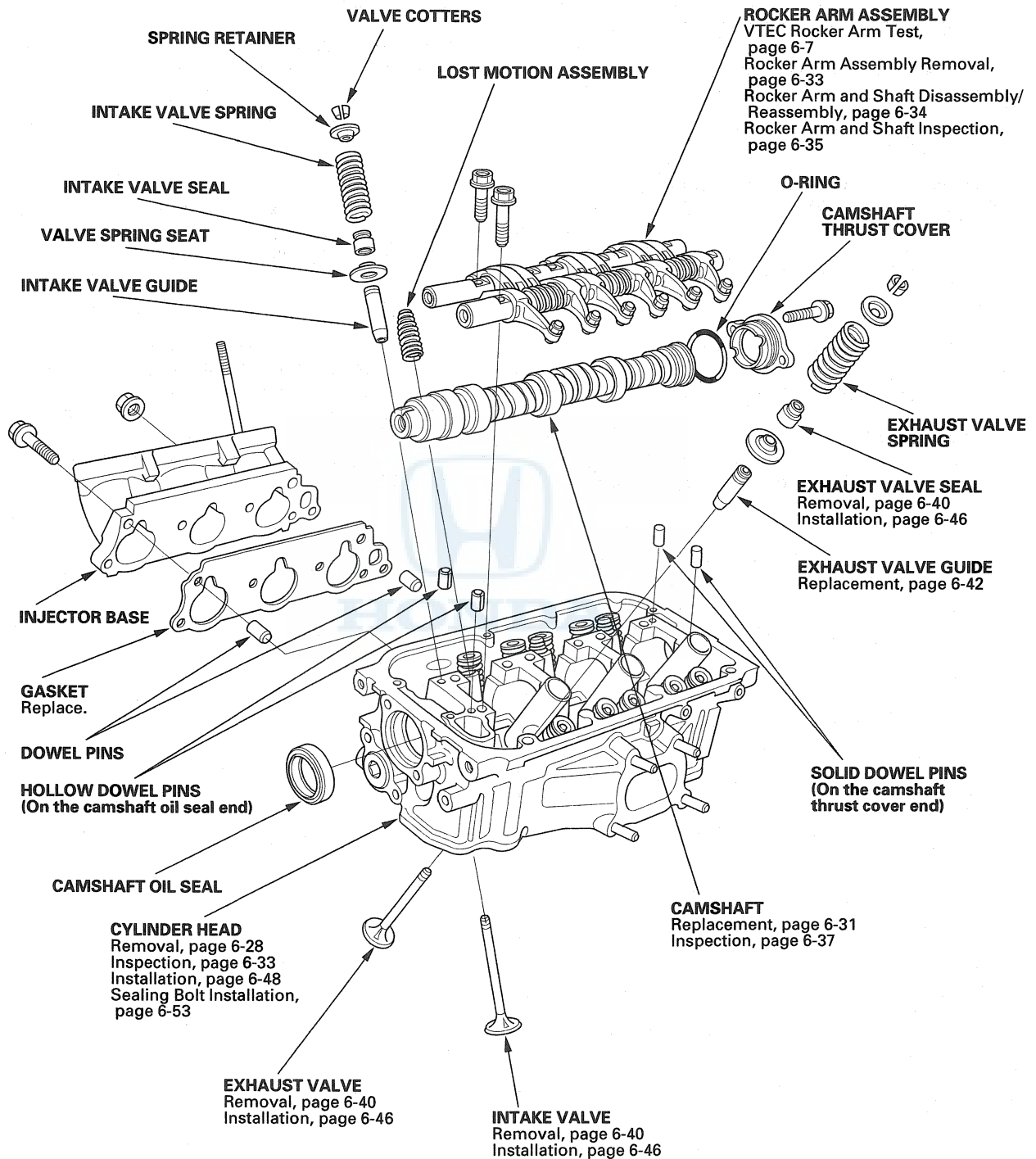
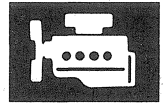


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Cylinder Head

Component Location Index (cont'd)



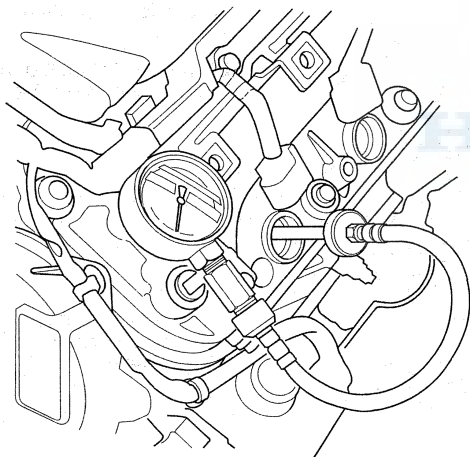


Cylinder Head

Engine Compression Inspection

NOTE: After the inspection, you must reset the powertrain control module (PCM). Otherwise, the PCM will continue to stop the fuel injectors from operating.

1. Warm up the engine to normal operating temperature (cooling fan comes on).
2. Turn the ignition switch OFF.
3. Connect the Honda Diagnostic System (HDS) to the data link connector (DLC) (see step 2 on page 11-3).
4. Turn the ignition switch ON (II), and select PGM-FI, INSPECTION, then ALL INJECTORS OFF on the HDS.
5. Turn the ignition switch OFF.
6. Remove the six ignition coils (see page 4-19).
7. Remove the six spark plugs.
8. Attach the compression gauge to a spark plug hole.



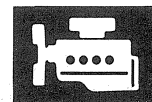
9. Open the throttle fully, then crank the engine with the starter motor, and measure the compression.

Compression Pressure:
Above 930 kPa (9.5 kgf/cm², 135 psi)

10. Measure the compression on the remaining cylinders.

Maximum Variation:
Within 200 kPa (2.0 kgf/cm², 28 psi)

11. If the compression is not within specifications, check the following items, then remeasure the compression.
 - Damaged or worn valves and seats
 - Damaged cylinder head gasket
 - Damaged or worn piston rings
 - Damaged or worn piston and cylinder bore
12. Select PCM reset (see page 11-4) to cancel the ALL INJECTORS OFF on the HDS.

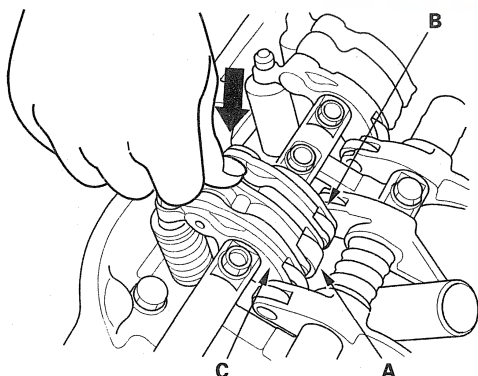


VTEC Rocker Arm Test

Special Tools Required

- VTEC air adapter 07VAJ-P8A010A
- VTEC air stopper 070AJ-0030100
- Air pressure regulator 07AAJ-PNAA101

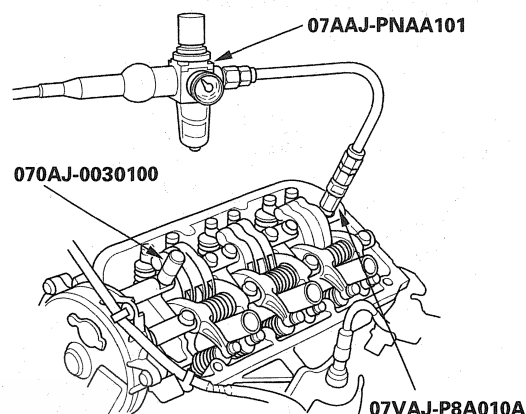
1. Start the engine and let it run for 5 minutes, then turn the ignition switch OFF.
2. Remove the intake manifold (see page 9-4).
3. Remove the cylinder head covers (see page 6-25).
4. Set the No. 1 piston at top dead center (TDC) (see step 3 on page 6-8).
5. Push on the intake mid rocker arm (A) for the No. 1 cylinder. The mid rocker arm should move independently of the primary rocker arm (B) and secondary rocker arm (C).
 - If the intake mid rocker arm moves freely, go to step 6.
 - If the intake mid rocker arm does not move, remove the mid, primary, and secondary intake rocker arms as an assembly, then check that the rocker arm pistons in the mid and primary rocker arms move smoothly. If any rocker arm needs replacing, replace the mid, primary, and secondary rocker arms as an assembly, then retest.



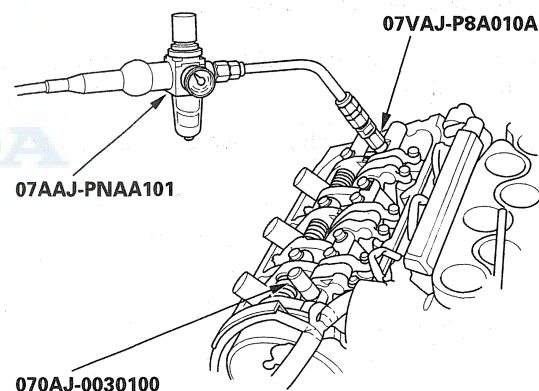
6. Repeat step 5 on the remaining intake mid rocker arms with each piston at TDC. When all the mid rocker arms pass the test, go to step 7.
7. Check that the air pressure on the shop air compressor gauge indicates over 690 kPa (7.0 kgf/cm², 100 psi).
8. Inspect the valve clearance (see page 6-8).

9. Remove the No. 1 and No. 6 intake rocker shaft mounting bolts, then install the VTEC air adapter and VTEC air stopper, and connect the air pressure regulator as shown.

FRONT



REAR



10. Loosen the valve on the regulator, and apply the specified air pressure.

Specified Air Pressure:

440—540 kPa (4.5—5.5 kgf/cm², 64—78 psi)

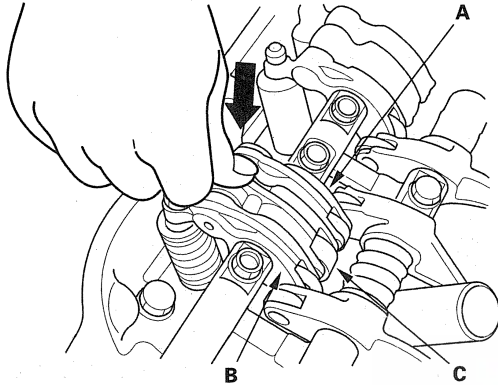
NOTE: If the rocker arm pistons do not move after applying air pressure, move the primary or secondary rocker arm up and down manually.

(cont'd)

Cylinder Head

VTEC Rocker Arm Test (cont'd)

11. Make sure that the intake primary rocker arm (A) and intake secondary rocker arm (B) are mechanically connected by the piston and that the mid rocker arm (C) does not move when pushed manually. If any intake mid rocker arm moves independently of the primary and secondary rocker arms, replace the rocker arms as a set.

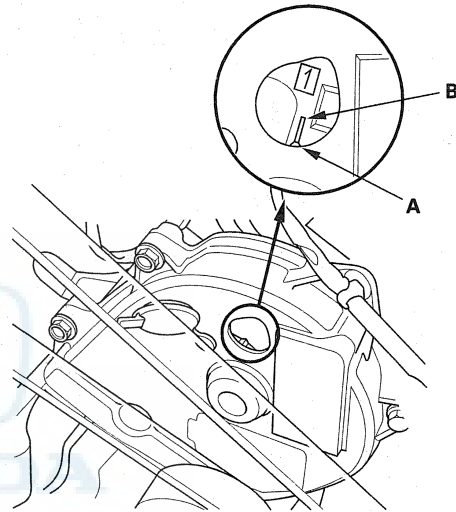


12. Remove the special tools.
13. Torque the rocker shaft bolts to 24 N·m (2.4 kgf·m, 18 lbf·ft)
14. Install the cylinder head covers (see page 6-26).
15. Install the intake manifold (see page 9-6).

Valve Clearance Adjustment

NOTE: Adjust the valves only when the cylinder head temperature is less than 100 °F (38 °C).

1. Remove the intake manifold (see page 9-4).
2. Remove the cylinder head covers (see page 6-25).
3. Set the No. 1 piston at top dead center (TDC). Align the pointer (A) on the front upper cover with the No. 1 piston TDC mark (B) on the front camshaft pulley.



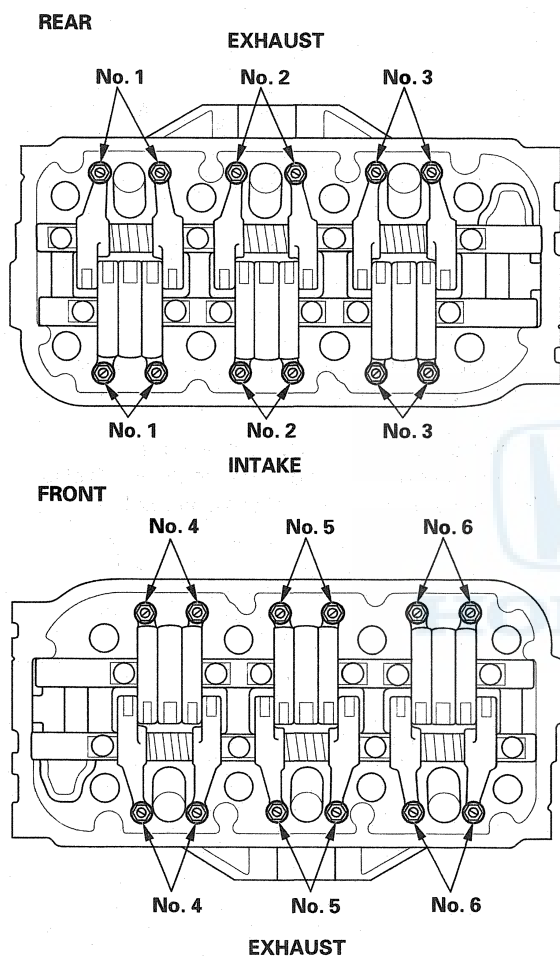


4. Select the correct thickness feeler gauge for the valves you're going to check.

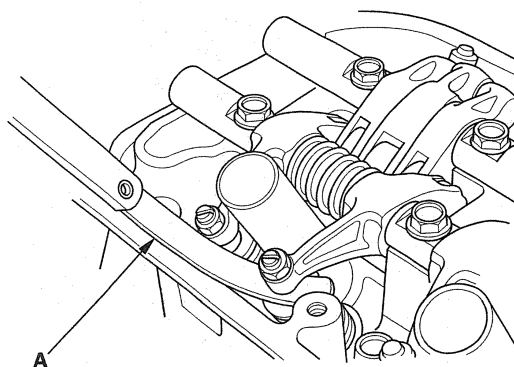
Valve Clearance

Intake: 0.20—0.24 mm (0.008—0.009 in.)

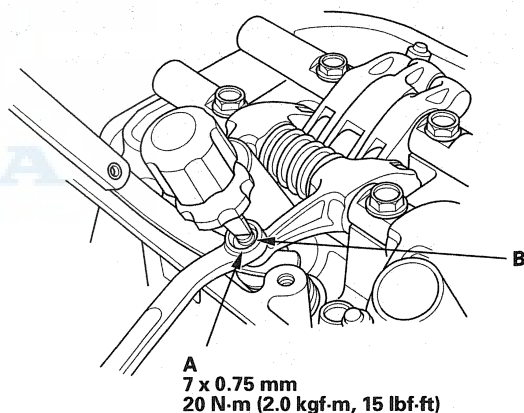
Exhaust: 0.28—0.32 mm (0.011—0.013 in.)



5. Insert the feeler gauge (A) between the adjusting screw and the end of the valve stem on No. 1 cylinder, and slide it back and forth; you should feel a slight amount of drag.



6. If you feel too much or too little drag, loosen the locknut (A), and turn the adjusting screw (B) until the drag on the feeler gauge is correct.



A
7 x 0.75 mm
20 N·m (2.0 kgf·m, 15 lbf·ft)

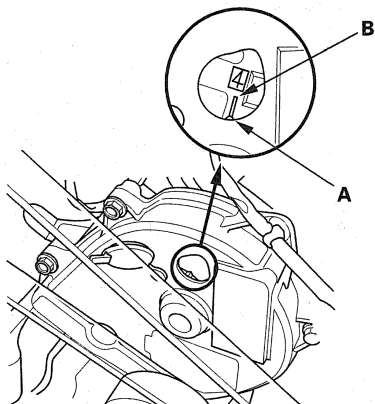
7. Torque the locknut and recheck the clearance. Repeat the adjustment, if necessary.

(cont'd)

Cylinder Head

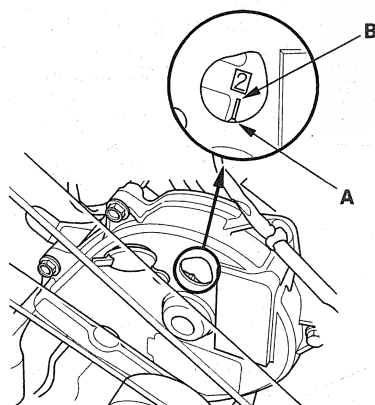
Valve Clearance Adjustment (cont'd)

8. Rotate the crankshaft clockwise. Align the pointer (A) on the front upper cover with the No. 4 piston TDC mark (B) on the front camshaft pulley.



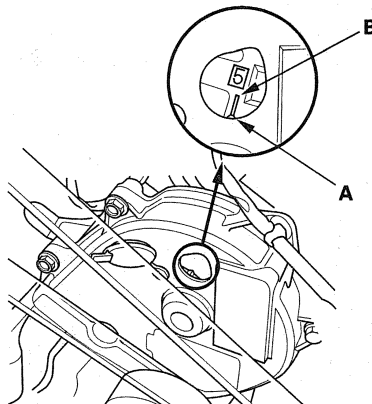
9. Check and, if necessary, adjust the valve clearance on No. 4 cylinder.

10. Rotate the crankshaft clockwise. Align the pointer (A) on the front upper cover with the No. 2 piston TDC mark (B) on the front camshaft pulley.



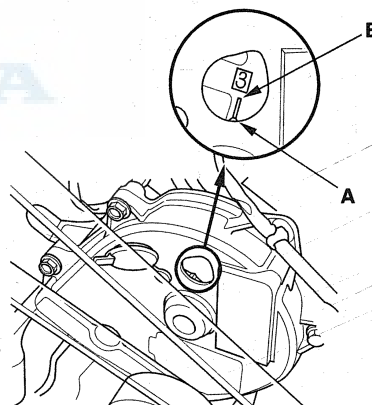
11. Check and, if necessary, adjust the valve clearance on No. 2 cylinder.

12. Rotate the crankshaft clockwise. Align the pointer (A) on the front upper cover with the No. 5 piston TDC mark (B) on the front camshaft pulley.

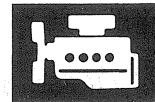


13. Check and, if necessary, adjust the valve clearance on No. 5 cylinder.

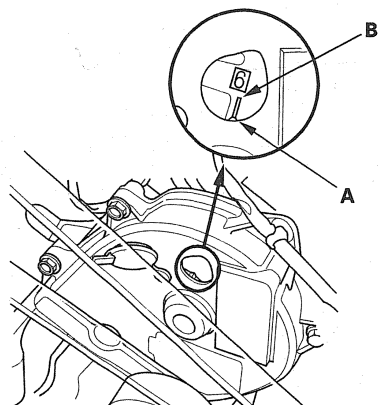
14. Rotate the crankshaft clockwise. Align the pointer (A) on the front upper cover with the No. 3 piston TDC mark (B) on the front camshaft pulley.



15. Check and, if necessary, adjust the valve clearance on No. 3 cylinder.



16. Rotate the crankshaft clockwise. Align the pointer (A) on the front upper cover with the No. 6 piston TDC mark (B) on the front camshaft pulley.



17. Check and, if necessary, adjust the valve clearance on No. 6 cylinder.

18. Install the cylinder head covers (see page 6-26).

19. Install the intake manifold (see page 9-6).

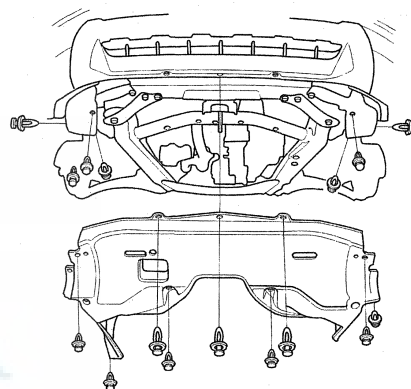
Crankshaft Pulley Removal and Installation

Special Tools Required

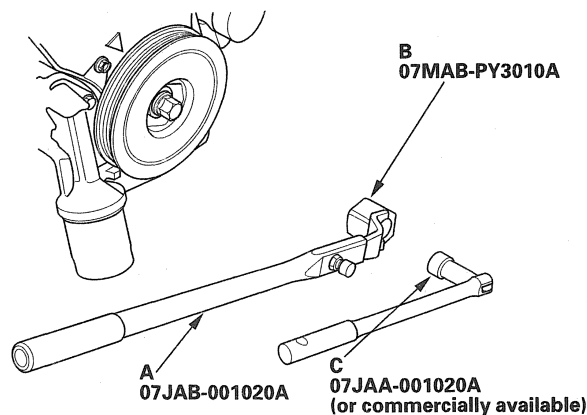
- Holder handle 07JAB-001020A
- Holder attachment, 50 mm, offset 07MAB-PY3010A
- Socket, 19 mm 07JAA-001020A , or a commercially available 19 mm socket

Removal

1. Raise the vehicle on the lift to full height.
2. Remove the right front wheel.
3. Remove the splash shield.



4. Remove the drive belt (see page 4-32).
5. Hold the pulley with the holder handle (A) and holder attachment (B).



6. Remove the bolt with a heavy duty 19 mm socket (C) and breaker bar, then remove the crankshaft pulley.

(cont'd)

Cylinder Head

Crankshaft Pulley Removal and Installation (cont'd)

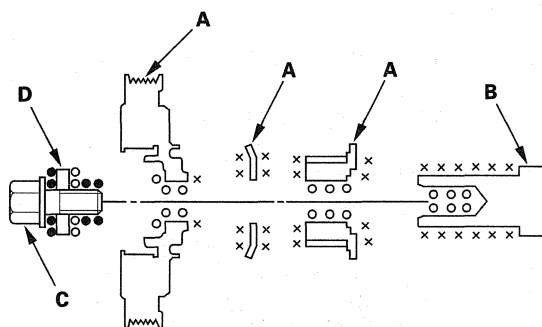
Installation

1. Remove any oil and clean the pulleys (A), crankshaft (B), bolt (C), and washer (D). Lubricate with new engine oil as shown.

✕: Remove any oil

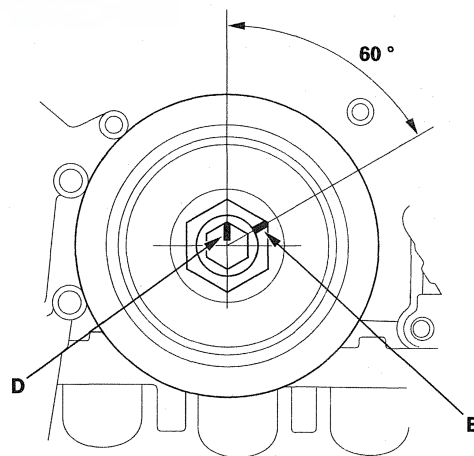
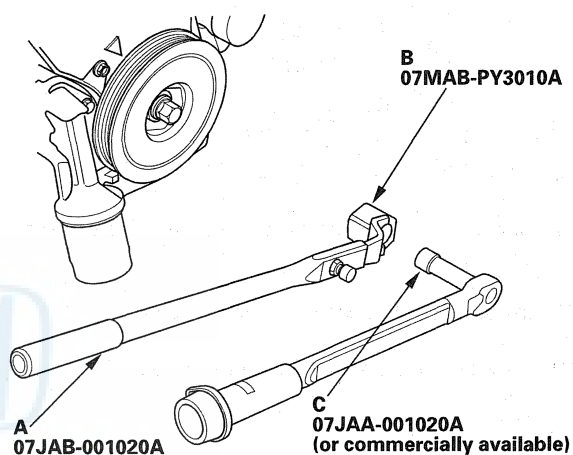
○: Clean

●: Lubricate with new engine oil

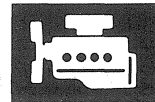


2. Install the crankshaft pulley, and torque the bolt. Do not use an impact wrench.

- 1 Hold the pulley with the holder handle (A) and holder attachment (B). Torque the bolt to 65 N·m (6.5 kgf·m, 48 lbf·ft) with a torque wrench and heavy duty 19 mm socket (C).
- 2 Mark the bolt head (D) and crankshaft pulley (E) as shown, then torque the bolt an additional 60° (The mark on the bolt head lines up with the mark on the crankshaft pulley).

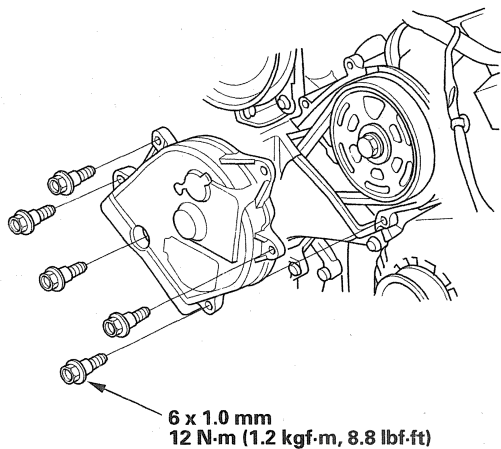


3. Install the drive belt (see page 4-32).
4. Install the splash shield.
5. Install the right front wheel.

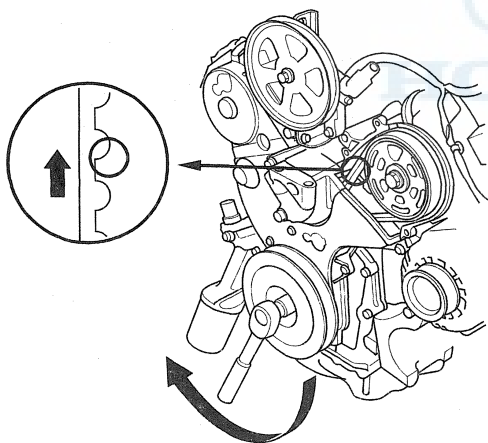


Timing Belt Inspection

1. Remove the drive belt (see page 4-32).
2. Remove the front upper cover.

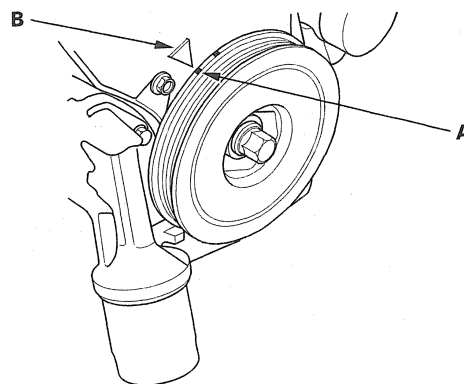


3. Inspect the timing belt for cracks and oil or coolant contamination. Replace the belt if it is cracked, or is contaminated with oil or coolant. Wipe off any oil or solvent that gets on the belt.



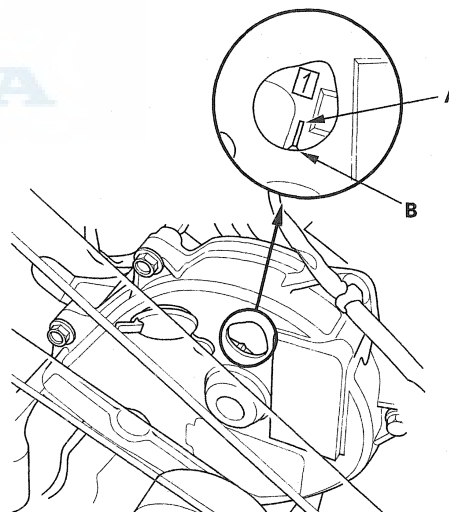
Timing Belt Removal

1. Turn the crankshaft so its white mark (A) lines up with the pointer (B).



2. Check that the No. 1 piston top dead center (TDC) mark (A) on the front camshaft pulley and the pointer (B) on the front upper cover are aligned.

NOTE: If the marks are not aligned, rotate the crankshaft 360 degrees, and recheck the camshaft pulley mark.



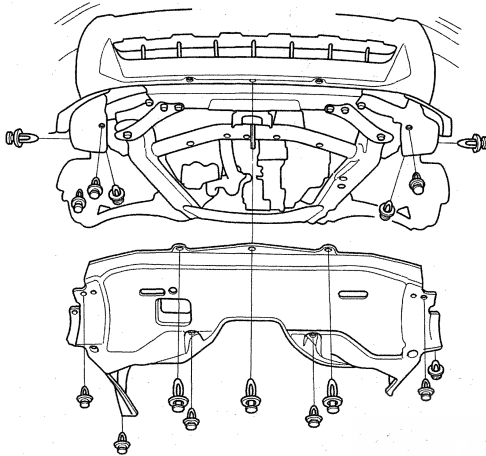
(cont'd)

Cylinder Head

Timing Belt Removal (cont'd)

3. Raise the vehicle on the lift, then remove the right front wheel.

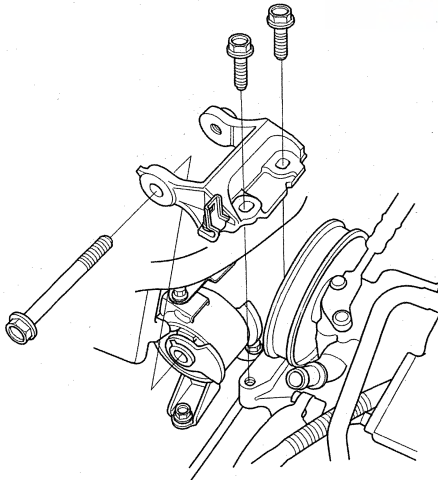
4. Remove the splash shield.



5. Remove the drive belt (see page 4-32).

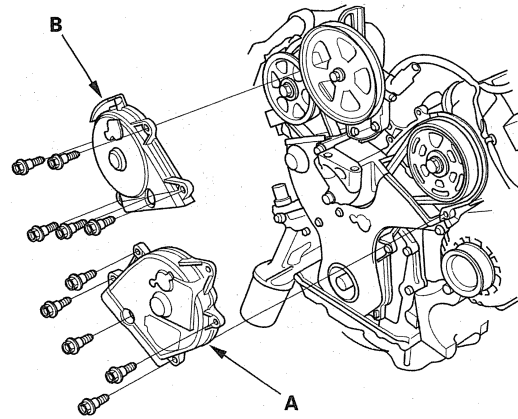
6. Support the engine with a jack and wood block under the oil pan.

7. Remove the upper half of the side engine mount bracket.

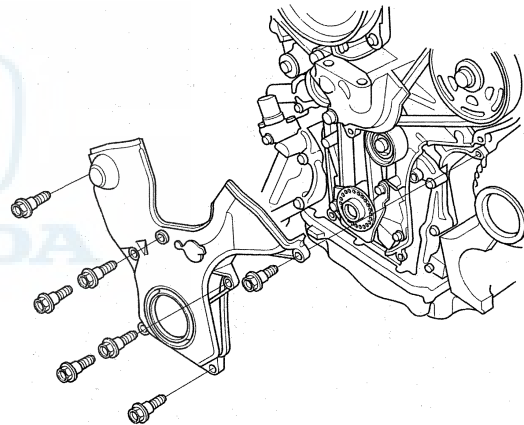


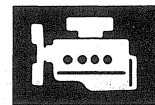
8. Remove the crankshaft pulley (see page 6-11).

9. Remove the front upper cover (A) and rear upper cover (B).

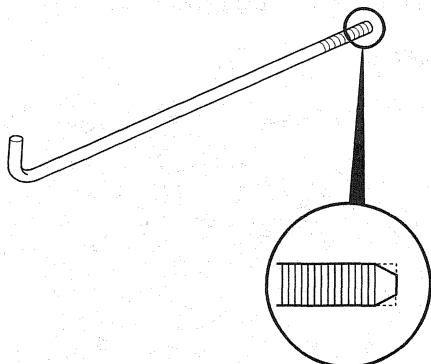


10. Remove the lower cover.

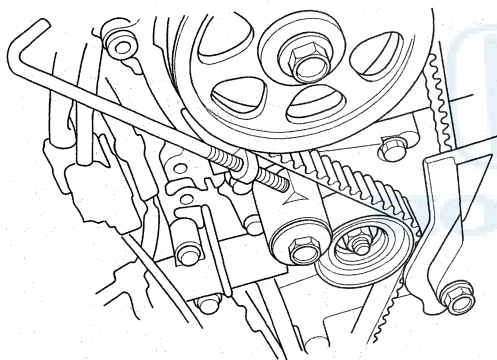




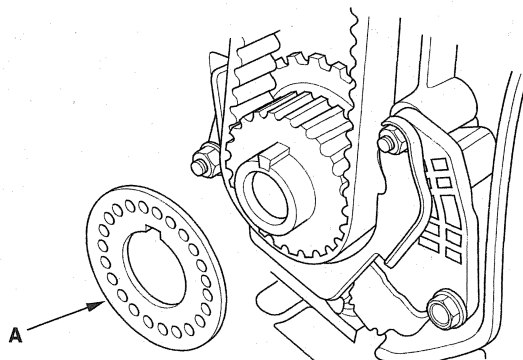
11. Remove one of the battery clamp bolts from the battery tray, and grind the end of it as shown.



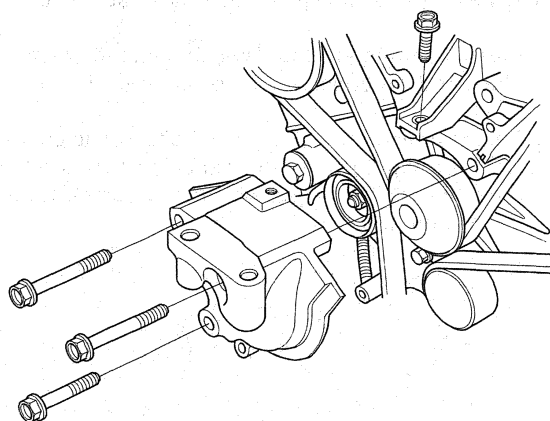
12. Thread the battery clamp bolt in as shown to hold the timing belt adjuster in its current position. Torque it by hand; do not use a wrench.



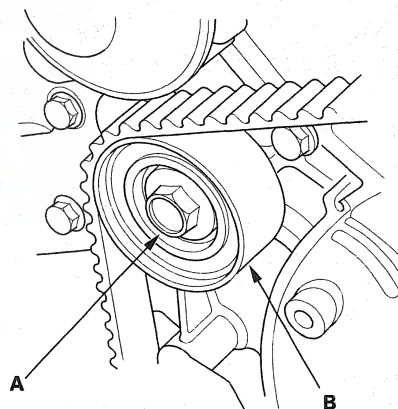
13. Remove the timing belt guide plate (A).



14. Remove the lower half of the side engine mount bracket.



15. Remove the idler pulley bolt (A) and idler pulley (B), then remove the timing belt. Discard the idler pulley bolt.

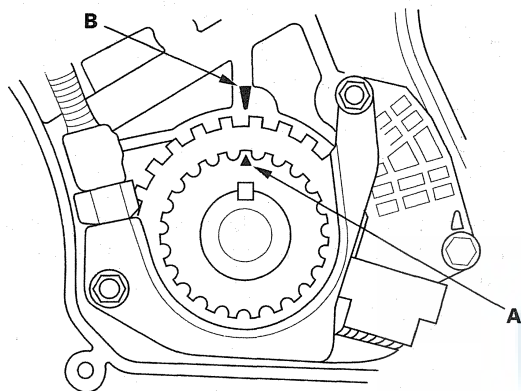


Cylinder Head

Timing Belt Installation

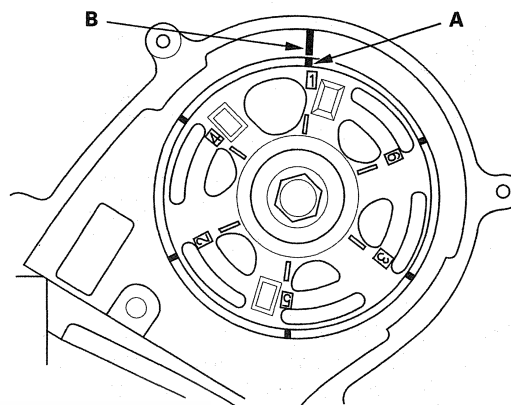
NOTE: The following procedure is for installing a used timing belt. If you are installing a new belt, refer to the timing belt replacement procedure (see page 6-20).

1. Clean the timing belt pulleys, timing belt guide plate, and the upper and lower covers.
2. Set the timing belt drive pulley to top dead center (TDC) by aligning the TDC mark (A) on the tooth of the timing belt drive pulley with the pointer (B) on the oil pump.

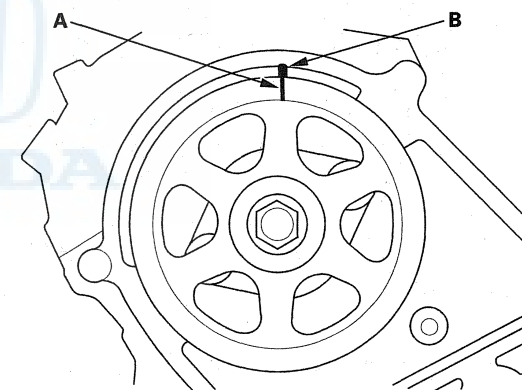


3. Set the camshaft pulleys to TDC by aligning the TDC marks (A) on the camshaft pulleys with the pointers (B) on the back covers.

FRONT



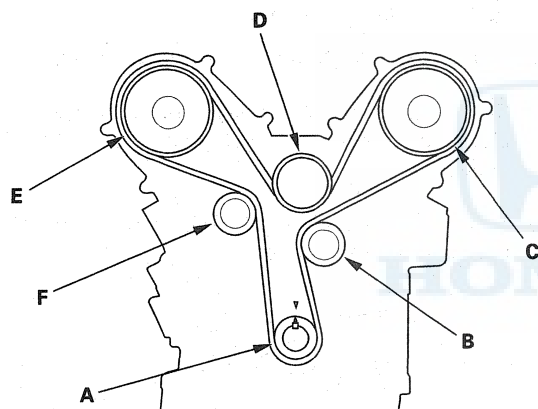
REAR



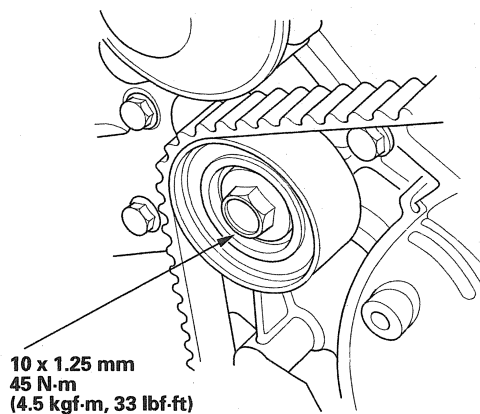


4. Loosely install the idler pulley with a new idler pulley bolt so the pulley can move but does not come off.
5. If the auto-tensioner has extended and the timing belt cannot be installed, do the timing belt replacement procedure (see page 6-20).
6. Install the timing belt in a counterclockwise sequence starting with the drive pulley. Take care not to damage the timing belt during installation.

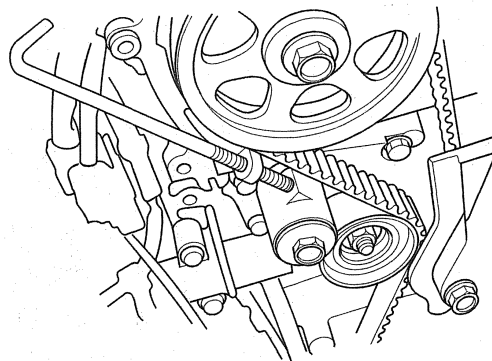
- 1 Drive pulley (A)
- 2 Idler pulley (B)
- 3 Front camshaft pulley (C)
- 4 Water pump pulley (D)
- 5 Rear camshaft pulley (E)
- 6 Adjusting pulley (F)



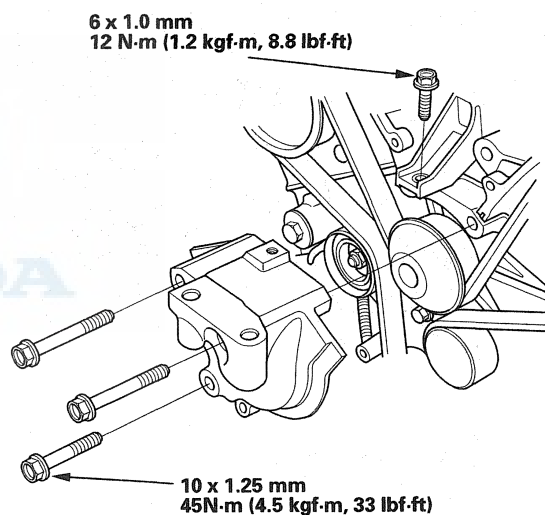
7. Torque the idler pulley bolt.



8. Remove the battery clamp bolt from the back cover.



9. Install the lower half of the side engine mount bracket.

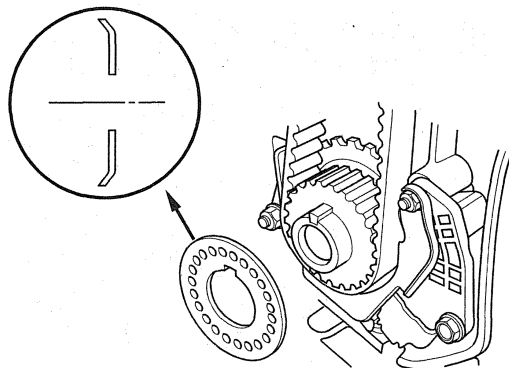


(cont'd)

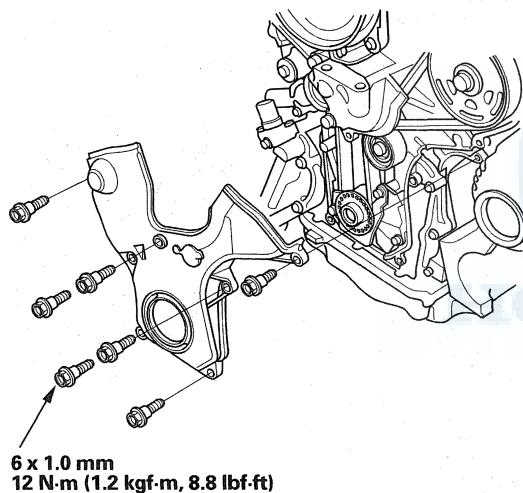
Cylinder Head

Timing Belt Installation (cont'd)

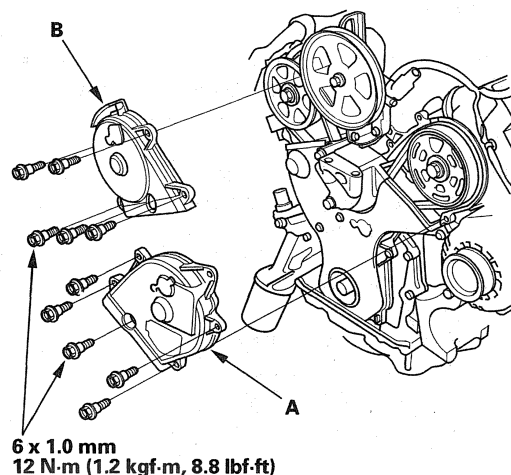
10. Install the timing belt guide plate as shown.



11. Install the lower cover.



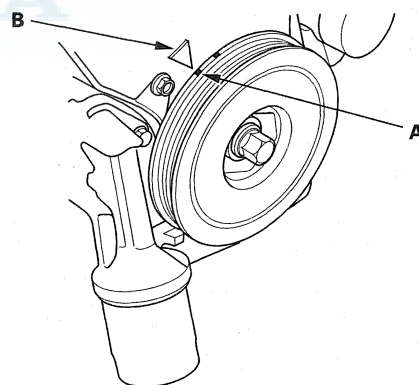
12. Install the front upper cover (A) and rear upper cover (B).

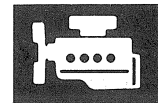


13. Install the crankshaft pulley (see page 6-12).

14. Rotate the crankshaft pulley about six turns clockwise so the timing belt positions itself on the pulleys.

15. Turn the crankshaft pulley so its white mark (A) lines up with the pointer (B).



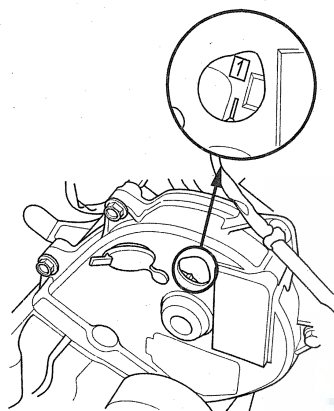


16. Check the camshaft pulley marks.

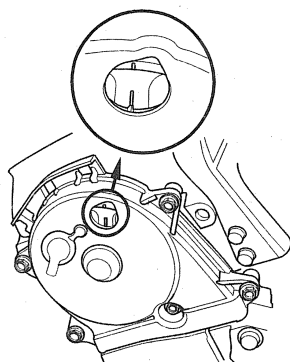
NOTE: If the marks are not aligned, rotate the crankshaft 360 degrees, and recheck the camshaft pulley mark.

- If the camshaft pulley marks are at TDC, go to step 17.
- If the camshaft pulley marks are not at TDC, remove the timing belt and repeat steps 2 through 16.

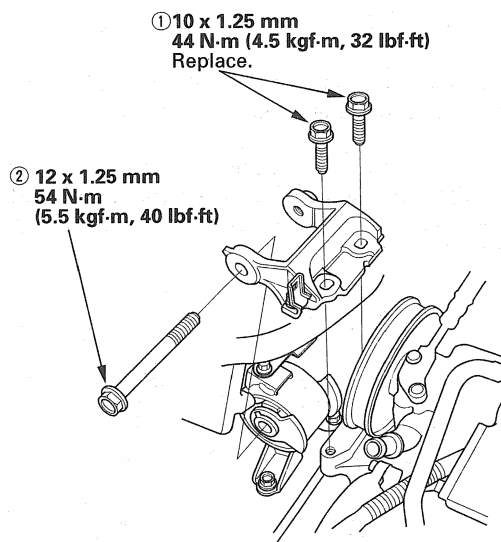
FRONT



REAR

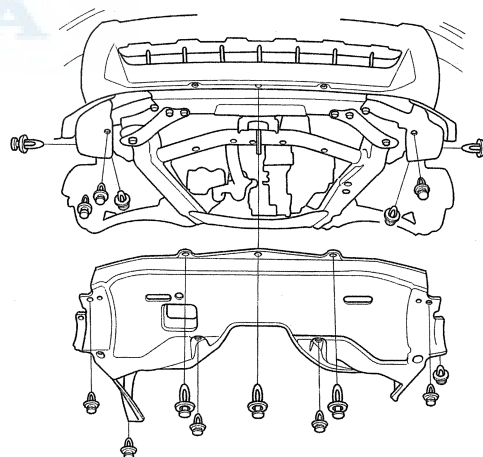


17. Install the upper half of the side engine mount bracket, then torque the mounting bolts in the numbered sequence shown.



18. Install the drive belt (see page 4-32).

19. Install the splash shield.



20. Install the right front wheel.

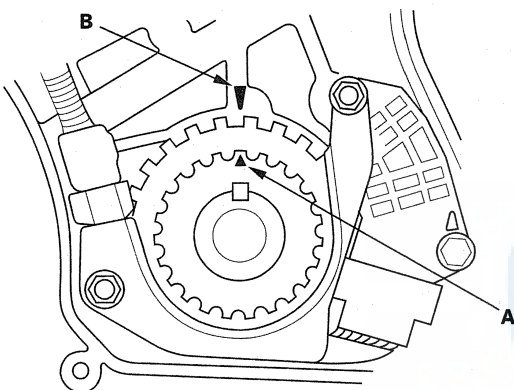
21. Do the crankshaft position (CKP) pattern clear/CKP pattern learn procedure (see page 11-5).

Cylinder Head

Timing Belt Replacement

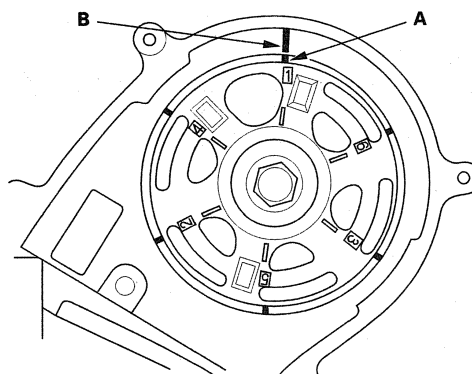
NOTE: The following procedure is for the installation of a new timing belt. If you are installing a used belt, refer to the timing belt installation procedure (see page 6-16).

1. Remove the timing belt (see page 6-13).
2. Clean the timing belt pulleys, timing belt guide plate, and the upper and lower covers.
3. Set the timing belt drive pulley to top dead center (TDC) by aligning the TDC mark (A) on the tooth of the timing belt drive pulley with the pointer (B) on the oil pump.

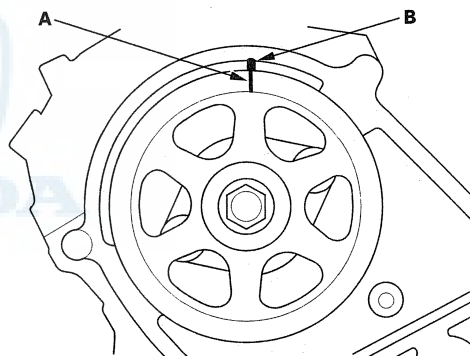


4. Set the camshaft pulleys to TDC by aligning the TDC marks (A) on the camshaft pulleys with the pointers (B) on the back covers.

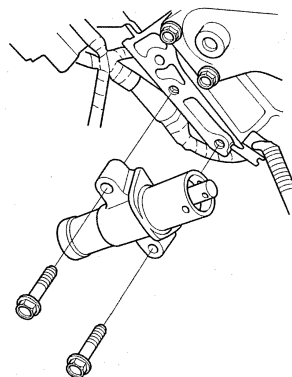
FRONT

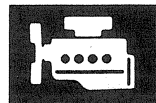


REAR

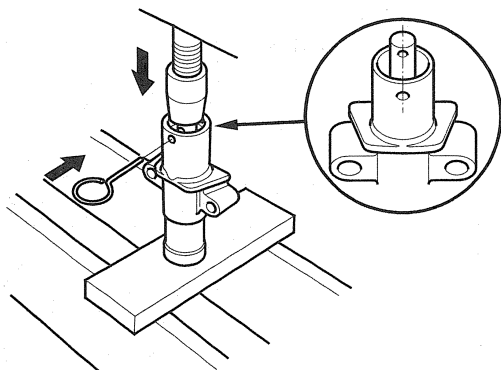


5. Remove the battery clamp bolt from the back cover.
6. Remove the auto-tensioner.





7. Align the holes on the rod and housing of the auto-tensioner.

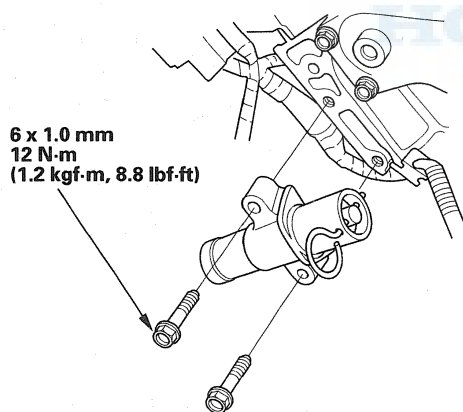


8. Use a hydraulic press to slowly compress the auto-tensioner. Insert a 2.0 mm (0.08 in.) pin through the housing and the rod.

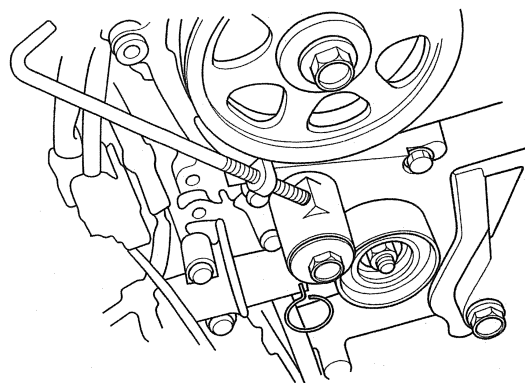
NOTE: The compression pressure should not exceed 9,800 N (1,000 kgf, 2,200 lbf).

9. Install the auto-tensioner.

NOTE: Make sure the pin stays in place.



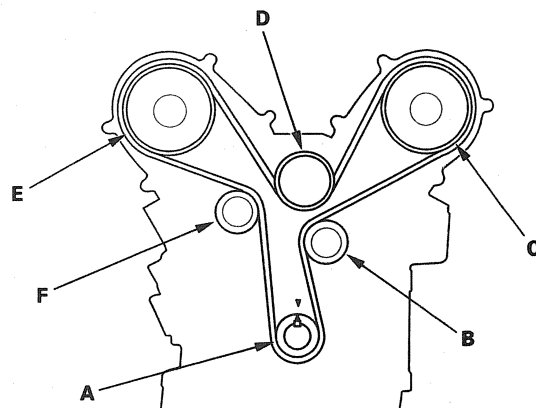
10. Thread the battery clamp bolt in as shown to hold the timing belt adjuster. Torque it by hand, do not use a wrench.



11. Loosely install the idler pulley with a new idler pulley bolt so the pulley can move but does not come off.

12. Install the timing belt in a counterclockwise sequence starting with the drive pulley.

- 1 Drive pulley (A)
- 2 Idler pulley (B)
- 3 Front camshaft pulley (C)
- 4 Water pump pulley (D)
- 5 Rear camshaft pulley (E)
- 6 Adjusting pulley (F)

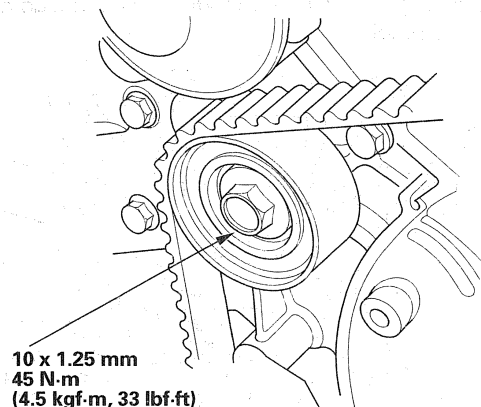


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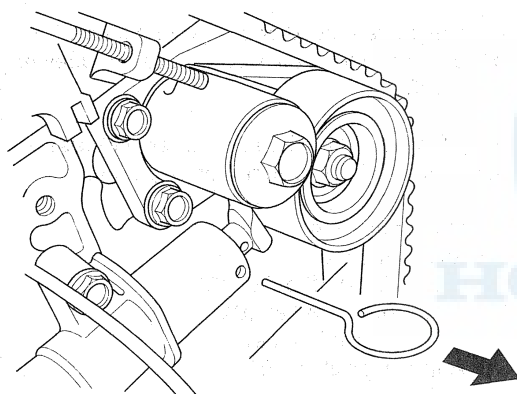
Cylinder Head

Timing Belt Replacement (cont'd)

13. Torque the idler pulley bolt.

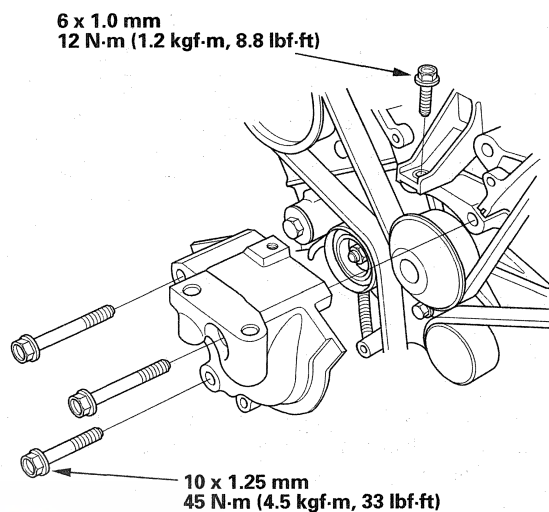


14. Remove the pin from the auto-tensioner.

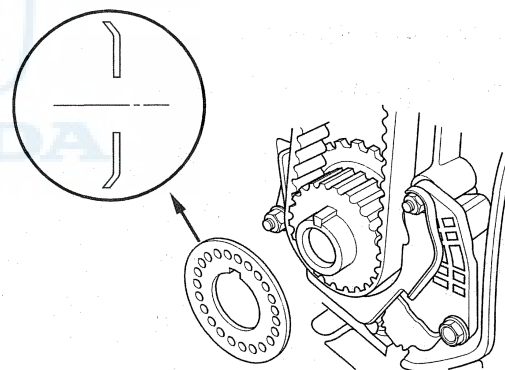


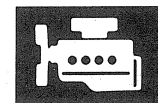
15. Remove the battery clamp bolt from the back cover.

16. Install the lower half of the side engine mount bracket.

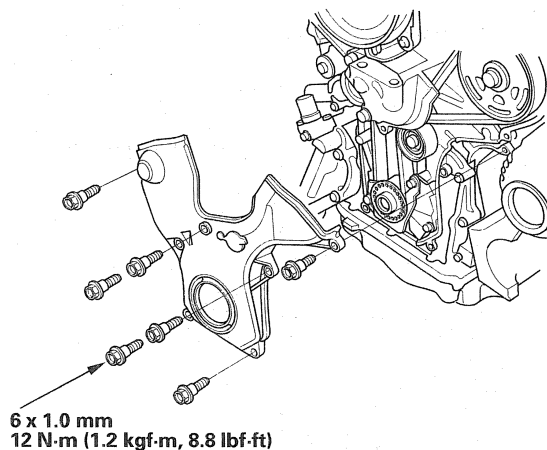


17. Install the timing belt guide plate as shown.

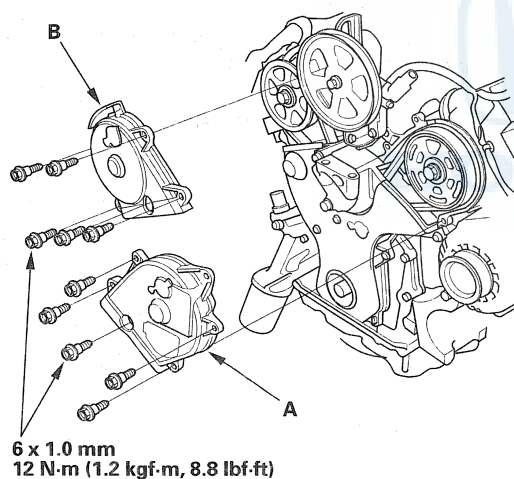




18. Install the lower cover.



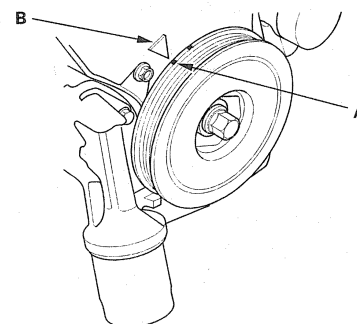
19. Install the front upper cover (A) and rear upper cover (B).



20. Install the crankshaft pulley (see page 6-12).

21. Rotate the crankshaft pulley about six turns clockwise so the timing belt positions itself on the pulleys.

22. Turn the crankshaft pulley so its white mark (A) lines up with the pointer (B).

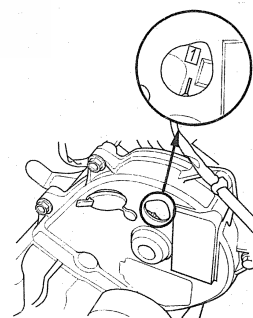


23. Check the camshaft pulley marks.

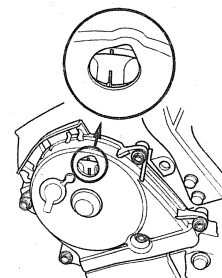
NOTE: If the marks are not aligned, rotate the crankshaft 360 degrees, and recheck the camshaft pulley mark.

- If the camshaft pulley marks are at TDC, go to step 24.
- If the camshaft pulley marks are not at TDC, remove the timing belt and repeat steps 3 through 22.

FRONT



REAR

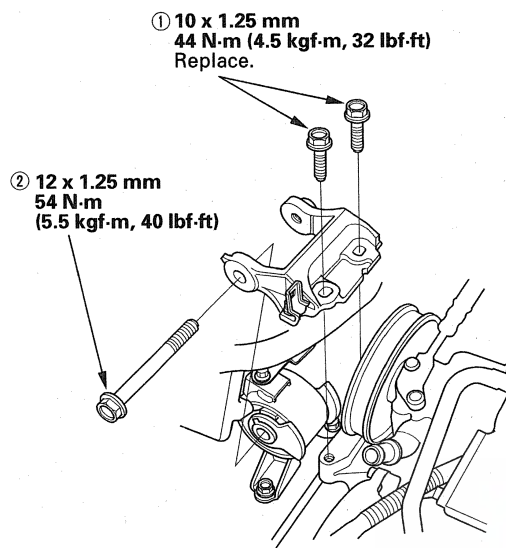


(cont'd)

Cylinder Head

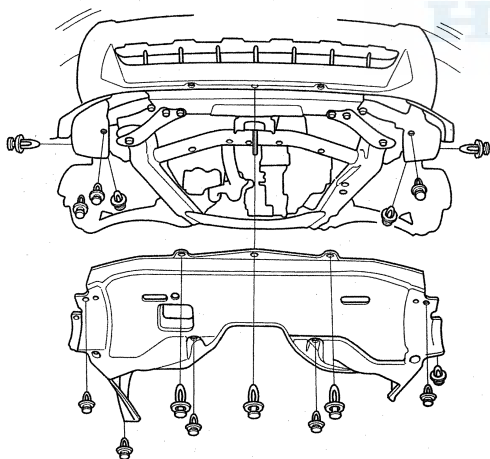
Timing Belt Replacement (cont'd)

24. Install the upper half of the side engine mount bracket, then torque the mounting bolts in the numbered sequence shown.



25. Install the drive belt (see page 4-32).

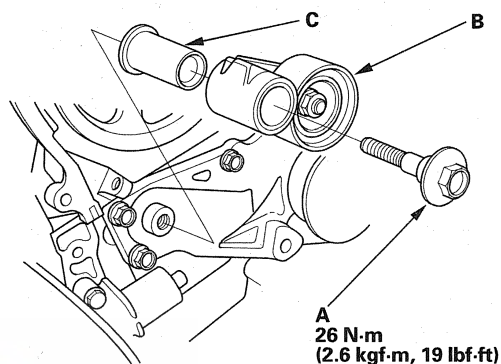
26. Install the splash shield.



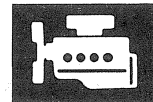
27. Install the right front wheel.
28. Do the crankshaft position (CKP) pattern clear/CKP pattern learn procedure (see page 11-5).

Timing Belt Adjuster Replacement

1. Remove the timing belt (see page 6-13).
2. Remove the battery clamp bolt from the back cover.
3. Remove the auto-tensioner.
4. Remove the bolt (A), then remove the timing belt adjuster (B) and collar (C).

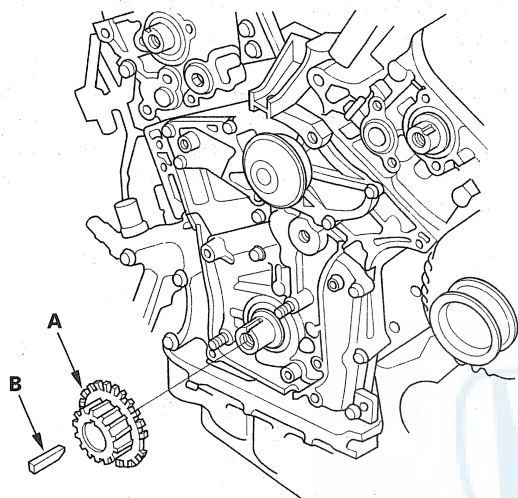


5. Install the timing belt adjuster in the reverse order of removal.
6. Install the timing belt (see page 6-16).



Timing Belt Drive Pulley Replacement

1. Remove the timing belt (see page 6-13).
2. Remove the crankshaft position (CKP) sensor (see page 11-228).
3. Remove the timing belt drive pulley (A) and key (B).

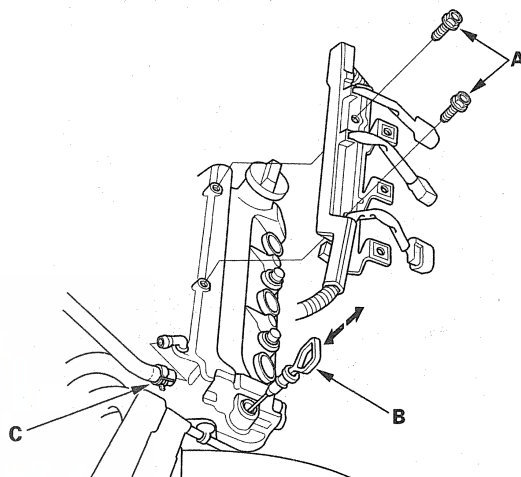


4. Inspect the timing belt drive pulley and key for damage. If it is cracked or damaged, replace the timing belt drive pulley.
5. Install the new timing belt drive pulley.
6. Install the CKP sensor (see page 11-228).
7. Install the timing belt (see page 6-16).
8. Do the CKP pattern clear/CKP pattern learn procedure (see page 11-5).

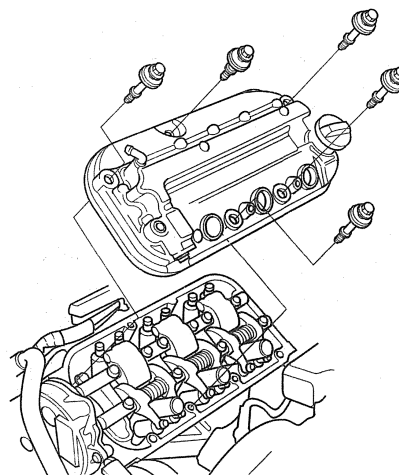
Cylinder Head Cover Removal

Front

1. Remove the intake manifold (see page 9-4).
2. Remove the three ignition coils from the front cylinder head (see page 4-19).
3. Remove the two bolts (A) securing the harness holder.



4. Remove the dipstick (B) and positive crankcase ventilation (PCV) hose (C).
5. Remove the front cylinder head cover.



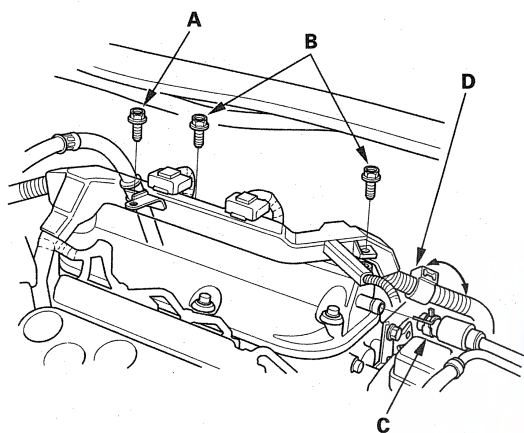
(cont'd)

Cylinder Head

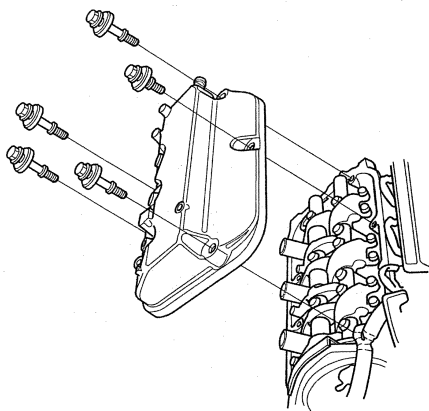
Cylinder Head Cover Removal (cont'd)

Rear

1. Remove the intake manifold (see page 9-4).
2. Remove the three ignition coils from the rear cylinder head (see page 4-19).
3. Remove the bolt (A) securing the power steering (P/S) hose bracket.



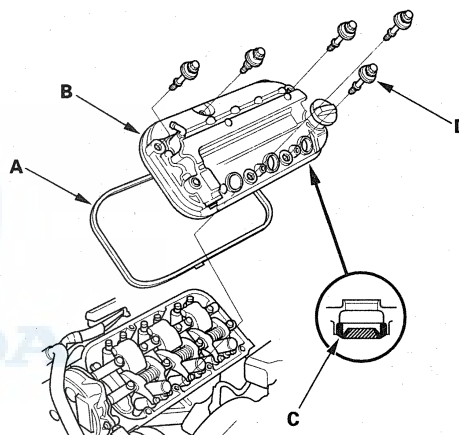
4. Remove the two bolts (B) securing the harness holder.
5. Remove the breather hose (C) and harness clamp (D).
6. Remove the rear cylinder head cover.



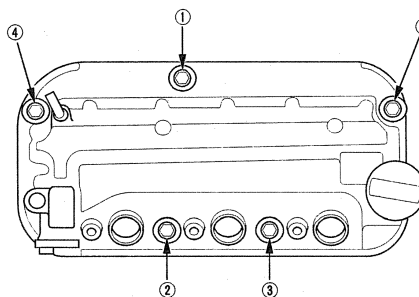
Cylinder Head Cover Installation

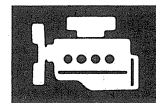
Front

1. Check the spark plug seals for damage. If any seal is damaged, replace it.
2. Thoroughly clean the head cover gasket and the groove of the cylinder head cover.
3. Clean the head cover contacting surfaces with a shop towel.
4. Install the head cover gasket (A) in the groove of the cylinder head cover (B). Make sure the head cover gasket is seated securely, then set the spark plug seals (C) on the spark plug tubes, and install the cylinder head cover.

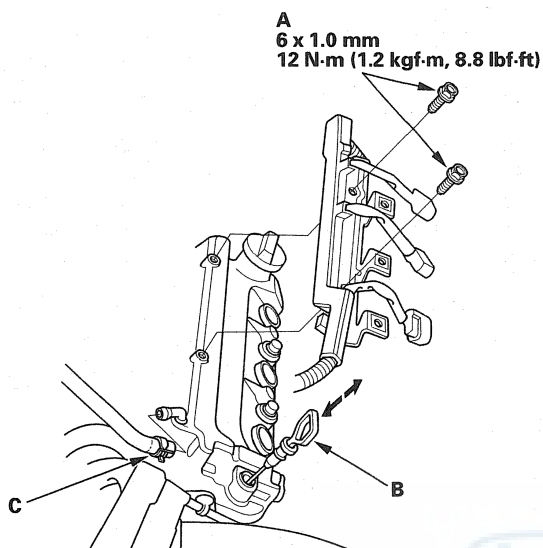


5. Visually check the spark plug seals for damage.
6. Inspect the cover washers (D). Replace any washer that is damaged or deteriorated.
7. Torque the bolts in three steps. In the final step torque all bolts, in sequence, 12 N·m (1.2 kgf·m, 8.8 lbf·ft).





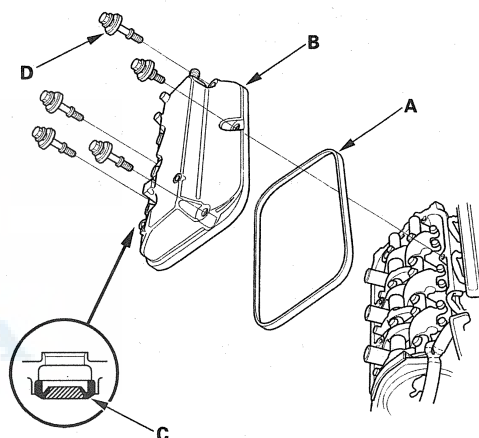
8. Torque the two bolts (A) securing the harness holder.



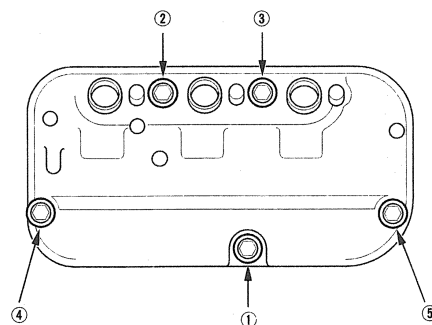
9. Install the dipstick (B) and positive crankcase ventilation (PCV) hose (C).
10. Install the three ignition coils to the front cylinder head (see page 4-19).
11. Install the intake manifold (see page 9-6).

Rear

1. Check the spark plug seals for damage. If any seal is damaged, replace it.
2. Thoroughly clean the head cover gasket and the groove of the cylinder head cover.
3. Clean the head cover contacting surfaces with a shop towel.
4. Install the head cover gasket (A) in the groove of the cylinder head cover (B). Make sure the head cover gasket is seated securely, then set the spark plug seals (C) on the spark plug tubes, and install the cylinder head cover.



5. Visually check the spark plug seals for damage.
6. Inspect the cover washers (D). Replace any washer that is damaged or deteriorated.
7. Torque the bolts in three steps. In the final step torque all bolts, in sequence, 12 N·m (1.2 kgf·m, 8.8 lbf·ft).

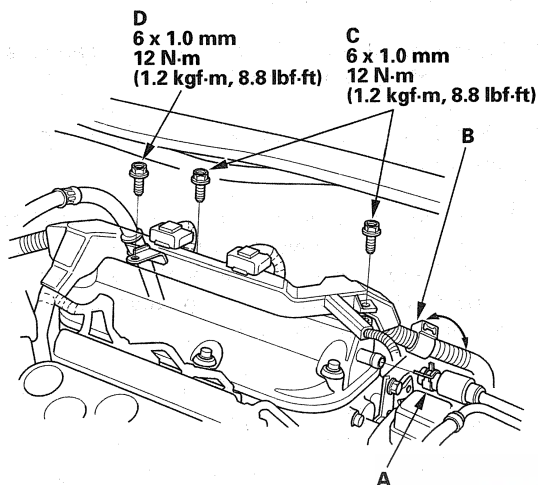


(cont'd)

Cylinder Head

Cylinder Head Cover Installation (cont'd)

8. Install the breather hose (A) and harness clamp (B).



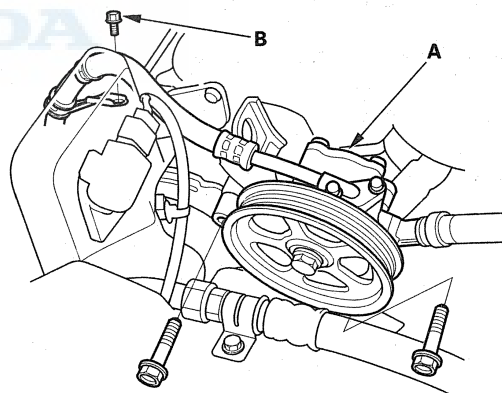
9. Torque the two bolts (C) securing the harness holder.
10. Torque the bolt (D) securing the power steering (P/S) hose bracket.
11. Install the three ignition coils to the rear cylinder head (see page 4-19).
12. Install the intake manifold (see page 9-6).

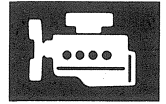
Cylinder Head Removal

NOTE:

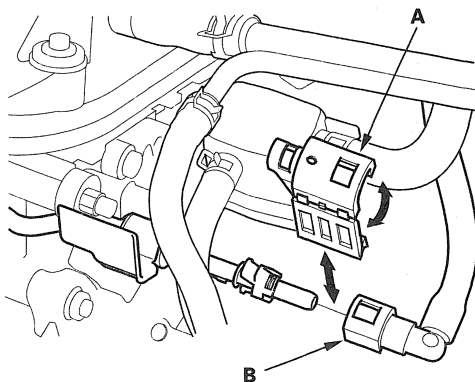
- Use fender covers to avoid damaging painted surfaces.
- To avoid damaging the wires and terminals, unplug the wiring connectors carefully while holding the connector portion.
- To avoid damaging the cylinder head, wait until the engine coolant temperature drops below 100 °F (38 °C) before loosening the cylinder head bolts.
- Mark all wiring and hoses to avoid misconnection. Also, be sure that they do not contact any other wiring or hoses, or interfere with any other parts.

1. Make sure you have the anti-theft codes for the audio system and the navigation system (if equipped), then write down the audio presets.
2. Relieve the fuel pressure (see page 11-372).
3. Disconnect the negative cable from the battery.
4. Drain the engine coolant (see page 10-6).
5. Remove the drive belt (see page 4-32).
6. Remove the power steering (P/S) pump (A) and the bolt (B) securing the P/S hose bracket.

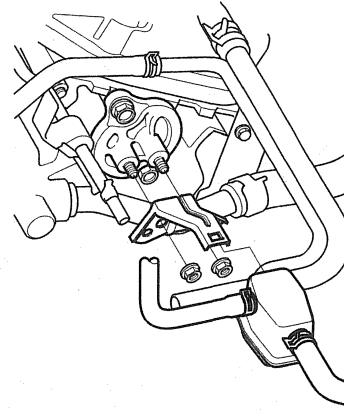




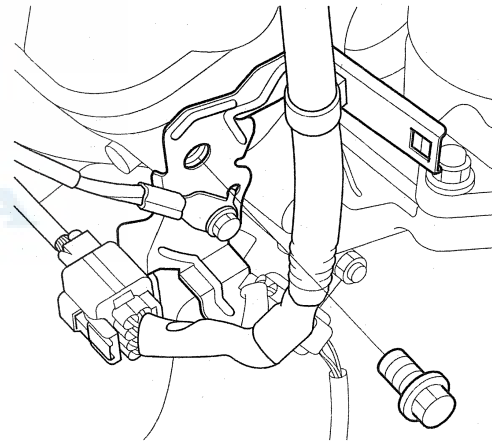
7. Remove the alternator (see page 4-36).
8. Remove the intake manifold (see page 9-4).
9. Remove the six ignition coils (see page 4-19).
10. Remove the timing belt (see page 6-13).
11. Remove the engine wire harness connectors and wire harness clamps from the cylinder head.
 - Six injector connectors
 - Engine coolant temperature (ECT) sensor 1 connector
 - Engine coolant temperature (ECT) sensor 2 connector
 - Crankshaft position (CKP) sensor connector
 - Exhaust gas recirculation (EGR) valve connector
 - Rocker arm oil control solenoid connector
 - Rocker arm oil pressure switch connector
 - Oil pressure switch connector
 - Two air fuel ratio (A/F) sensor connectors
 - Two secondary heated oxygen sensor (secondary HO2S) connectors
12. Remove the front warm up three way catalytic converter (front WU-TWC) (see page 11-412) and rear warm up three way catalytic converter (rear WU-TWC) (see page 11-413).
13. Remove the quick-connect fitting cover (A), then disconnect the fuel feed hose (B) (see page 11-380).



14. Remove the two nuts securing the evaporative emission (EVAP) canister purge valve joint.



15. Remove the connector bracket from the front cylinder head.

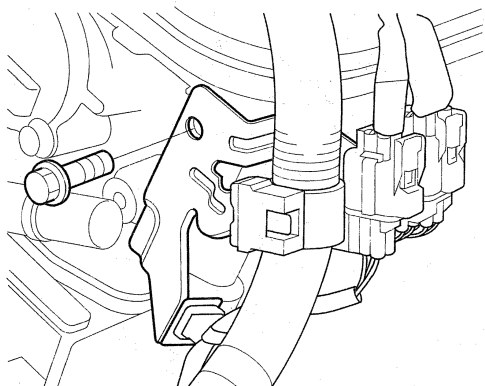


(cont'd)

Cylinder Head

Cylinder Head Removal (cont'd)

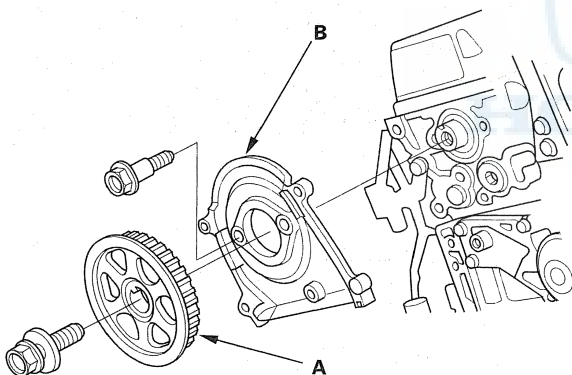
16. Remove the harness clamp bracket from the rear cylinder head.



17. Remove the fuel rails (see step 5 on page 11-222).

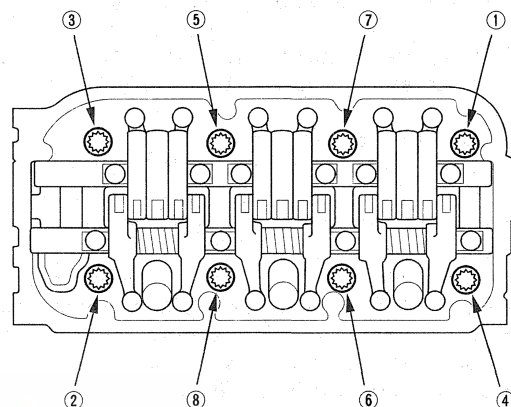
18. Remove the water passage (see page 10-10).

19. Remove the front and rear camshaft pulleys (A) and back covers (B).

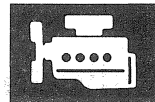


20. Remove the cylinder head covers (see page 6-25).

21. Remove the cylinder head bolts. To prevent warpage, loosen the bolts in sequence 1/3 turn at a time; repeat the sequence until all bolts are loosened.



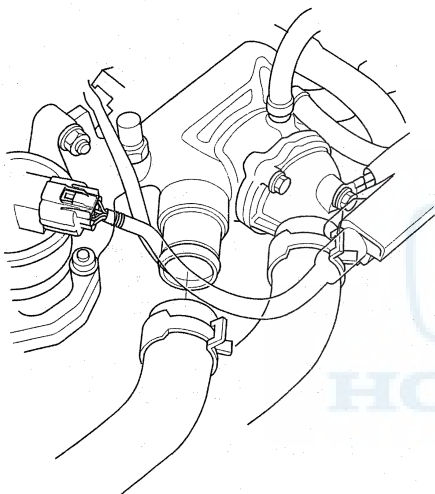
22. Remove the cylinder heads.



Camshaft Replacement

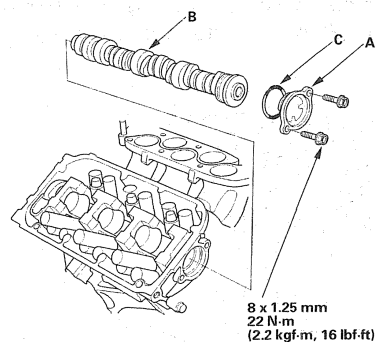
FRONT

1. Make sure you have the anti-theft codes for the audio system and the navigation system (if equipped), then write down the audio presets.
2. Disconnect the negative cable from the battery first, then disconnect the positive cable.
3. Remove the battery and battery tray.
4. Drain the engine coolant (see page 10-6).
5. Remove the upper radiator hose.



6. Remove the exhaust gas recirculation (EGR) valve (see page 11-429).
7. Remove the timing belt (see page 6-13).
8. Remove the rocker arm assembly (see page 6-33).
9. Remove the front camshaft pulley.

10. Remove the thrust cover (A), then remove the camshaft (B).



11. Install the camshaft in the reverse order of removal. Always use a new O-ring (C). Apply new engine oil to the journals and cam lobes.
12. Apply new engine oil to the threads of the camshaft pulley mounting bolt, then install the front camshaft pulley (see step 11 on page 6-48).
13. Install the rocker arm assembly, then torque the mounting bolts (see step 9 on page 6-47).
14. Install the timing belt (see page 6-16).
15. Adjust the valve clearance (see page 6-8).
16. Install the EGR valve (see page 11-429), then install the upper radiator hose.
17. Install the battery and battery tray. Clean the battery posts and cable terminals, then assemble them and apply grease to prevent corrosion.
18. Fill the radiator with engine coolant, and bleed air from the cooling system (see step 8 on page 10-7).
19. Do the crankshaft position (CKP) pattern clear/CKP pattern learn procedure (see page 11-5).
20. Do the powertrain control module (PCM) idle learn procedure (see page 11-359) and the power window control unit reset procedure (see page 22-255).
21. Enter the anti-theft codes for audio the system and the navigation system (if equipped), then enter the audio presets.
22. Set the clock (on vehicles without navigation).

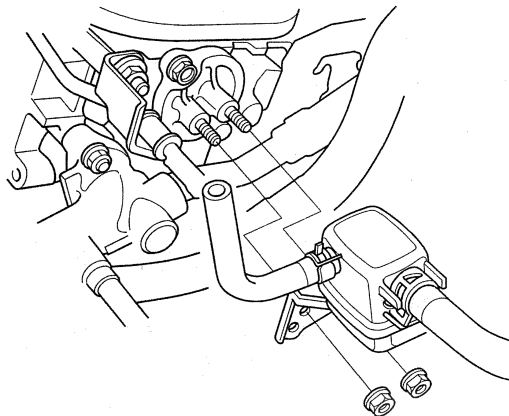
(cont'd)

Cylinder Head

Camshaft Replacement (cont'd)

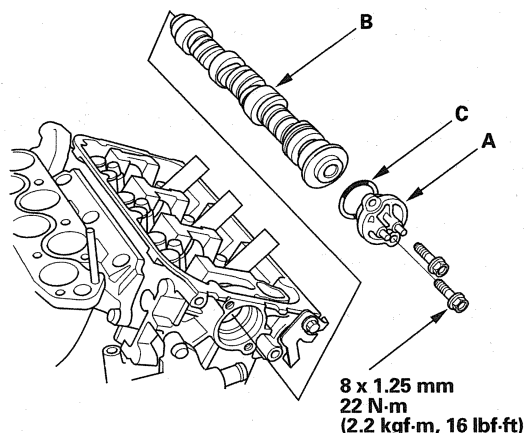
REAR

1. Remove the two nuts securing the evaporative emission (EVAP) canister purge valve joint.

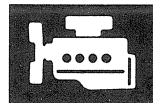


2. Remove the brake lines from the master cylinder (see page 19-16).
3. Remove the timing belt (see page 6-13).
4. Remove the rocker arm assembly (see page 6-33).
5. Remove the rear camshaft pulley.

6. Remove the thrust cover (A), then remove the camshaft (B).



7. Install the camshaft in the reverse order of removal. Always use a new O-ring (C). Apply new engine oil to the journals and cam lobes.
8. Apply new engine oil to the threads of the camshaft pulley mounting bolt, then install the rear camshaft pulley (see step 11 on page 6-48).
9. Install the rocker arm assembly, then torque the mounting bolts (see step 9 on page 6-47).
10. Install the timing belt (see page 6-16).
11. Adjust the valve clearance (see page 6-8).
12. Install the brake lines (see page 19-16) and do the brake system bleeding procedure (see page 19-8).
13. Install the EVAP canister purge valve joint.
14. Do the CKP pattern clear/CKP pattern learn procedure (see page 11-5).



Cylinder Head Inspection for Warpage

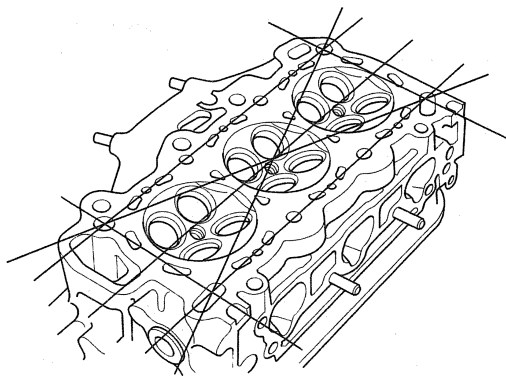
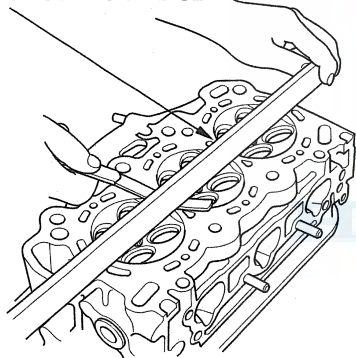
1. Remove the cylinder head (see page 6-28).
2. Inspect the camshaft (see page 6-37).
3. Check the cylinder head for warpage. Measure along the edges, and three ways across the center.

- If warpage is less than 0.05 mm (0.002 in.), cylinder head resurfacing is not required.
- If warpage is between 0.05 mm (0.002 in.) and 0.2 mm (0.008 in.), resurface the cylinder head.
- Maximum resurface limit is 0.2 mm (0.008 in.) based on a height of 121 mm (4.76 in.).

Cylinder Head Height

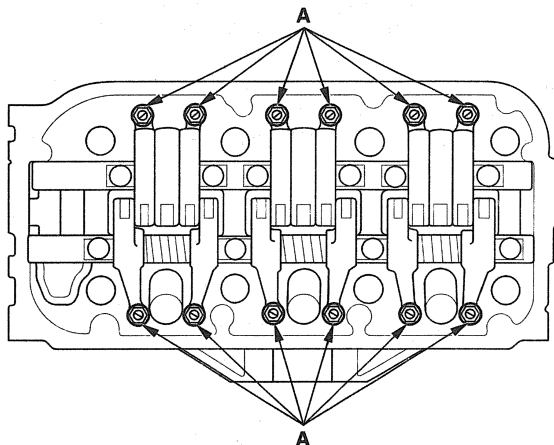
Standard (New): 120.95—121.05 mm
(4.762—4.766 in.)

PRECISION STRAIGHT EDGE



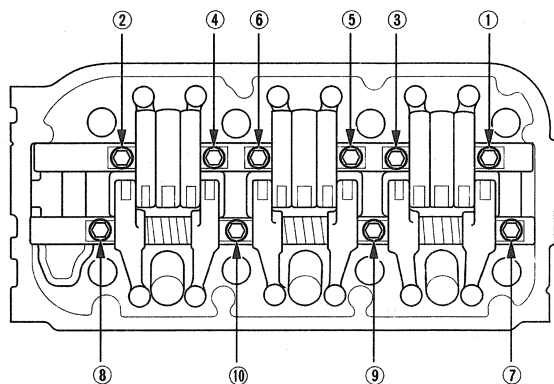
Rocker Arm Assembly Removal

1. Remove the cylinder head cover (see page 6-25).
2. Loosen the locknuts and adjusting screws (A).



3. Remove the rocker shaft mounting bolts and the rocker arm assembly.

- 1 Loosen the rocker shaft mounting bolts in sequence two turns at a time, to prevent damaging the valves or rocker arm assembly.
- 2 When removing the rocker arm assembly, do not remove the rocker shaft mounting bolts. The bolts will keep the springs and the rocker arms on the shafts.

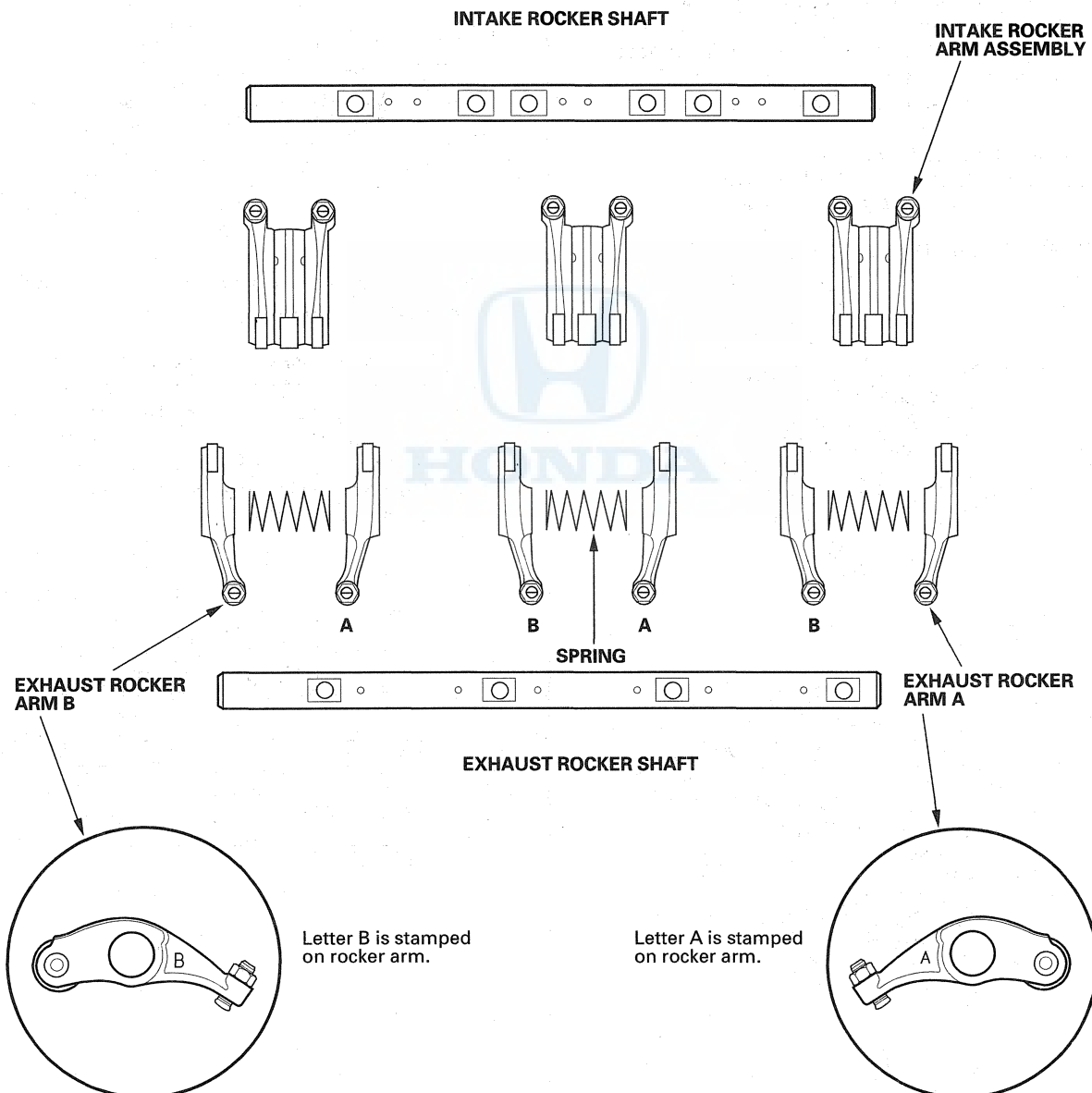


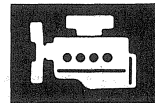
Cylinder Head

Rocker Arm and Shaft Disassembly/Reassembly

NOTE:

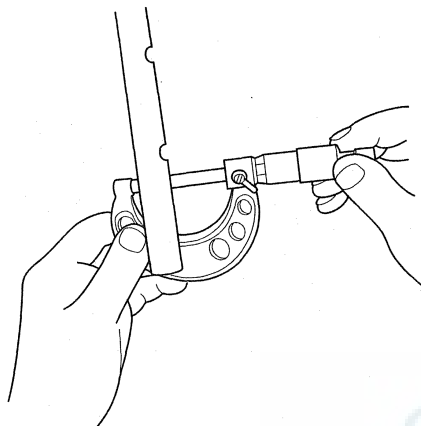
- Identify parts as they are removed so they can be reinstalled in their original locations.
- Inspect the rocker shafts and rocker arms (see page 6-35).
- If reused, the rocker arms must be installed in their original locations.
- When removing or installing the rocker arm assembly, do not remove the rocker shaft mounting bolts. The bolts will keep the springs and rocker arms on the shaft.
- Bundle the intake rocker arms with rubber bands to keep them together as a set.
- Prior to reassembling, clean all the parts in solvent, dry them and apply new engine oil to any contact points.
- When replacing the intake rocker arm assembly, remove the fastening hardware from the new intake rocker arm assembly.



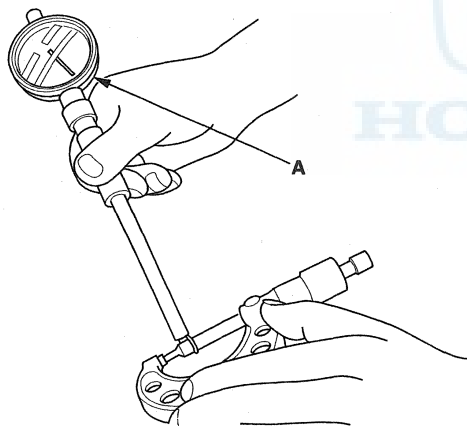


Rocker Arm and Shaft Inspection

1. Remove the rocker arm assembly (see page 6-33).
2. Disassemble the rocker arm assembly (see page 6-34).
3. Measure the diameter of the shaft at the first rocker location.



4. Zero the gauge (A) to the shaft diameter.



5. Measure the inside diameter of the rocker arm, and check it for an out-of-round condition.

Intake Rocker Arm-to-Shaft Clearance

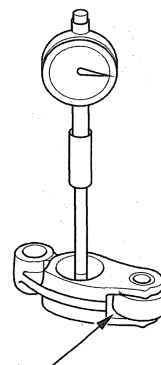
Standard (New): 0.026–0.067 mm
(0.0010–0.0026 in.)

Service Limit: 0.067 mm (0.0026 in.)

Exhaust Rocker Arm-to-Shaft Clearance

Standard (New): 0.026–0.077 mm
(0.0010–0.0030 in.)

Service Limit: 0.077 mm (0.0030 in.)



Inspect rocker arm face for wear.

6. Repeat for all rockers and both shafts. If the clearance is over the limit, replace the rocker shaft and all over-tolerance rocker arms. If any intake rocker arm needs replacement, replace all three rocker arms in that set (primary, mid, and secondary).

(cont'd)

Cylinder Head

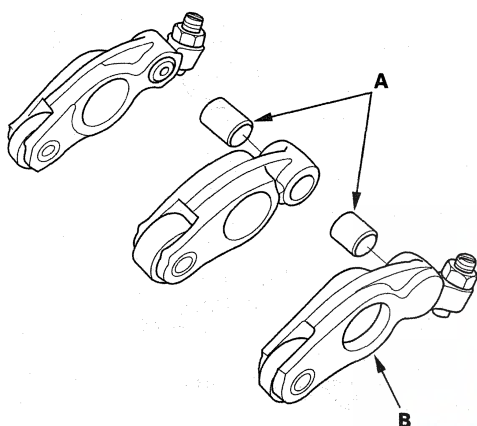
Rocker Arm and Shaft Inspection (cont'd)

VTEC Rocker Arms

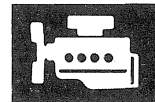
7. Inspect the rocker arm pistons (A). Push them manually. If they do not move smoothly, replace the rocker arm set.

NOTE:

- Apply new engine oil to the rocker arm pistons when reassembling.
- When reassembling the primary rocker arm (B), carefully apply air pressure to the oil passage of the rocker arm.



8. Install the rocker arm assembly (see page 6-47).

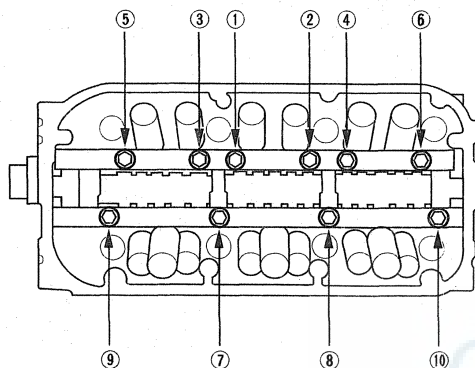


Camshaft Inspection

1. Remove the cylinder head (see page 6-28).
2. Remove the rocker arms (see page 6-33).
3. Put the rocker shafts on the cylinder head, then torque the bolts to the specified sequence.

Specified Torque

8 x 1.25 mm: 24 N·m (2.4 kgf·m, 18 lbf·ft)

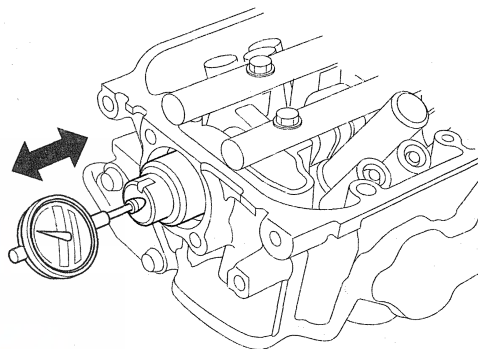


4. Seat the camshaft by pushing it toward the rear of the cylinder head.
5. Zero the dial indicator against the end of the camshaft. Push the camshaft back and forth and read the end play. If the end play is beyond the service limit, replace the thrust cover and recheck. If it is still beyond the service limit, replace the camshaft (see page 6-31).

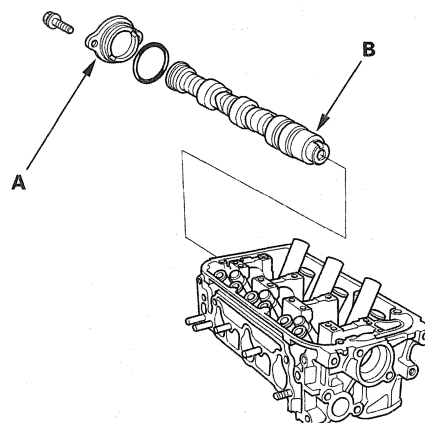
Camshaft End Play

Standard (New): 0.05—0.20 mm
(0.002—0.008 in.)

Service Limit: 0.20 mm (0.008 in.)



6. Remove the camshaft thrust cover (A), then pull out the camshaft (B).

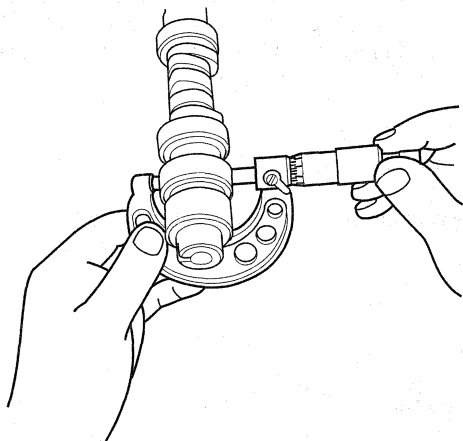


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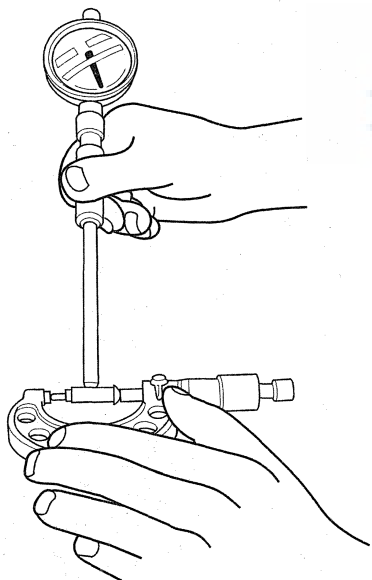
Cylinder Head

Camshaft Inspection (cont'd)

7. Wipe the camshaft clean, then inspect the lift ramps. Replace the camshaft if any lobes are pitted, scored, or excessively worn.
8. Measure the diameter of each camshaft journal.



9. Zero the gauge to the journal diameter.



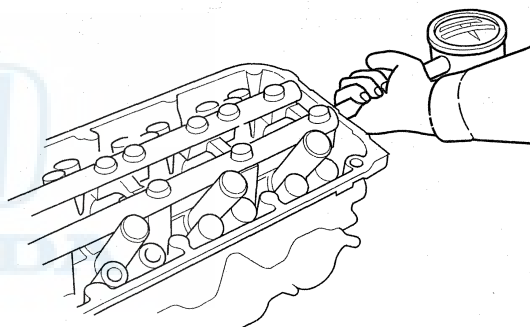
10. Clean the camshaft bearing surfaces in the cylinder head. Measure the inside diameter of each camshaft bearing surface, and check for an out-of-round condition.

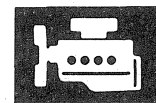
- If the camshaft-to-holder clearance is within limits, go to step 12.
- If the camshaft-to-holder clearance is beyond the service limit and the camshaft has been replaced, replace the cylinder head.
- If the camshaft-to-holder clearance is beyond the service limit and the camshaft has not been replaced, go to step 11.

Camshaft-to-Holder Oil Clearance

Standard (New): 0.050—0.089 mm
(0.0020—0.0035 in.)

Service Limit: 0.15 mm (0.006 in.)





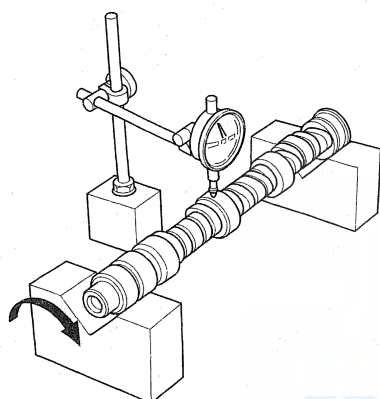
11. Check total runout with the camshaft supported on V-blocks.

- If the total runout of the camshaft is within the service limit, replace the cylinder head.
- If the total runout is beyond the service limit, replace the camshaft and recheck the oil clearance. If the oil clearance is still out of tolerance, replace the cylinder head.

Camshaft Total Runout

Standard (New): 0.03 mm (0.001 in.) max.

Service Limit: 0.04 mm (0.002 in.)



12. Measure cam lobe height.

Cam Lobe Height Standard (New):

	INTAKE	EXHAUST
PRI	35.041 mm (1.3796 in.)	36.326 mm (1.4302 in.)
MID	36.445 mm (1.4348 in.)	
SEC	35.284 mm (1.3891 in.)	

PRI: Primary

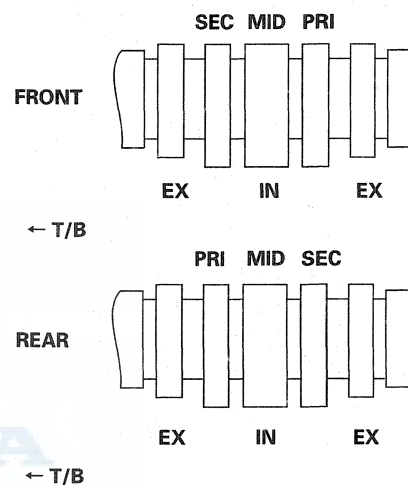
MID: Mid

SEC: Secondary

IN: Intake

EX: Exhaust

T/B: Timing Belt



Cylinder Head

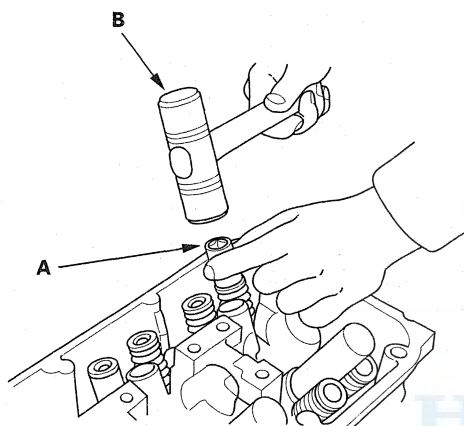
Valve, Spring, and Valve Seal Removal

Special Tools Required

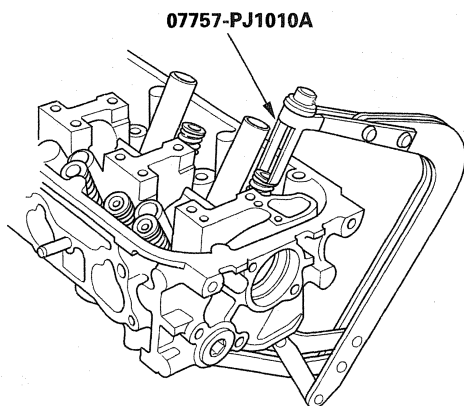
Valve spring compressor attachment
07757-PJ1010A

Identify the valves and valve springs as they are removed so that each item can be reinstalled in its original position.

1. Remove the cylinder head (see page 6-28).
2. Using an appropriate-sized socket (A) and plastic mallet (B), lightly tap the spring retainer to loosen the valve cotters.

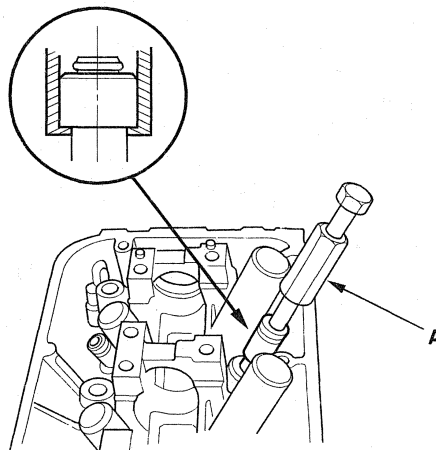


3. Install the valve spring compressor attachment and spring compressor. Compress the spring and remove the valve cotters.

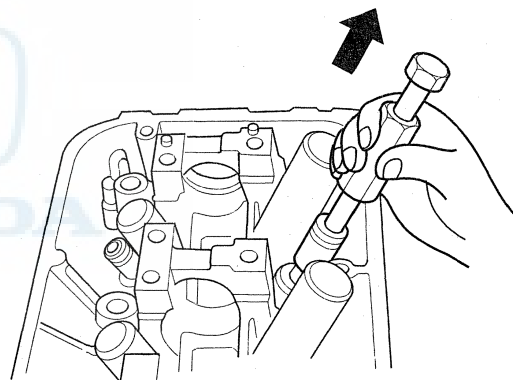


4. Remove the spring compressor and valve spring compressor attachment, then remove the spring retainer, valve spring, and valve.

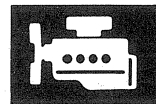
5. Install the valve guide seal remover (A).



6. Remove the valve seal.



7. Remove the valve spring seat.



Valve Inspection

1. Remove the valves (see page 6-40).

2. Measure the valve in these areas.

Intake Valve Dimensions

A Standard (New): 34.90—35.10 mm
(1.374—1.382 in.)

B Standard (New): 115.70—116.30 mm
(4.555—4.579 in.)

C Standard (New): 5.485—5.495 mm
(0.2159—0.2163 in.)

C Service Limit: 5.455 mm (0.2148 in.)

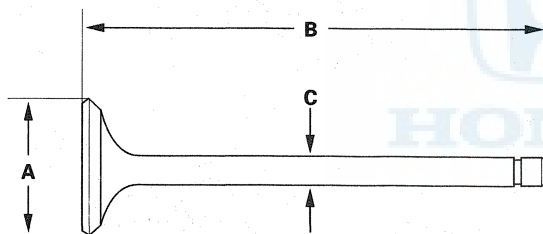
Exhaust Valve Dimensions

A Standard (New): 29.90—30.10 mm
(1.177—1.185 in.)

B Standard (New): 113.90—114.50 mm
(4.484—4.508 in.)

C Standard (New): 5.450—5.460 mm
(0.2146—0.2150 in.)

C Service Limit: 5.420 mm (0.2134 in.)



Valve Stem-to-Guide Clearance Inspection

1. Remove the valves (see page 6-40).

2. Slide the valve out of its guide about 10 mm (0.39 in.), then measure the guide-to-stem clearance with a dial indicator while rocking the stem in the direction of normal thrust (wobble method).

- If the measurement exceeds the service limit, recheck it using a new valve.
- If the measurement is now within the service limit, reassemble using a new valve.
- If the measurement with a new valve still exceeds the service limit, go to step 3.

Intake Valve Stem-to-Guide Clearance

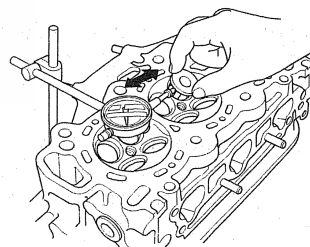
Standard (New): 0.04—0.09 mm
(0.002—0.004 in.)

Service Limit: 0.16 mm (0.006 in.)

Exhaust Valve Stem-to-Guide Clearance

Standard (New): 0.11—0.16 mm
(0.004—0.006 in.)

Service Limit: 0.22 mm (0.009 in.)



3. Subtract the O.D. of the valve stem, measured with a micrometer, from the I.D. of the valve guide, measured with an inside micrometer or ball gauge. Take the measurements in three places along the valve stem and three places inside the valve guide. The difference between the largest guide measurement and the smallest stem measurement should not exceed the service limit.

Intake Valve Stem-to-Guide Clearance

Standard (New): 0.020—0.045 mm
(0.0008—0.0018 in.)

Service Limit: 0.08 mm (0.003 in.)

Exhaust Valve Stem-to-Guide Clearance

Standard (New): 0.055—0.080 mm
(0.0022—0.0031 in.)

Service Limit: 0.11 mm (0.004 in.)

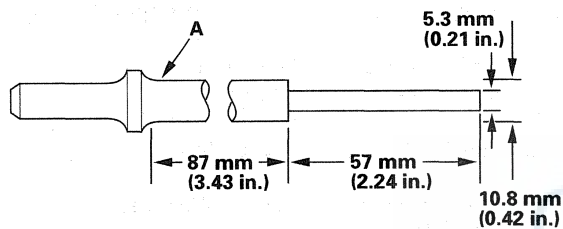
Cylinder Head

Valve Guide Replacement

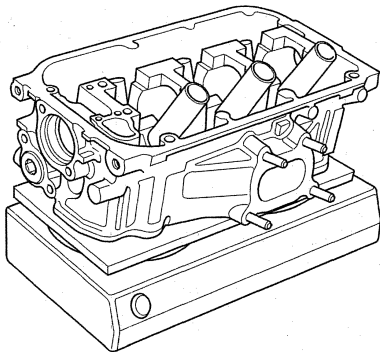
Special Tools Required

- Valve guide driver, 5.5 mm 07742-0010100
- Valve guide reamer, 5.5 mm 07HAH-PJ7A100

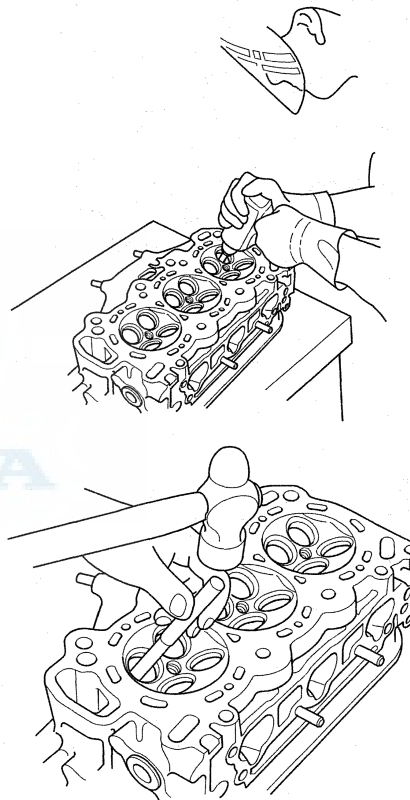
1. Inspect valve stem-to-guide clearance (see page 6-41).
2. As illustrated, use a commercially available air-impact valve guide driver (A) modified to fit the diameter of the valve guides. In most cases, the same procedure can be done using the special tool and a conventional hammer.



3. Select the proper replacement guides, and chill them in the freezer section of a refrigerator for about an hour.
4. Use a hot plate or oven to evenly heat the cylinder head to 300 °F (150 °C). Monitor the temperature with a cooking thermometer. Do not get the head hotter than 300 °F (150 °C); excessive heat may loosen the valve seats.



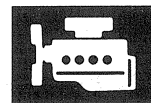
5. Working from the combustion chamber side, use the driver and an air hammer to drive the guide about 2 mm (0.1 in.) towards the combustion chamber. This will knock off some of the carbon and make removal easier. Hold the air hammer directly in line with the valve guide to prevent damaging the driver. Wear safety goggles or a face shield.
6. Turn the head over, and drive the guide out toward the camshaft side of the head.



7. If a valve guide still won't move, drill it out with a 8 mm (5/16 in.) bit, then try again.

NOTE: Drill guides only in extreme cases; you could damage the cylinder head if the guide breaks.

8. Take out the new guide(s) from the freezer, one at a time, as you need them.

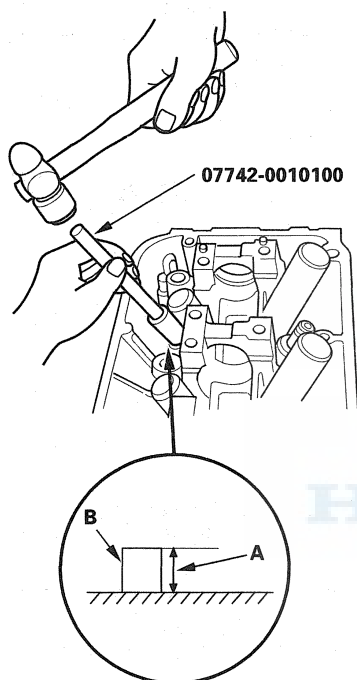


9. Apply a thin coat of new engine oil to the outside of the new valve guide. Install the guide from the camshaft side of the head; use the valve guide driver to drive the guide to the specified installed height (A) of the guide (B). If you have all 12 guides to do, you may have to reheat the head.

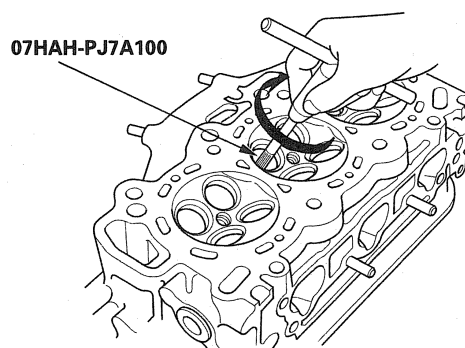
Valve Guide Installed Height

Intake: 21.20—22.20 mm (0.835—0.874 in.)

Exhaust: 20.60—21.60 mm (0.811—0.850 in.)



10. Coat both the reamer and the valve guide with cutting oil.
11. Rotate the reamer clockwise the full length of the valve guide bore.

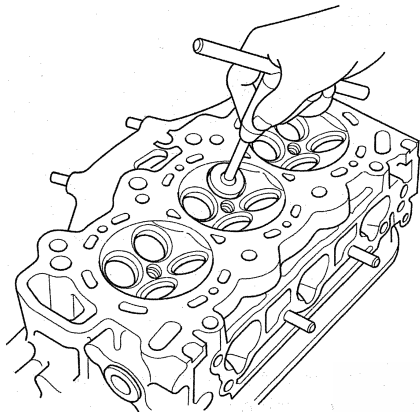


12. Continue to rotate the reamer clockwise while drawing it from the bore.
13. Thoroughly wash the guide in detergent and water to remove any cutting residue.
14. Check the clearance with a valve (see page 6-41). Verify that a valve slides in the intake and exhaust valve guides without sticking.

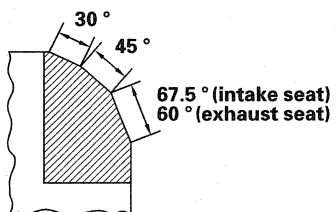
Cylinder Head

Valve Seat Reconditioning

1. Inspect valve stem-to-guide clearance (see page 6-41). If the valve guides are worn, replace them (see page 6-42) before cutting the valve seats.
2. Renew the valve seats in the cylinder head using a valve seat cutter.



3. Carefully cut a 45 ° seat, removing only enough material to ensure a smooth and concentric seat.
4. Bevel the upper edge of the seat with the 30 ° cutter and the lower edge of the seat with the 67.5 ° cutter (intake seat) or the 60 ° cutter (exhaust seat). Check the width of the seat and adjust accordingly.



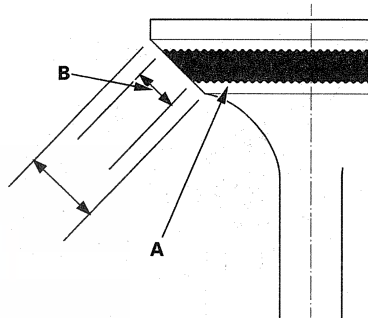
5. Make one more very light pass with the 45 ° cutter to remove any possible burrs caused by the other cutters.

Valve Seat Width

Standard (New): 1.25—1.55 mm (0.049—0.061 in.)

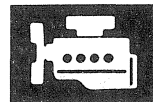
Service Limit: 2.00 mm (0.079 in.)

6. After resurfacing the seat, inspect it for even valve seating. Apply Prussian Blue compound (A) to the valve face. Insert the valve in its original location in the head, then lift it and snap it closed against the seat several times.



7. The actual valve seating surface (B), as shown by the blue compound, should be centered on the seat.
 - If it is too high (closer to the valve stem), you must make a second cut with the 67.5 ° cutter (intake seat) or the 60 ° cutter (exhaust seat) to move it down, then one more cut with the 45 ° cutter to restore seat width.
 - If it is too low (closer to the valve edge), you must make a second cut with the 30 ° cutter to move it up, then one more cut with the 45 ° cutter to restore seat width.

NOTE: The final cut should always be made with the 45 ° cutter.



8. Insert the intake and exhaust valves in the head, and measure the valve stem installed height (A).

Intake Valve Stem Installed Height

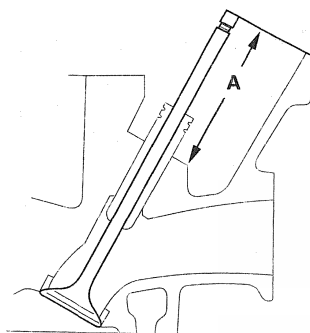
Standard (New): 46.75—47.55 mm
(1.841—1.872 in.)

Service Limit: 47.80 mm (1.882 in.)

Exhaust Valve Stem Installed Height

Standard (New): 46.68—47.48 mm
(1.838—1.869 in.)

Service Limit: 47.73 mm (1.879 in.)



9. If the valve stem installed height is over the service limit, replace the valve and recheck. If it is still over the service limit, replace the cylinder head; the valve seat in the head is too deep.

Cylinder Head

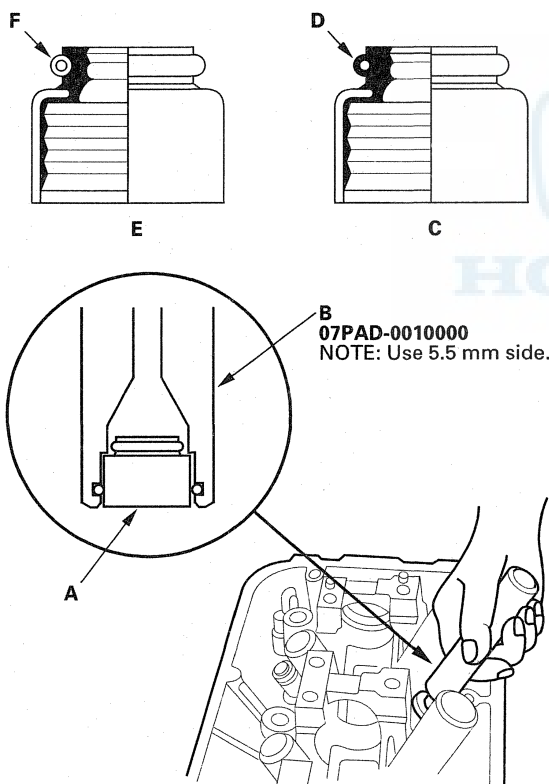
Valve, Spring, and Valve Seal Installation

Special Tools Required

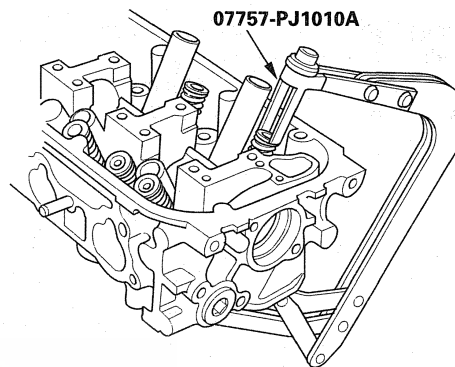
- Stem seal driver 07PAD-0010000
- Valve spring compressor attachment 07757-PJ1010A

1. Coat the valve stems with new engine oil. Install the valves in the valve guides.
2. Check that the valves move up and down smoothly.
3. Install the spring seats on the cylinder head.
4. Install the new valve seals (A) using the stem seal driver (B).

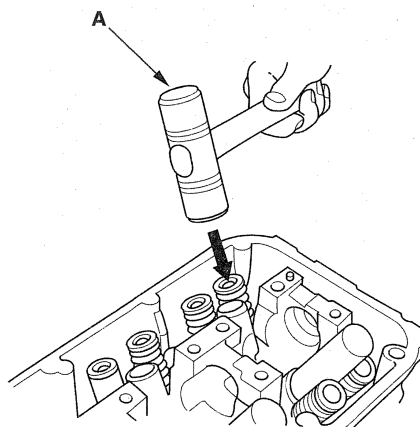
NOTE: Exhaust valve seals (C) have a black spring (D) and intake valve seals (E) have a white spring (F); they are not interchangeable.



5. Install the valve spring and valve retainer. Place the end of the valve spring with closely wound coils toward the cylinder head.
6. Install the valve spring compressor attachment and spring compressor. Compress the spring and install the valve cotters.



7. Remove the valve spring compressor and valve spring compressor attachment.
8. Lightly tap the end of each valve stem two or three times with a plastic mallet (A) to ensure proper seating of the valve and valve cotters. Tap the valve stem only along its axis so you do not bend the stem.



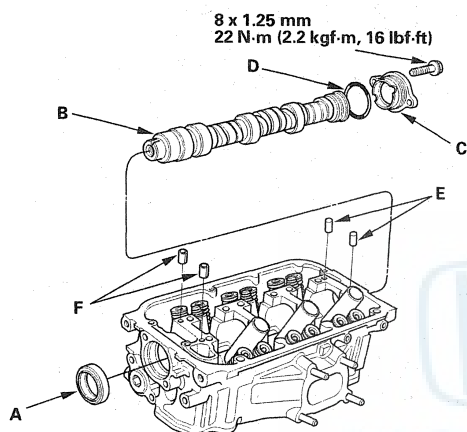


Camshaft, Rocker Arm Assembly, Camshaft Seal, and Pulley Installation

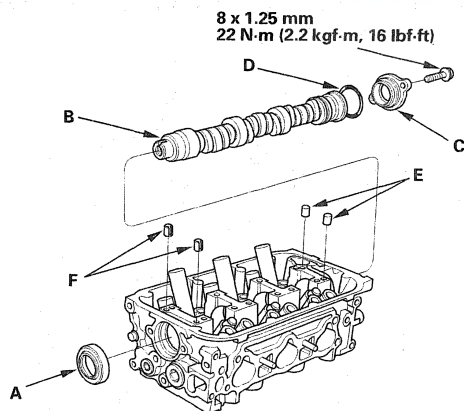
1. Apply a light coat of new engine oil around the camshaft oil seal.
2. Gently tap the new camshaft oil seal (A) into the cylinder head.

- 1 Tap the camshaft oil seal in squarely.
- 2 Install the oil seal about 0.5 —1.5 mm (0.02—0.06 in.) below the surface of the cylinder head.

FRONT



REAR



3. Insert the camshaft (B) into the cylinder head, then install the camshaft thrust cover (C). Always use a new O-ring (D). Apply new engine oil to the journals and cam lobes.
4. Check that the oil seal lips are not distorted.
5. Install the solid dowel pins (E) and the hollow dowel pins (F).

6. Loosen the valve adjusting screws.

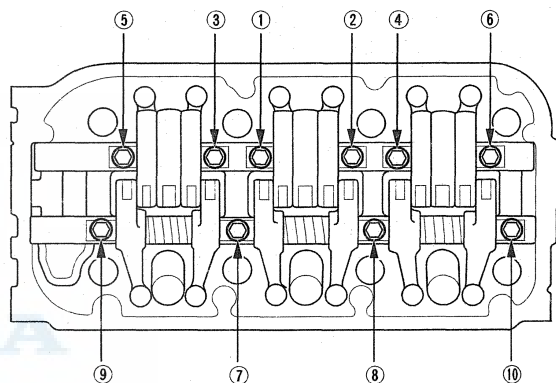
7. If the rocker arm assembly is disassembled, reassemble the rocker arm assembly (see page 6-34).

8. Set the rocker arm assembly in place, and loosely install the bolts. Make sure the rocker arms are properly positioned on the valve stems.

9. Torque each bolt two turns at a time in the sequence shown to ensure that the rockers do not bind on the valves.

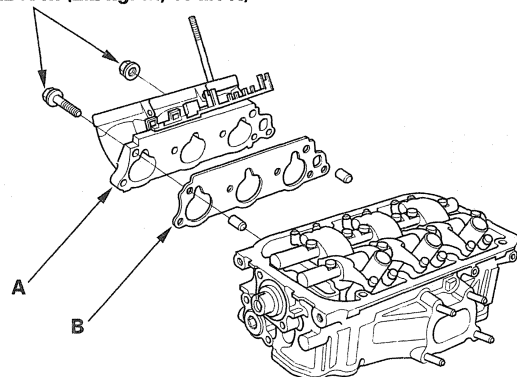
Specified Torque

8 x 1.25 mm: 24 N·m (2.4 kgf·m, 18 lbf·ft)



10. Install the injector base (A). Always use a new gasket (B).

8 x 1.25 mm
22 N·m (2.2 kgf·m, 16 lbf·ft)

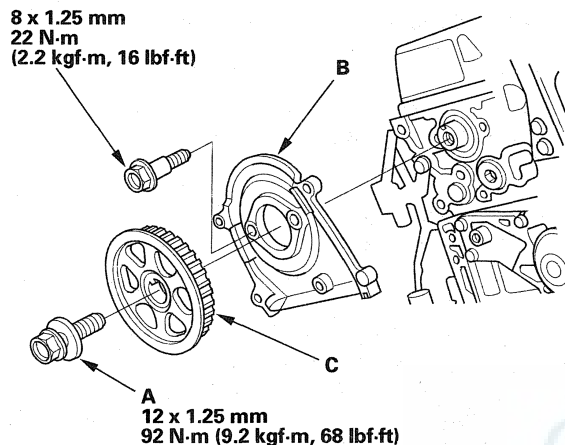


(cont'd)

Cylinder Head

Camshaft, Rocker Arm Assembly, Camshaft Seal, and Pulley Installation (cont'd)

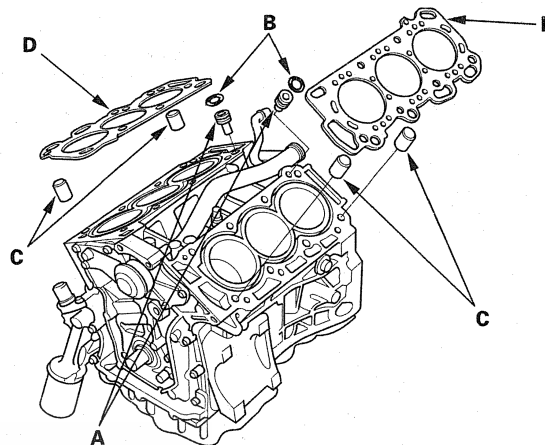
11. Apply new engine oil to the threads of the camshaft pulley mounting bolt (A). Install the back cover (B), then install the camshaft pulley (C).



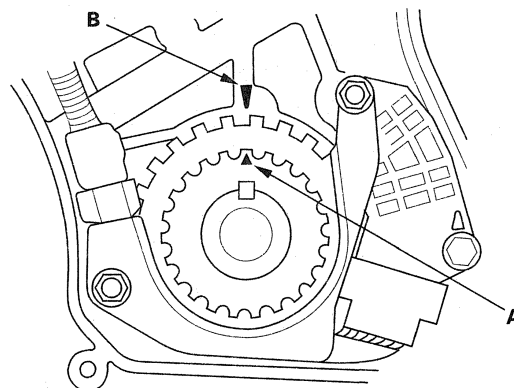
12. Set the camshaft pulleys to top dead center (TDC) before bolting them onto the engine block (see step 6 on page 6-49).

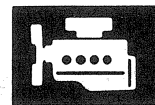
Cylinder Head Installation

1. Clean the cylinder head and engine block surface.
2. Clean and install the oil control orifices (A) with new O-rings (B).



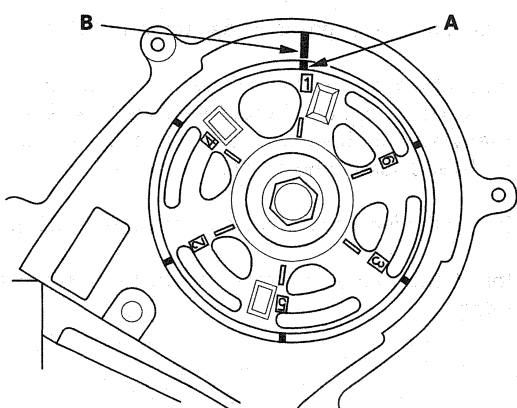
3. Install the dowel pins (C) and new cylinder head gaskets (D).
4. Clean the timing belt pulleys, timing belt guide plate, and the upper and lower covers.
5. Set the timing belt drive pulley to top dead center (TDC) by aligning the TDC mark (A) on the tooth of the timing belt drive pulley with the pointer (B) on the oil pump.



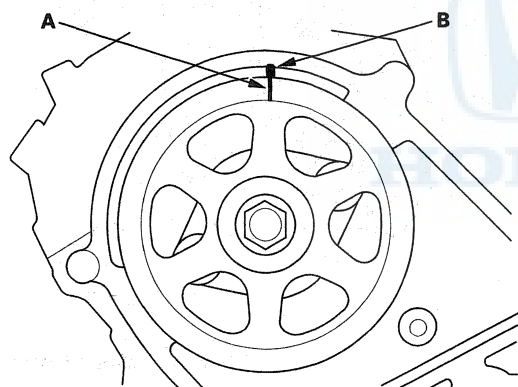


6. Set the camshaft pulleys to TDC by aligning the TDC marks (A) on the camshaft pulleys with the pointers (B) on the back covers.

FRONT

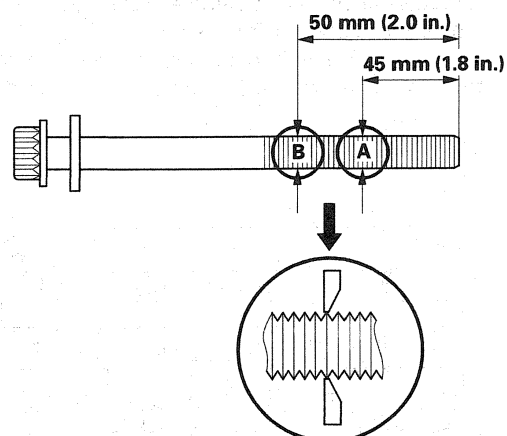


REAR



7. Install the cylinder heads on the engine block.

8. Measure the diameter of each cylinder head bolt at point A and point B.



9. If either diameter is less than 10.6 mm (0.42 in.), replace the cylinder head bolt.

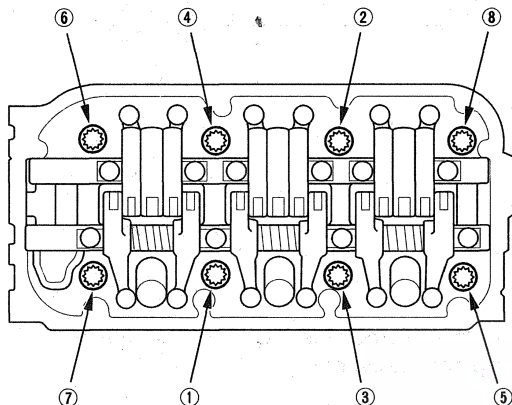
10. Apply new engine oil to the threads and under the bolt heads of all cylinder head bolts.

(cont'd)

Cylinder Head

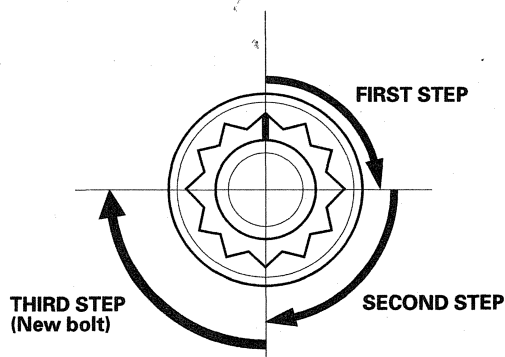
Cylinder Head Installation (cont'd)

11. Torque the cylinder head bolts in sequence to 30 N·m (3.0 kgf·m, 22 lbf·ft). Use a beam-type torque wrench. When using a preset-type torque wrench, be sure to torque slowly and do not overtorque. If a bolt makes any noise while you are torquing it, loosen the bolt and retorque it from the first step.

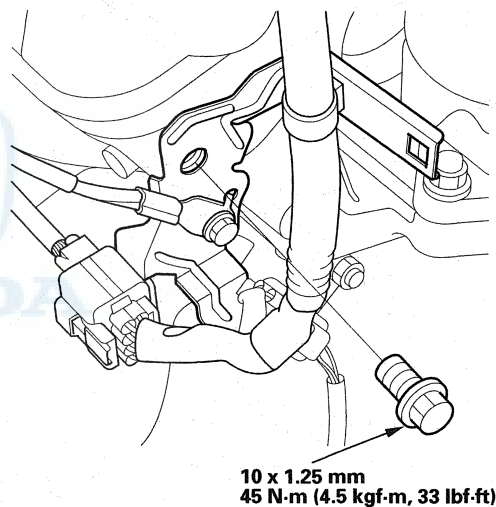


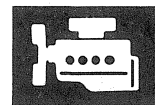
12. After torquing, torque all cylinder head bolts in two steps (90° per step). If you are using a new cylinder head bolt, torque the bolt an extra 90°.

NOTE: Remove the cylinder head bolt if you torqued it beyond the specified angle, and go back to step 8 of the procedure. Do not loosen it back to the specified angle.

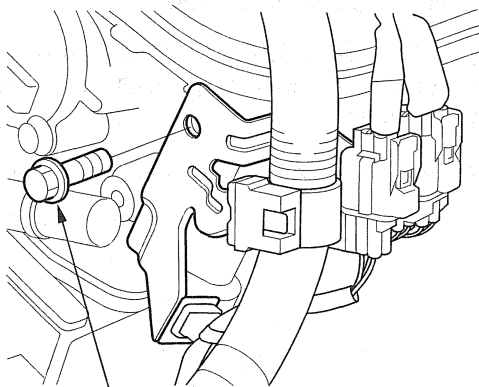


13. Install the timing belt (see page 6-16).
14. Adjust the valve clearance (see page 6-8).
15. Install the cylinder head covers (see page 6-26).
16. Install the water passage (see page 10-10).
17. Install the front warm up three way catalytic converter (front WU-TWC) (see page 11-412) and rear warm up three way catalytic converter (rear WU-TWC) (see page 11-413).
18. Install the fuel rails (see step 5 on page 11-222).
19. Install the connector bracket to the front cylinder head.



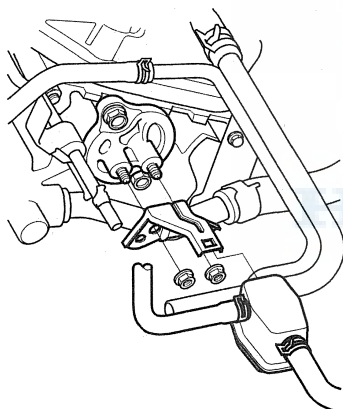


20. Install the harness clamp bracket to the rear cylinder head.

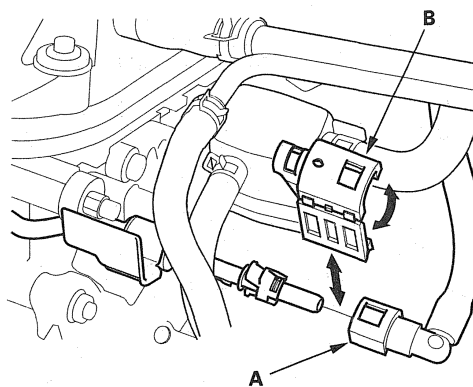


8 x 1.25 mm
22 N·m (2.2 kgf·m, 16 lbf·ft)

21. Install the evaporative emission (EVAP) canister purge valve joint.



22. Connect the fuel feed hose (A) (see page 11-381), then install the quick-connect fitting cover (B).



23. Connect the engine wire harness connectors, and install the wire harness clamps to the cylinder head.

- Six injector connectors
- Engine coolant temperature (ECT) sensor 1 connector
- Engine coolant temperature (ECT) sensor 2 connector
- Crankshaft position (CKP) sensor connector
- Exhaust gas recirculation (EGR) valve connector
- Rocker arm oil control solenoid connector
- Rocker arm oil pressure switch connector
- Oil pressure switch connector
- Two air fuel ratio (A/F) sensor connectors
- Two secondary heated oxygen sensor (secondary HO2S) connectors

24. Install the intake manifold (see page 9-6).

25. Install the alternator (see page 4-36).

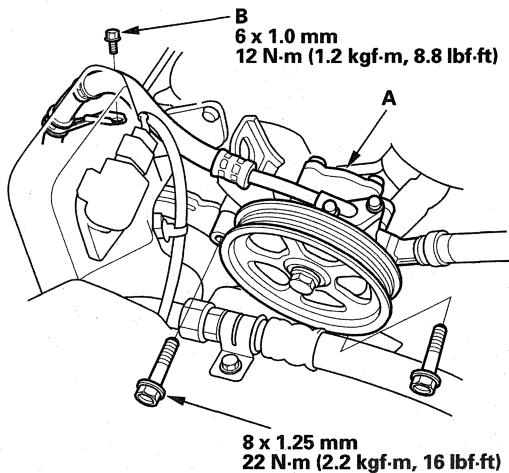
26. Install the six ignition coils (see page 4-19).

(cont'd)

Cylinder Head

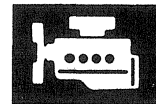
Cylinder Head Installation (cont'd)

27. Install the power steering (P/S) pump (A), and torque the bolt (B) securing the P/S hose bracket.



28. Install the drive belt (see page 4-32).
29. Clean the battery posts and cable terminals, then assemble them and apply grease to prevent corrosion.
30. After installation, check that all tubes, hoses, and connectors are installed correctly.
31. Inspect for fuel leaks. Turn the ignition switch ON (II) (do not operate the starter) so the fuel pump runs for about 2 seconds and pressurizes the fuel line. Repeat this operation three times, then check for fuel leakage at any point in the fuel line.
32. Refill the radiator with engine coolant, and bleed air from the cooling system with the heater valve open (see step 8 on page 10-7).
33. Do the crankshaft position (CKP) pattern clear/CKP pattern learn procedure (see page 11-5).
34. Do the powertrain control module (PCM) idle learn procedure (see page 11-359) and power window control unit reset procedure (see page 22-255).

35. Inspect the idle speed (see page 11-358).
36. Inspect the ignition timing (see page 4-18).
37. Enter the anti-theft codes for the audio system and the navigation system (if equipped), then enter the audio presets.
38. Set the clock (on vehicles without navigation).

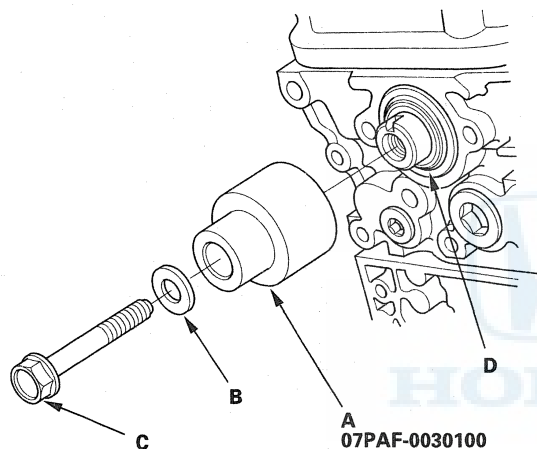


Camshaft Oil Seal Installation - In Car

Special Tools Required

Camshaft oil seal driver 07PAF-0030100

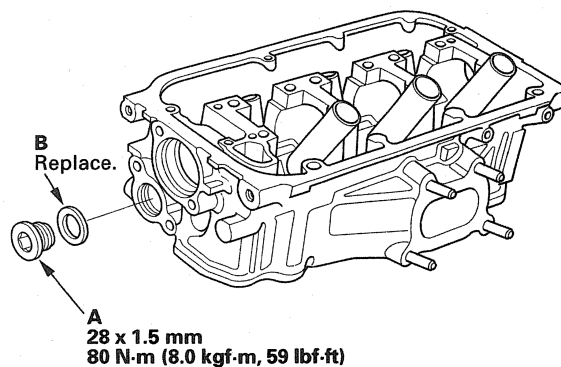
1. Dry the camshaft oil seal housing.
2. Apply a light coat of multipurpose grease to the lip of the camshaft oil seal.
3. Using the camshaft oil seal driver (A), washer (B), and a 12 x 75 x 1.25 mm bolt (C), press in the camshaft oil seal (D) about 0.5—1.5 mm (0.02—0.06 in.) below the surface of the cylinder head.



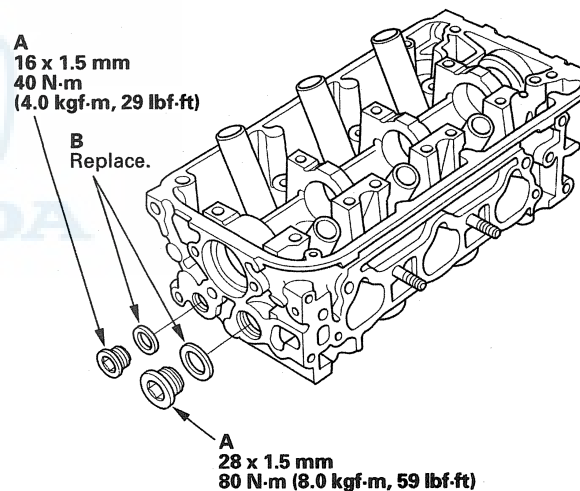
Sealing Bolt Installation

NOTE: When installing the sealing bolt (A), always use new washer (B).

FRONT



REAR



Engine Mechanical

Cylinder Head (J35A9 engine)	6-1
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Cylinder Head (J35Z1 engine)

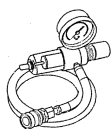
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Cylinder Head

Special Tools

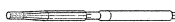
Ref. No.	Tool Number	Description	Qty
①	07AAJ-PNAA101	Air Pressure Regulator	1
②	07AAJ-RYPA100	VCM Air Adapter	1
③	07HAH-PJ7A100	Valve Guide Reamer, 5.5 mm	1
④	07JAA-001020A	Socket, 19 mm	1
⑤	07JAB-001020A	Holder Handle	1
⑥	07MAB-PY3010A	Holder Attachment, 50 mm, Offset	1
⑦	07PAD-0010000	Stem Seal Driver	1
⑧	07PAF-0030100	Camshaft Oil Seal Driver	1
⑨	07742-0010100	Valve Guide Driver, 5.5 mm	1
⑩	07757-PJ1010A	Valve Spring Compressor Attachment	1



①



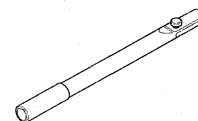
②



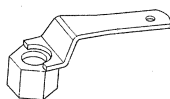
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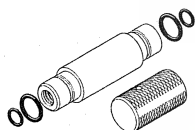
④



⑤



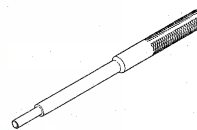
⑥



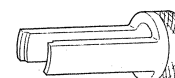
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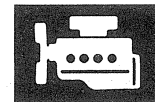
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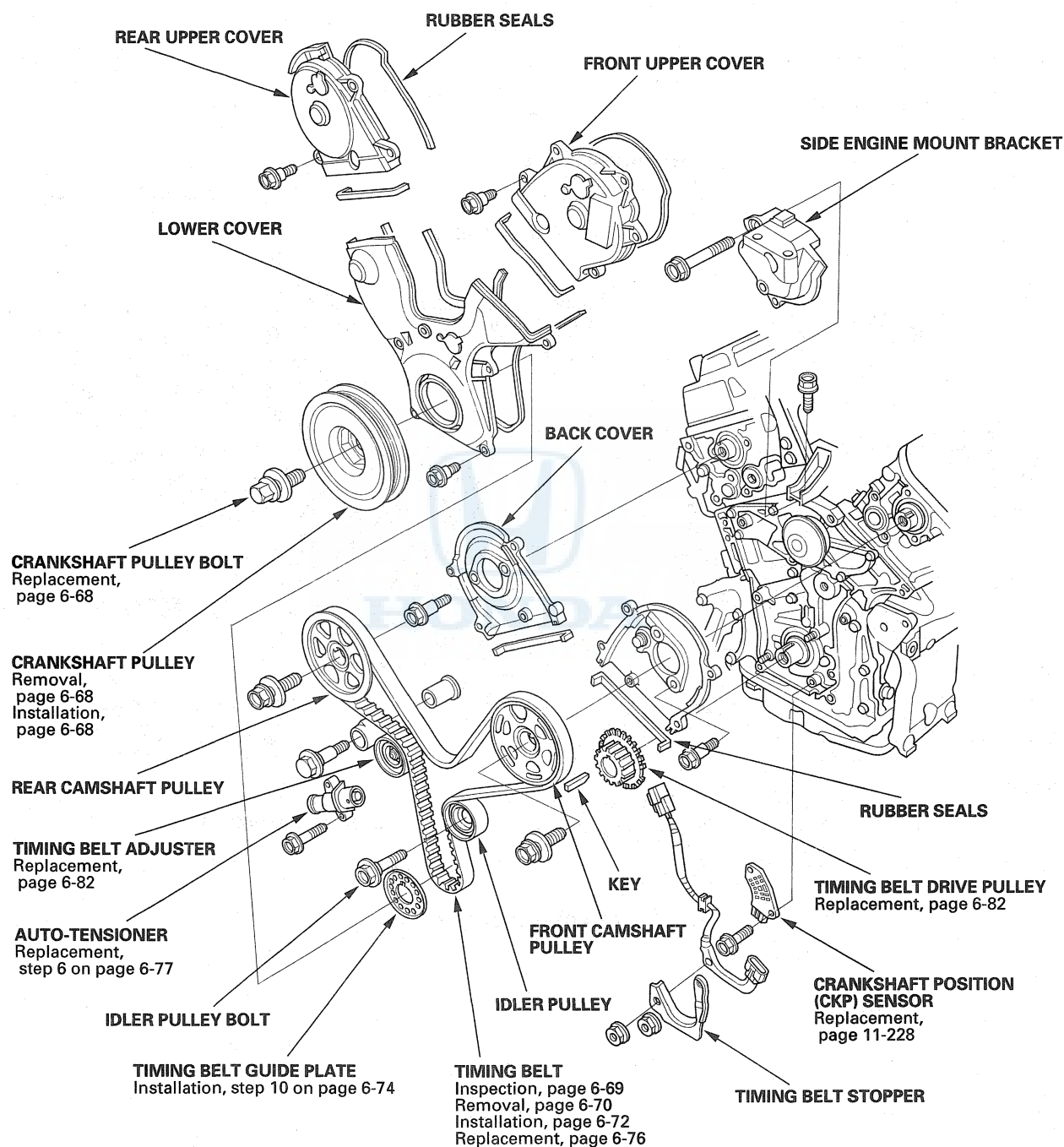
⑨



⑩



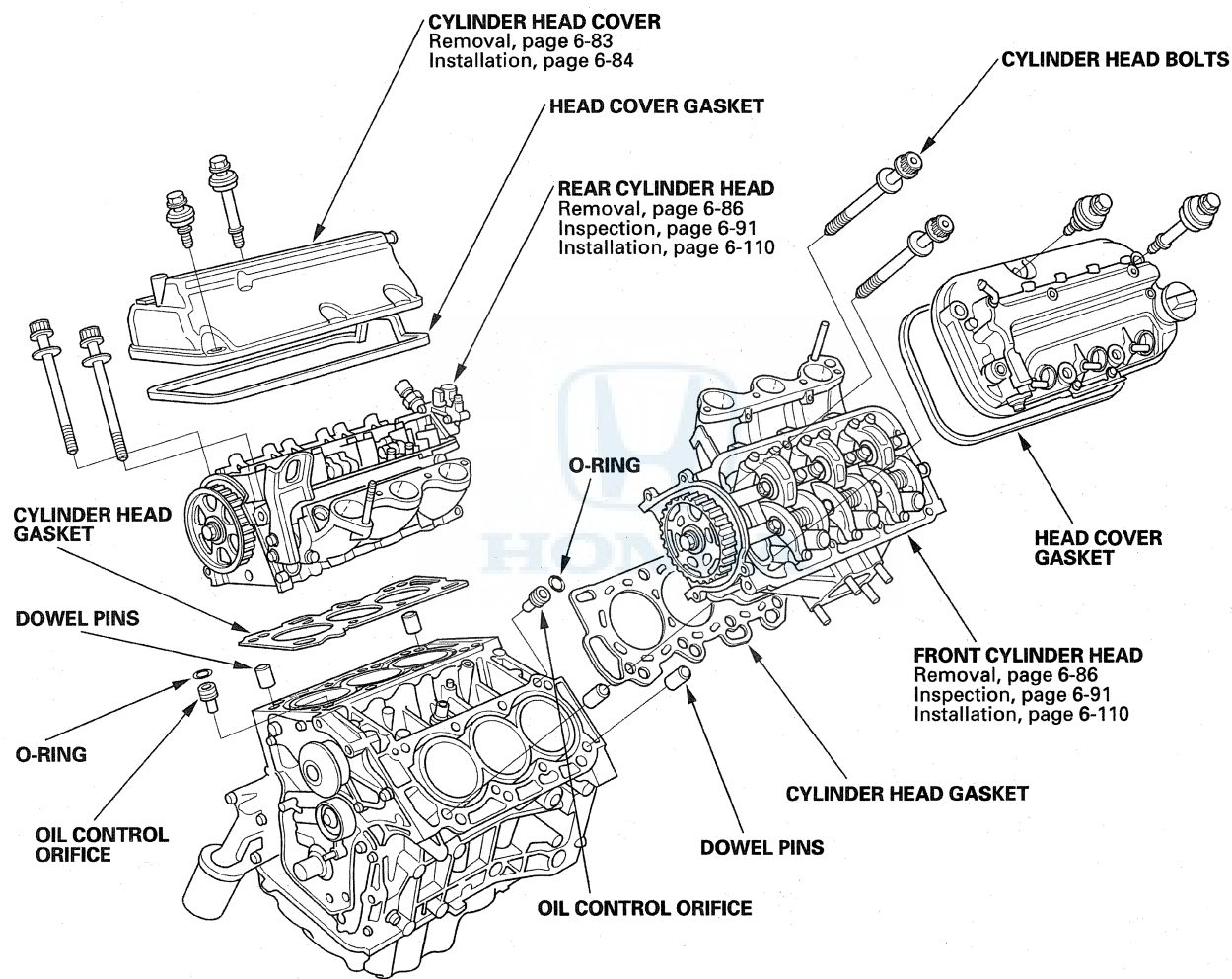
Component Location Index

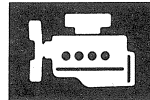


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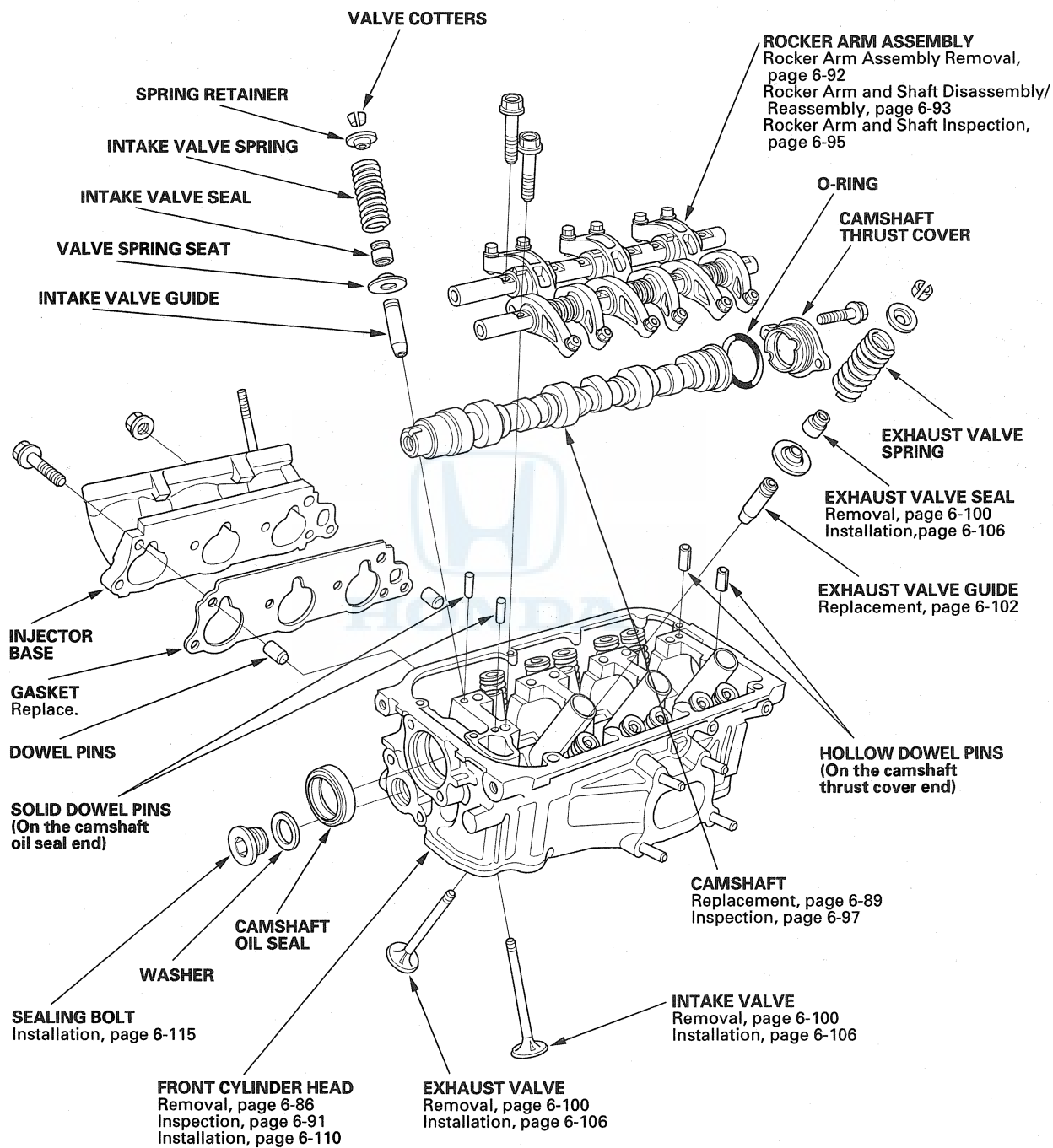
Cylinder Head

Component Location Index (cont'd)





FRONT

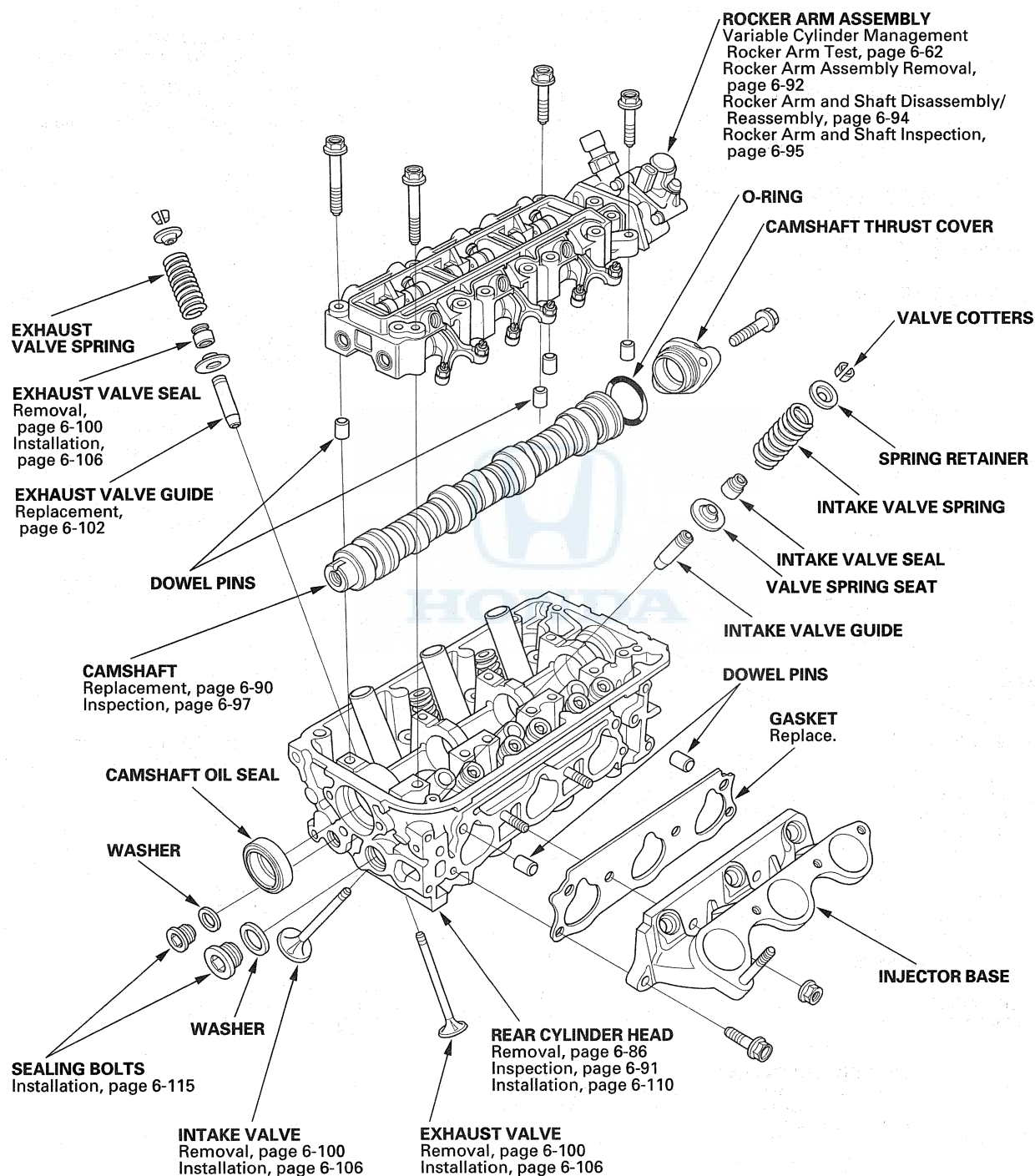


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Cylinder Head

Component Location Index (cont'd)

REAR

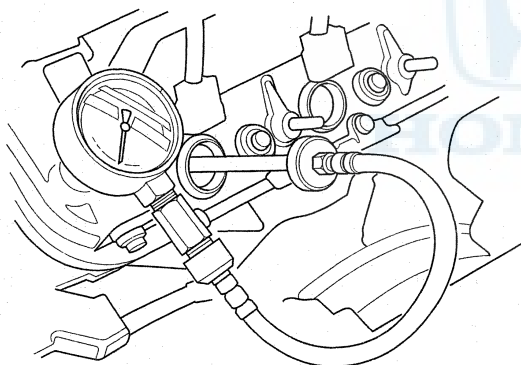




Engine Compression Inspection

NOTE: After the inspection, you must reset the powertrain control module (PCM). Otherwise, the PCM will continue to stop the fuel injectors from operating.

1. Warm up the engine to normal operating temperature (cooling fan comes on).
2. Turn the ignition switch OFF.
3. Connect the Honda Diagnostic System (HDS) to the data link connector (DLC) (see step 2 on page 11-3).
4. Turn the ignition switch ON (II), and select PGM-FI, INSPECTION, then ALL INJECTORS OFF on the HDS.
5. Turn the ignition switch OFF.
6. Remove the six ignition coils (see page 4-19).
7. Remove the six spark plugs.
8. Attach the compression gauge to a spark plug hole.



9. Open the throttle fully, then crank the engine with the starter motor, and measure the compression.

Compression Pressure:
Above 930 kPa (9.5 kgf/cm², 135 psi)

10. Measure the compression on the remaining cylinders.

Maximum Variation:
Within 200 kPa (2.0 kgf/cm², 28 psi)

11. If the compression is not within specifications, check the following items, then remeasure the compression.
 - Damaged or worn valves and seats
 - Damaged cylinder head gaskets
 - Damaged or worn piston rings
 - Damaged or worn piston and cylinder bore
12. Select PCM reset (see page 11-4) to cancel the ALL INJECTORS OFF on the HDS.

Cylinder Head

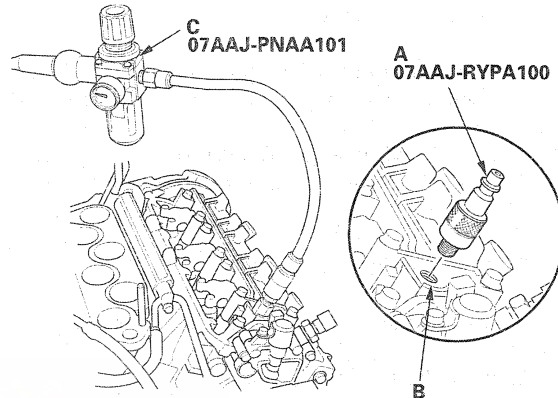
Variable Cylinder Management Rocker Arm Test

Special Tools Required

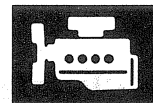
- Air pressure regulator 07AAJ-PNAA101
- VCM air adapter 07AAJ-RYPA100

1. Remove the front and rear ignition coils and spark plugs (see page 4-19).
2. Remove the rear cylinder head cover (see page 6-83).
3. At the steering pump pulley, rotate the engine clockwise with a 19 mm wrench; watch the rear bank intake and exhaust rocker arms open and close through a full rotation.
 - If any of the rear bank rocker arms are disengaged, remove the rocker arm assembly (see page 6-92), and inspect the rocker arms and shafts (see page 6-95).
 - If the rocker arms are functioning normally, go to step 4.

4. Install the VCM air adapter (A) into the inspection hole (B), and then connect the air pressure regulator (C) to the adapter.



5. Connect the air pressure to the regulator and adjust the pressure to 345 kPa (3.5 kgf/cm², 50 psi).
6. Rotate the engine clockwise with a 19 mm wrench; watch the rear bank intake and exhaust rocker arms through a full rotation. The rocker arms should be disengaging as the pistons in the rear bank go past TDC.
 - If any of the rear bank rocker arms are engaged, remove the rocker arm assembly (see page 6-92), and inspect the rocker arms and shafts (see page 6-95).
 - If the entire rear bank rocker arms are disengaged, the system is OK.
7. Remove the air pressure regulator and adapter.
8. Install the cylinder head cover (see page 6-84).
9. Install the spark plugs (see page 4-22) and ignition coils (see page 4-19).



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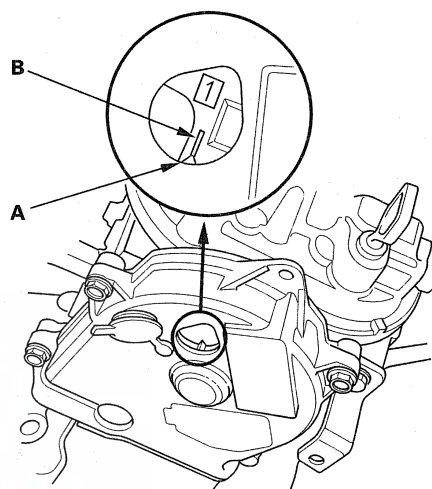


Cylinder Head

Valve Clearance Adjustment

NOTE: Adjust the valves only when the cylinder head temperature is less than 100 °F (38 °C).

1. Remove the cylinder head covers (see page 6-83).
2. Set the No. 1 piston at top dead center (TDC). Align the pointer (A) on the front upper cover with the No. 1 piston TDC mark (B) on the front camshaft pulley.





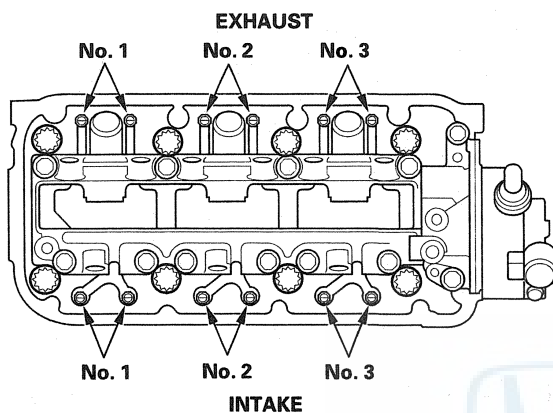
3. Select the correct thickness feeler gauge for the valves you're going to check.

Valve Clearance

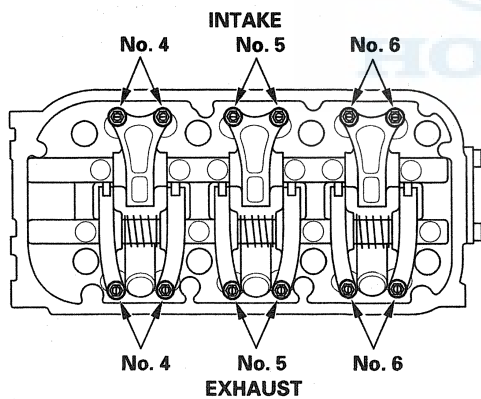
Intake: 0.20–0.24 mm (0.008–0.009 in.)

Exhaust: 0.28–0.32 mm (0.011–0.013 in.)

REAR

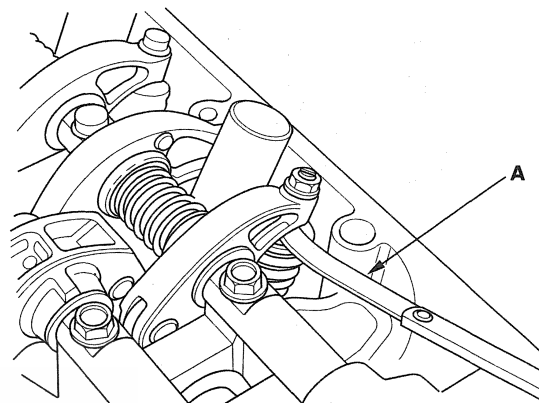


FRONT

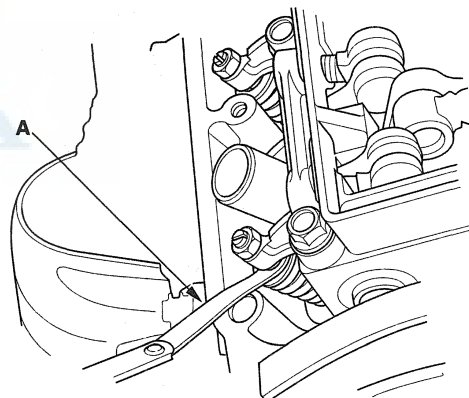


4. Insert the feeler gauge (A) between the adjusting screw and the end of the valve stem on the No. 1 cylinder, and slide it back and forth; you should feel a slight amount of drag.

FRONT



REAR



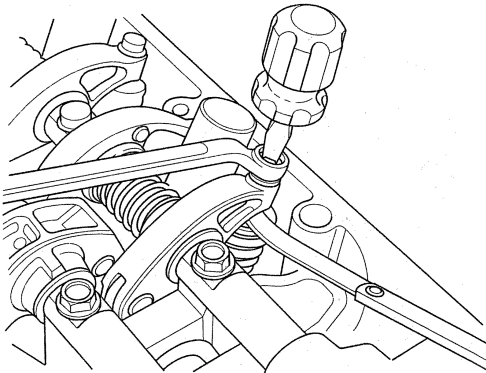
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Cylinder Head

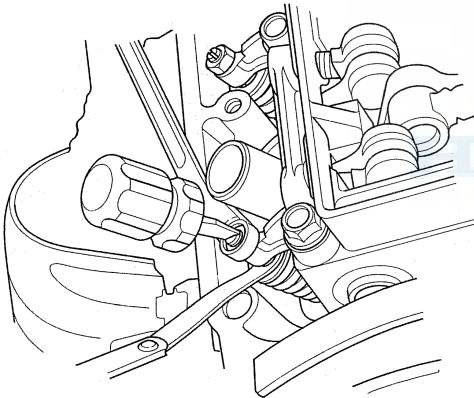
Valve Clearance Adjustment (cont'd)

5. If you feel too much or too little drag, loosen the locknut, and turn the adjusting screw until the drag on the feeler gauge is correct.

FRONT



REAR



6. While holding the adjusting screw with the screw driver, torque the locknut and recheck the clearance. Repeat the adjustment, if necessary.

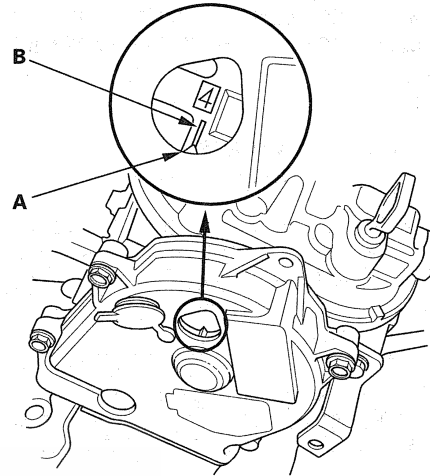
Specified Torque

Front: 14 N·m (1.4 kgf·m, 10 lbf·ft)

Apply new engine oil to the nut threads.

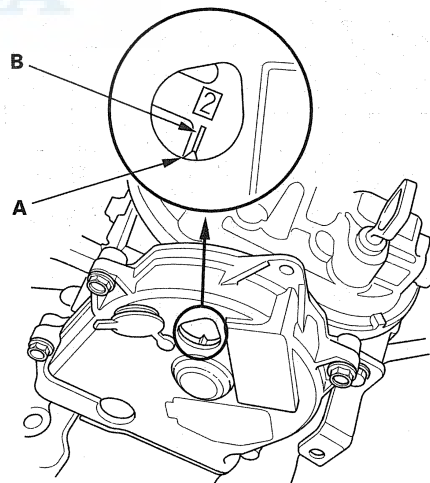
Rear: 20 N·m (2.0 kgf·m, 15 lbf·ft)

7. Rotate the crankshaft clockwise. Align the pointer (A) on the front upper cover with the No. 4 piston TDC mark (B) on the front camshaft pulley.

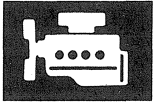


8. Check and, if necessary, adjust the valve clearance on the No. 4 cylinder.

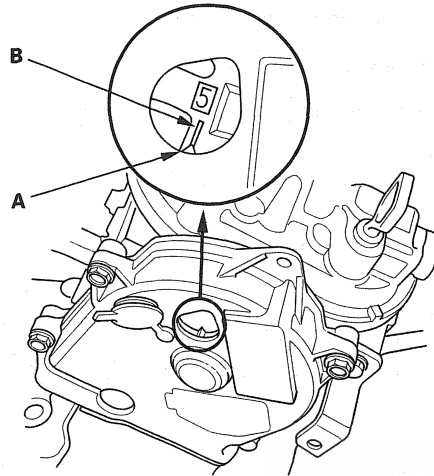
9. Rotate the crankshaft clockwise. Align the pointer (A) on the front upper cover with the No. 2 piston TDC mark (B) on the front camshaft pulley.



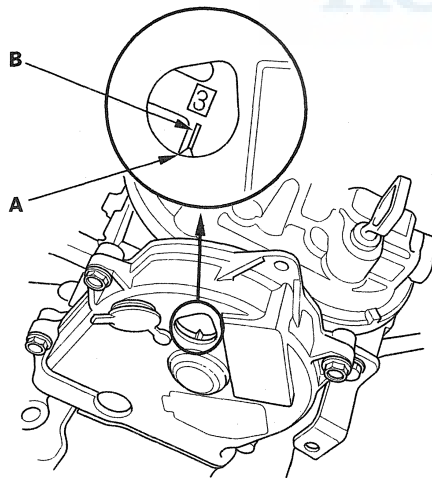
10. Check and, if necessary, adjust the valve clearance on the No. 2 cylinder.



11. Rotate the crankshaft clockwise. Align the pointer (A) on the front upper cover with the No. 5 piston TDC mark (B) on the front camshaft pulley.

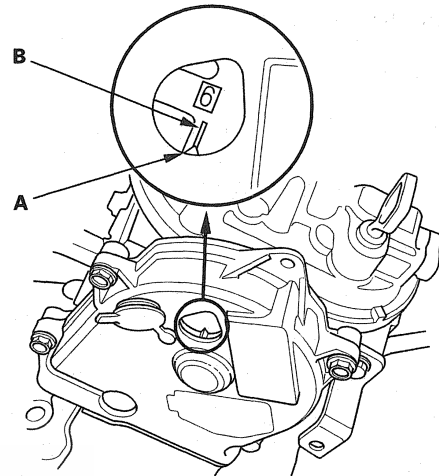


12. Check and, if necessary, adjust the valve clearance on the No. 5 cylinder.
13. Rotate the crankshaft clockwise. Align the pointer (A) on the front upper cover with the No. 3 piston TDC mark (B) on the front camshaft pulley.



14. Check and, if necessary, adjust the valve clearance on the No. 3 cylinder.

15. Rotate the crankshaft clockwise. Align the pointer (A) on the front upper cover with the No. 6 piston TDC mark (B) on the front camshaft pulley.



16. Check and, if necessary, adjust the valve clearance on the No. 6 cylinder.
17. Install the cylinder head covers (see page 6-84).

Cylinder Head

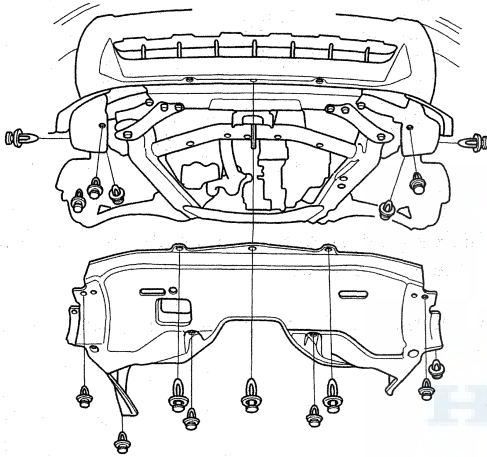
Crankshaft Pulley Removal and Installation

Special Tools Required

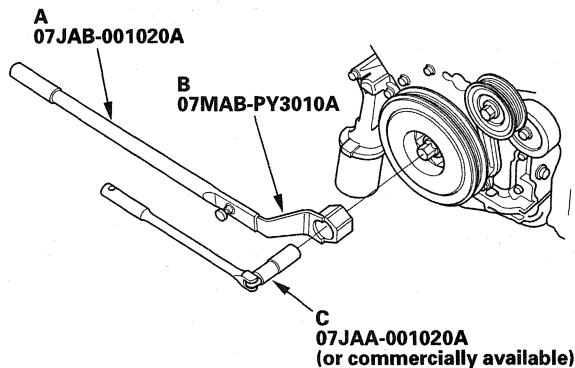
- Holder handle 07JAB-001020A
- Holder attachment, 50 mm, offset 07MAB-PY3010A
- Socket, 19 mm 07JAA-001020A, or a commercially available 19 mm socket

Removal

1. Raise the vehicle on the lift to full height.
2. Remove the right front wheel.
3. Remove the splash shield.



4. Remove the drive belt (see page 4-32).
5. Hold the pulley with the holder handle (A) and holder attachment (B).

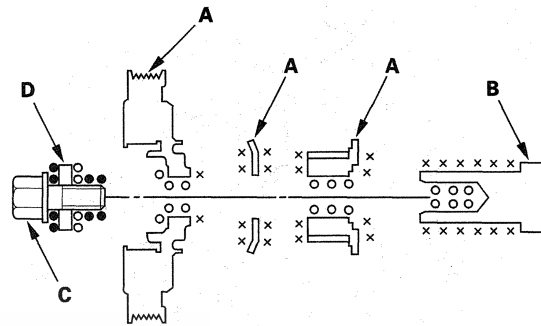


6. Remove the bolt with a heavy duty 19 mm socket (C) and breaker bar, then remove the crankshaft pulley.

Installation

1. Remove any oil and clean the pulleys (A), crankshaft (B), bolt (C), and washer (D). Lubricate with new engine oil as shown.

- ×: Remove any oil
- : Clean
- : Lubricate with new engine oil

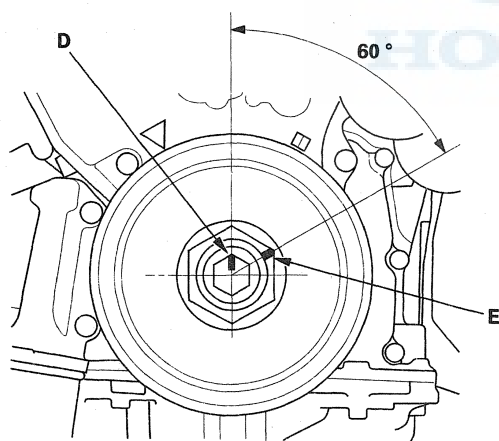
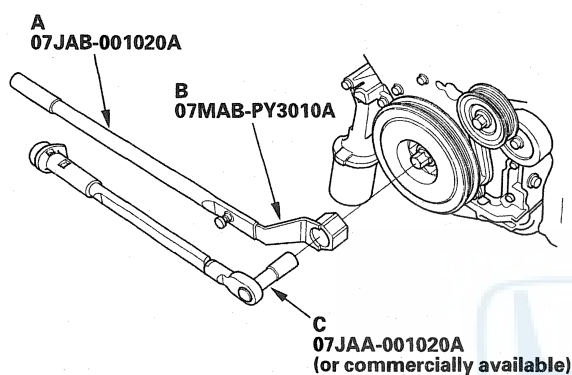




Timing Belt Inspection

2. Install the crankshaft pulley, and torque the bolt. Do not use an impact wrench.

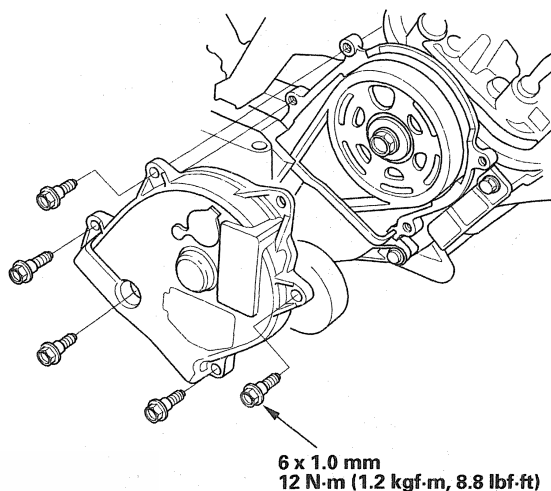
- 1 Hold the pulley with the holder handle (A) and holder attachment (B). Torque the bolt to 65 N·m (6.5 kgf·m, 48 lbf·ft) with a torque wrench and a 19 mm socket (C).
- 2 Mark the bolt head (D) and crankshaft pulley (E) as shown, then torque the bolt an additional 60° (The mark on the bolt head lines up with the mark on the crankshaft pulley).



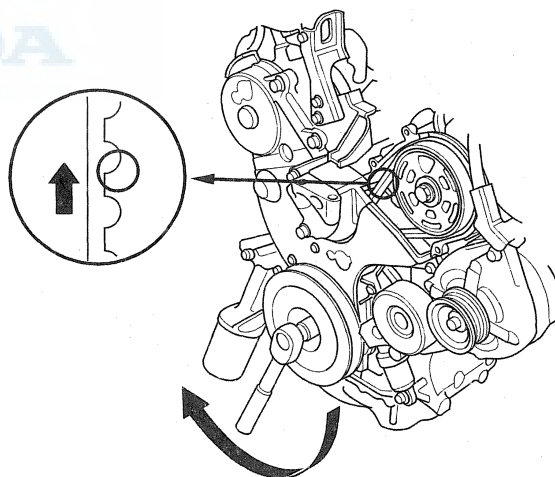
3. Install the drive belt (see page 4-32).
4. Install the splash shield.
5. Install the right front wheel.

1. Remove the drive belt (see page 4-32).

2. Remove the front upper cover.



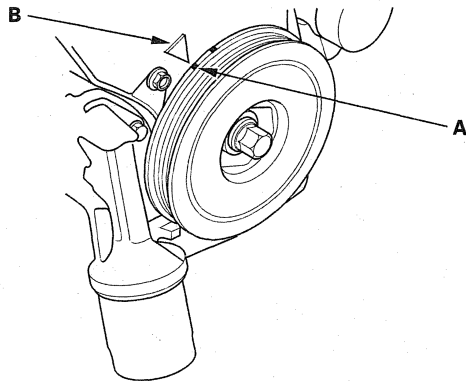
3. Inspect the timing belt for cracks and oil or coolant contamination. Replace the belt if it is cracked, or is contaminated with oil or coolant. Wipe off any oil or solvent that gets on the belt.



Cylinder Head

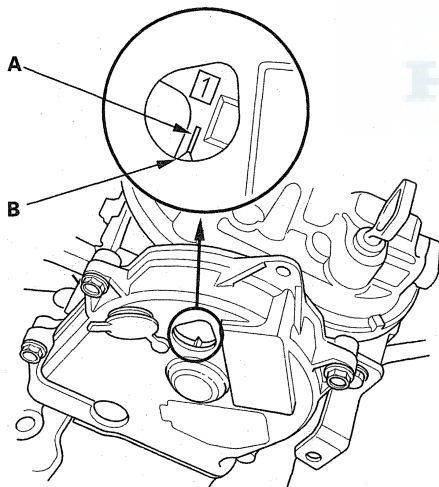
Timing Belt Removal

1. Turn the crankshaft so its white mark (A) lines up with the pointer (B).



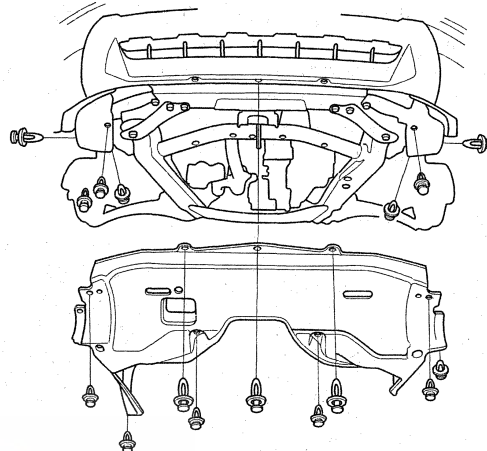
2. Check that the No. 1 piston top dead center (TDC) mark (A) on the front camshaft pulley and the pointer (B) on the front upper cover are aligned.

NOTE: If the marks are not aligned, rotate the crankshaft 360 degrees, and recheck the camshaft pulley mark.



3. Raise the vehicle on the lift, then remove the right front wheel.

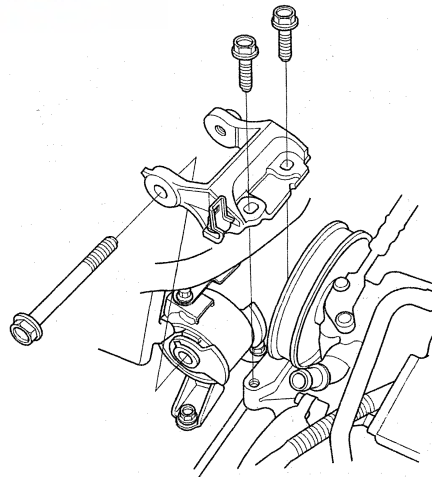
4. Remove the splash shield.



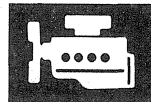
5. Remove the drive belt (see page 4-32).

6. Support the engine with a jack and wood block under the oil pan.

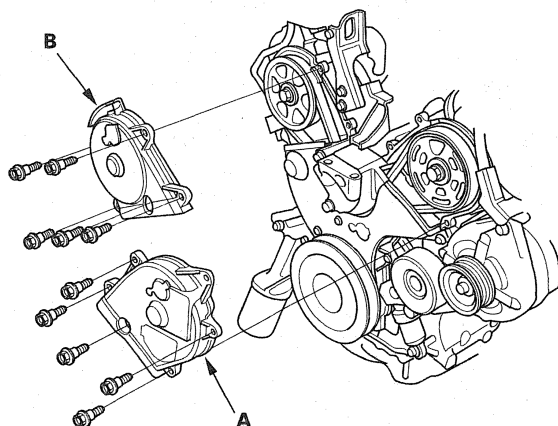
7. Remove the upper half of the side engine mount bracket.



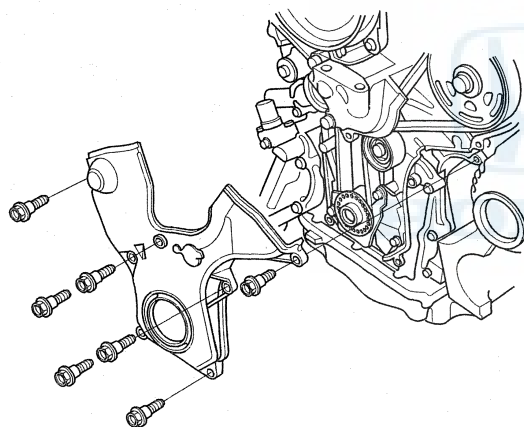
8. Remove the crankshaft pulley (see page 6-68).



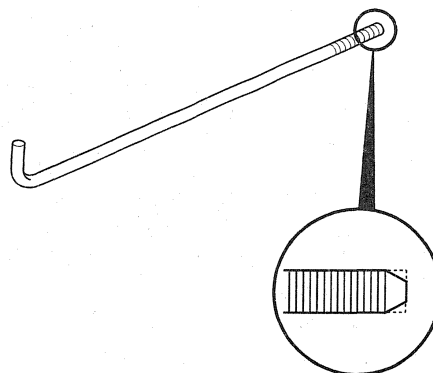
9. Remove the front upper cover (A) and rear upper cover (B).



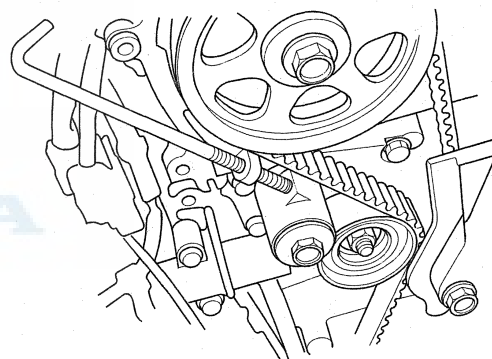
10. Remove the lower cover.



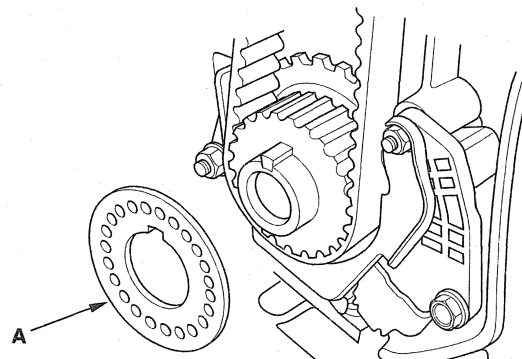
11. Remove one of the battery clamp bolts from the battery tray, and grind the end of it as shown.



12. Thread the battery clamp bolt in as shown to hold the timing belt adjuster in its current position. Torque it by hand, do not use a wrench.



13. Remove the timing belt guide plate (A).

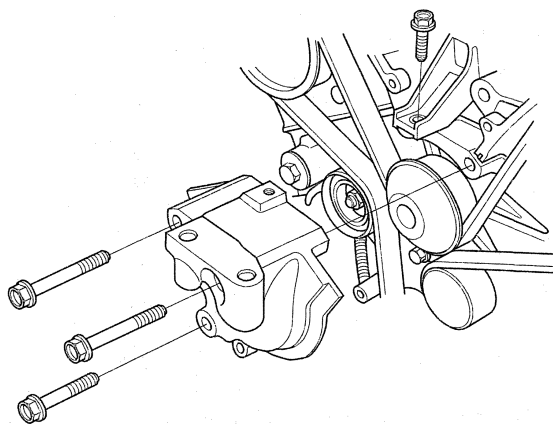


(cont'd)

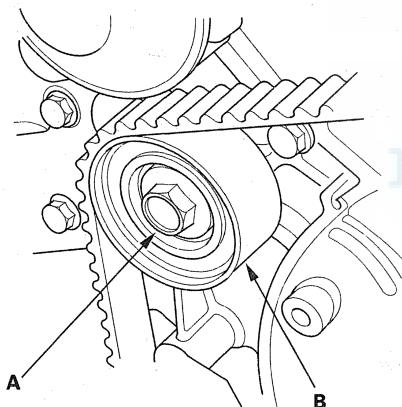
Cylinder Head

Timing Belt Removal (cont'd)

14. Remove the lower half of the side engine mount bracket.



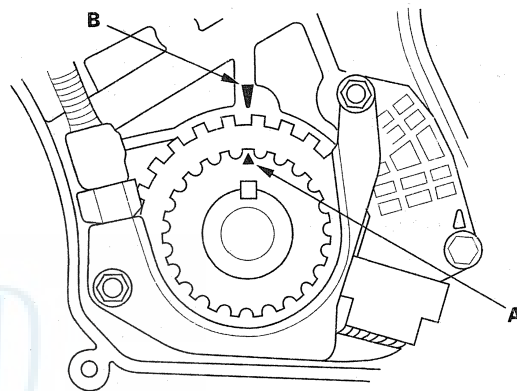
15. Remove the idler pulley bolt (A) and idler pulley (B), then remove the timing belt. Discard the idler pulley bolt.

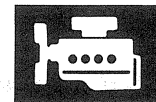


Timing Belt Installation

NOTE: The following procedure is for installing a used belt. If you are installing a new belt, refer to the timing belt replacement procedure (see page 6-76).

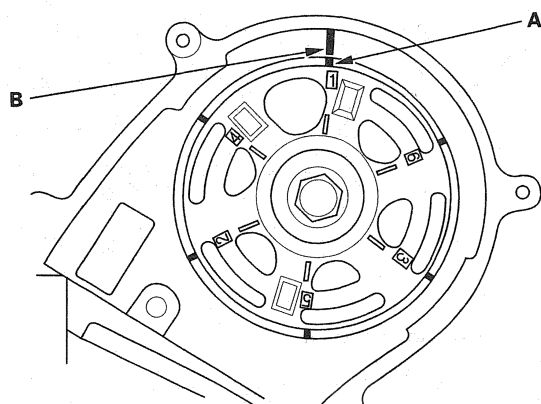
1. Clean the timing belt pulleys, timing belt guide plate, and the upper and lower covers.
2. Set the timing belt drive pulley to top dead center (TDC) by aligning the TDC mark (A) on the tooth of the timing belt drive pulley with the pointer (B) on the oil pump.



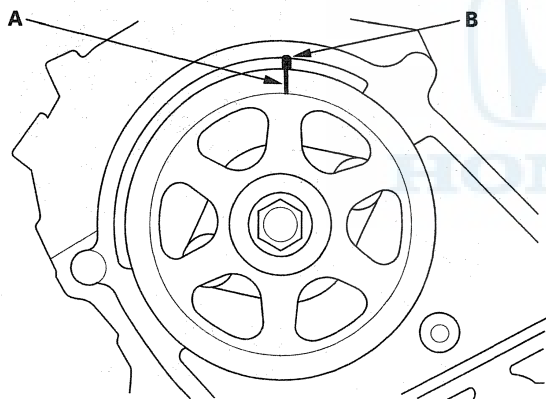


3. Set the camshaft pulleys to TDC by aligning the TDC marks (A) on the camshaft pulleys with the pointers (B) on the back covers.

FRONT

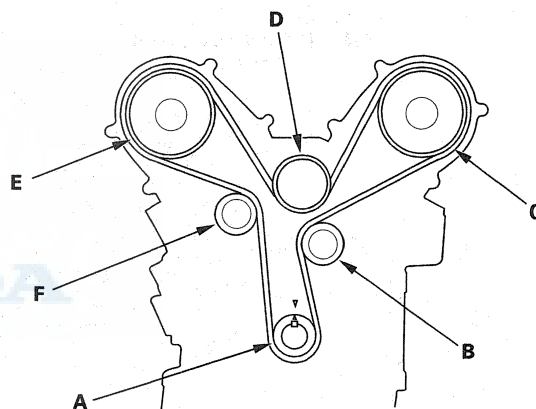


REAR

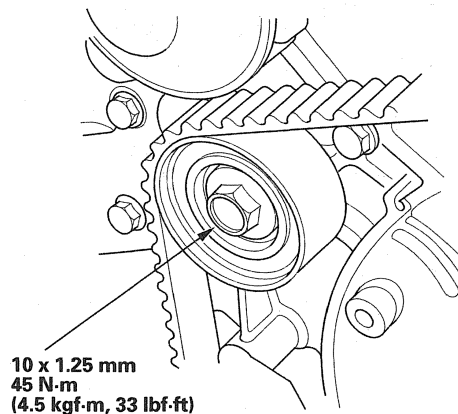


4. Loosely install the idler pulley with a new idler pulley bolt so the pulley can move but does not come off.
5. If the auto-tensioner has extended and the timing belt cannot be installed, do the timing belt replacement procedure (see page 6-76).
6. Install the timing belt in a counterclockwise sequence starting with the drive pulley. Take care not to damage the timing belt during installation.

- 1 Drive pulley (A)
- 2 Idler pulley (B)
- 3 Front camshaft pulley (C)
- 4 Water pump pulley (D)
- 5 Rear camshaft pulley (E)
- 6 Adjusting pulley (F)



7. Torque the idler pulley bolt.

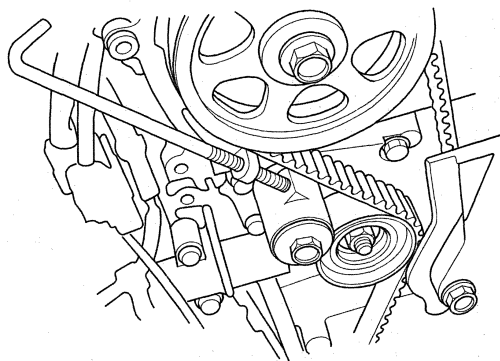


(cont'd)

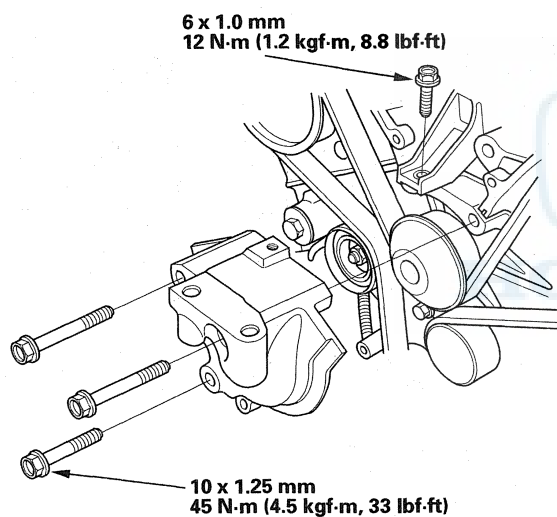
Cylinder Head

Timing Belt Installation (cont'd)

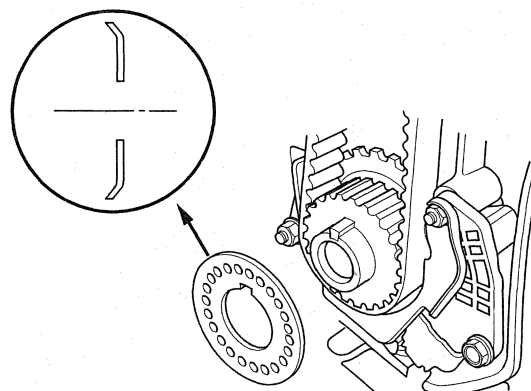
8. Remove the battery clamp bolt from the back cover.



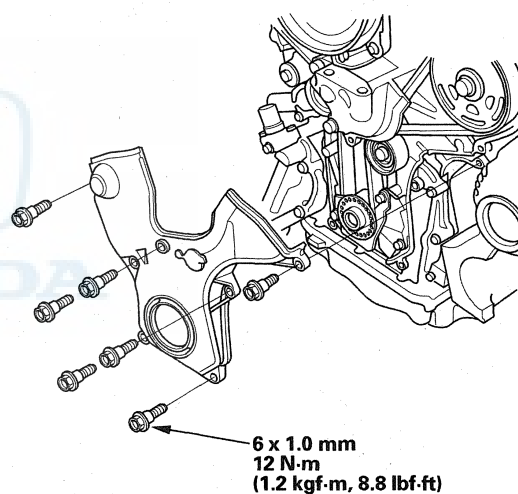
9. Install the lower half of the side engine mount bracket.

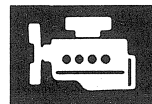


10. Install the timing belt guide plate as shown.

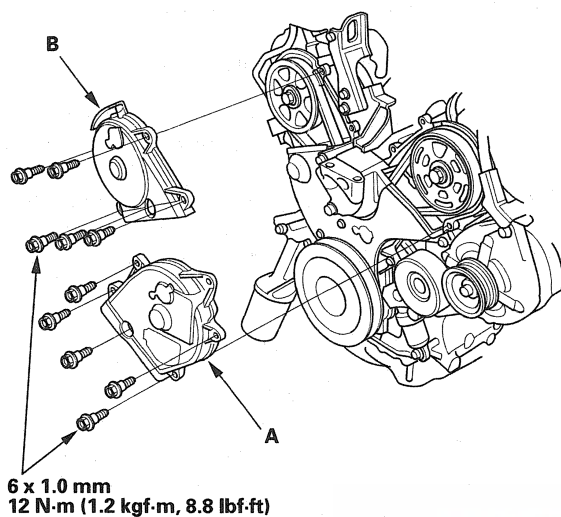


11. Install the lower cover.

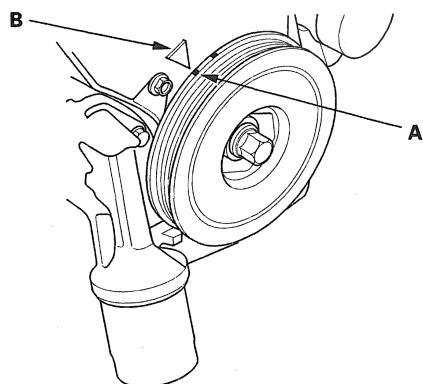




12. Install the front upper cover (A) and rear upper cover (B).



13. Install the crankshaft pulley (see page 6-68).
14. Rotate the crankshaft pulley about six turns clockwise so the timing belt positions itself on the pulleys.
15. Turn the crankshaft pulley so its white mark (A) lines up with the pointer (B).

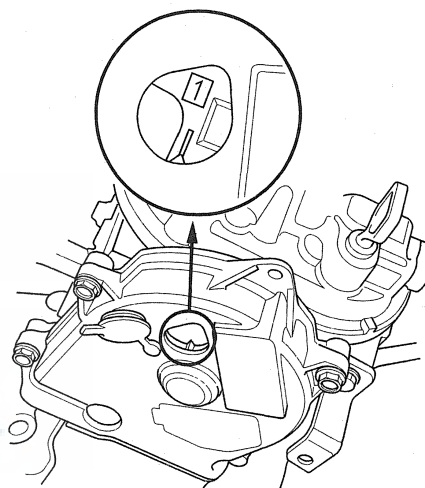


16. Check the camshaft pulley marks.

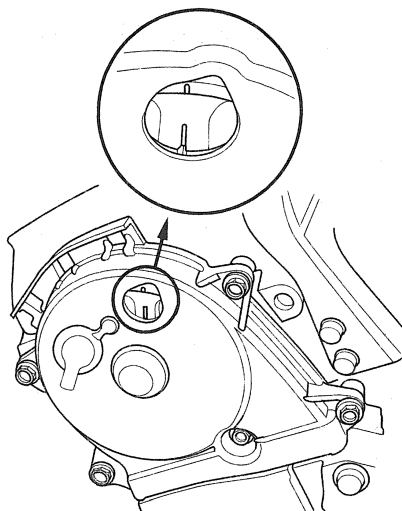
NOTE: If the marks are not aligned, rotate the crankshaft 360 degrees, and recheck the camshaft pulley mark.

- If the camshaft pulley marks are at TDC, go to step 17.
- If the camshaft pulley marks are not at TDC, remove the timing belt and repeat steps 2 through 16.

FRONT



REAR

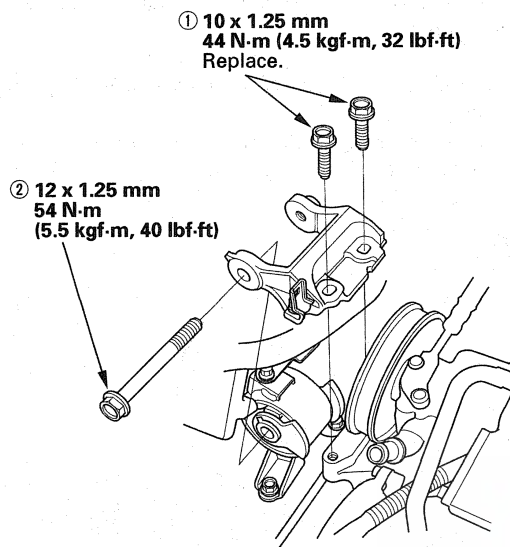


(cont'd)

Cylinder Head

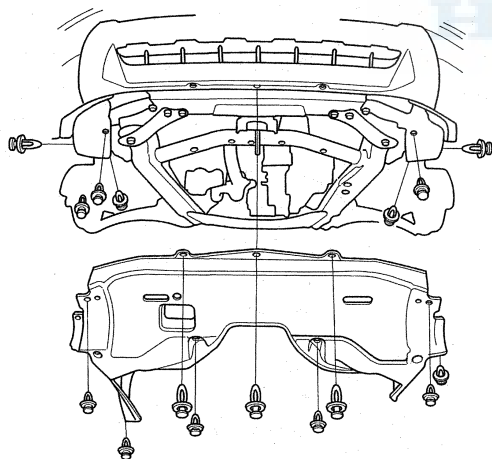
Timing Belt Installation (cont'd)

17. Install the upper half of the side engine mount bracket, then torque the mounting bolts in the numbered sequence shown.



18. Install the drive belt (see page 4-32).

19. Install the splash shield.



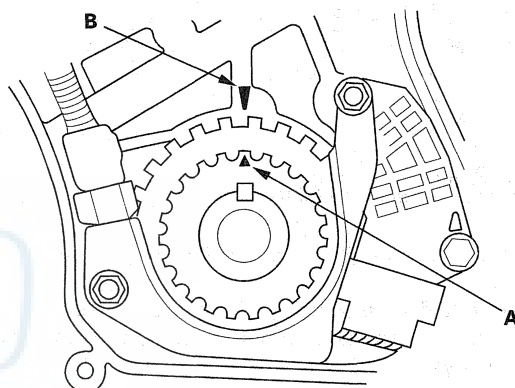
20. Install the right front wheel.

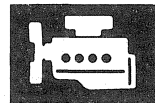
21. Do the crankshaft position (CKP) pattern clear/CKP pattern learn procedure (see page 11-5).

Timing Belt Replacement

NOTE: The following procedure is for the installation of a new timing belt. If you are installing a used belt, refer to the timing belt installation procedure (see page 6-72).

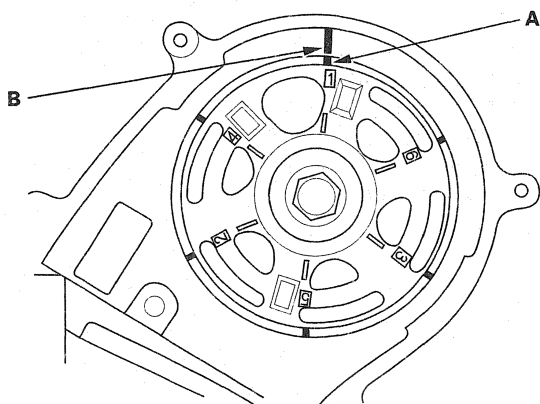
1. Remove the timing belt (see page 6-70).
2. Clean the timing belt pulleys, timing belt guide plate, and the upper and lower covers.
3. Set the timing belt drive pulley to top dead center (TDC) by aligning the TDC mark (A) on the tooth of the timing belt drive pulley with the pointer (B) on the oil pump.



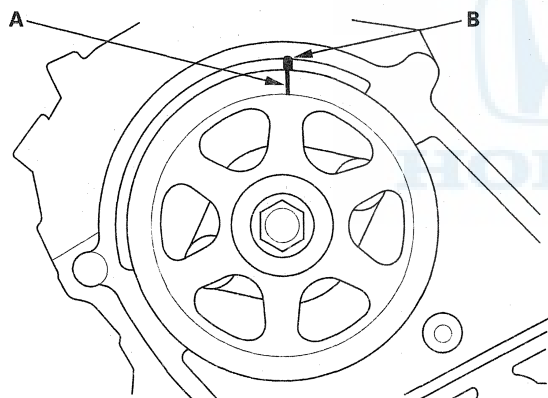


4. Set the camshaft pulleys to TDC by aligning the TDC marks (A) on the camshaft pulleys with the pointers (B) on the back covers.

FRONT

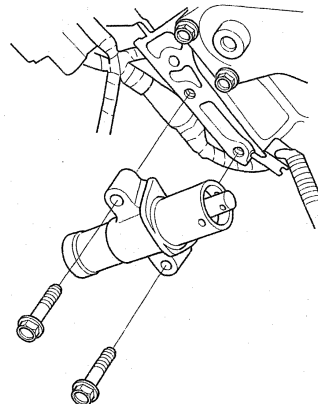


REAR

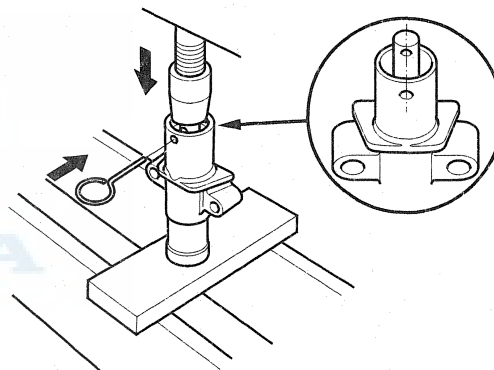


5. Remove the battery clamp bolt from the back cover.

6. Remove the auto-tensioner.



7. Align the holes on the rod and housing of the auto-tensioner.



8. Use a hydraulic press to slowly compress the auto-tensioner. Insert a 2.0 mm (0.08 in.) pin through the housing and the rod.

NOTE: The compression pressure should not exceed 9,800 N (1,000 kgf, 2,200 lbf).

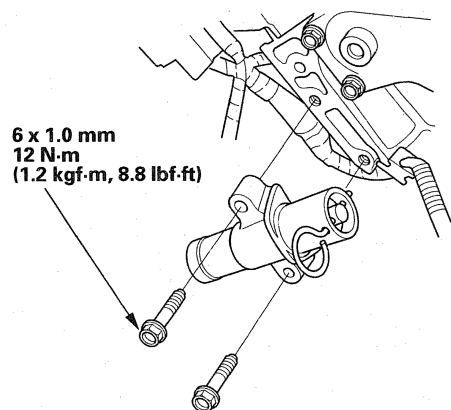
(cont'd)

Cylinder Head

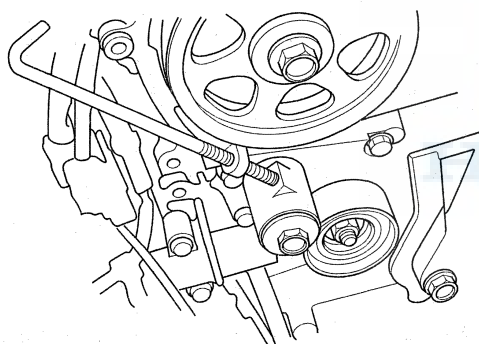
Timing Belt Replacement (cont'd)

9. Install the auto-tensioner.

NOTE: Make sure the pin stays in place.



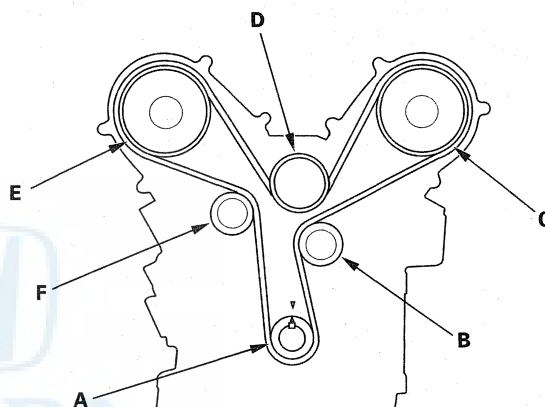
10. Thread the battery clamp bolt in as shown to hold the timing belt adjuster. Tighten it by hand, do not use a wrench.



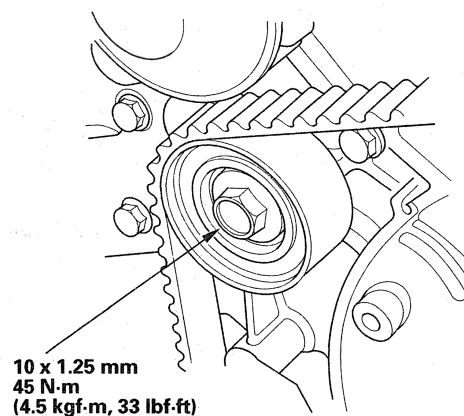
11. Loosely install the idler pulley with a new idler pulley bolt so the pulley can move but does not come off.

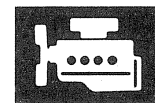
12. Install the timing belt in a counterclockwise sequence starting with the drive pulley.

- 1 Drive pulley (A)
- 2 Idler pulley (B)
- 3 Front camshaft pulley (C)
- 4 Water pump pulley (D)
- 5 Rear camshaft pulley (E)
- 6 Adjusting pulley (F)

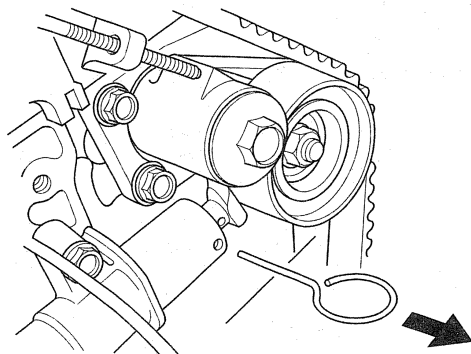


13. Torque the idler pulley bolt.



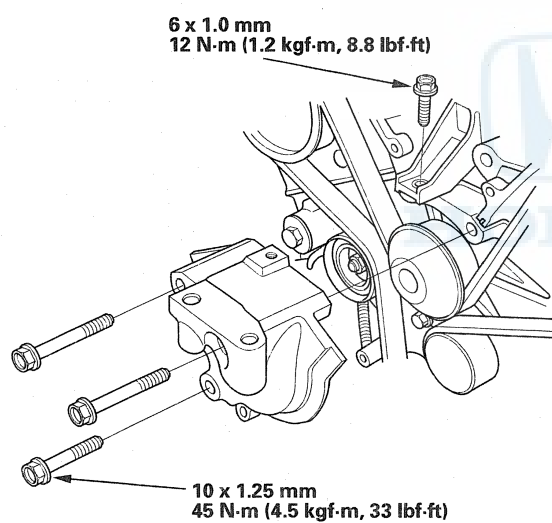


14. Remove the pin from the auto-tensioner.

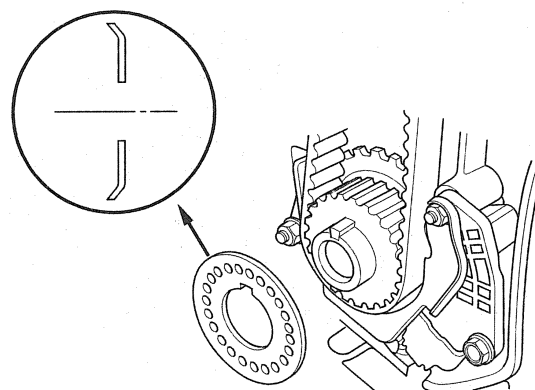


15. Remove the battery clamp bolt from the back cover.

16. Install the lower half of the side engine mount bracket.



17. Install the timing belt guide plate as shown.

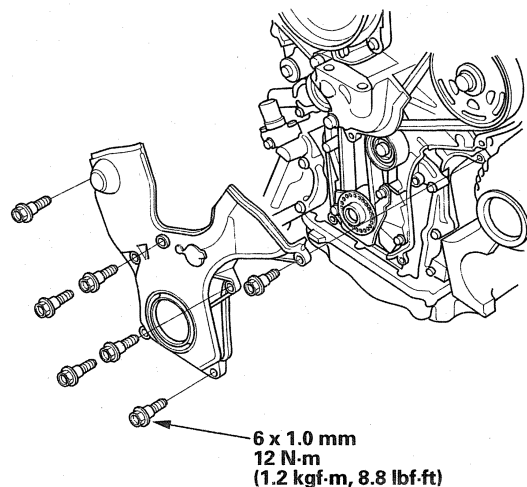


(cont'd)

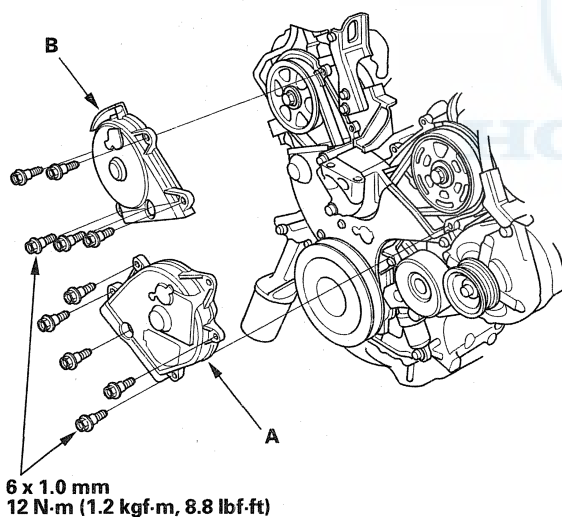
Cylinder Head

Timing Belt Replacement (cont'd)

18. Install the lower cover.



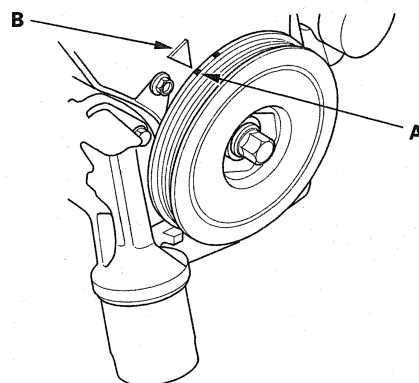
19. Install the front upper cover (A) and rear upper cover (B).

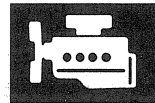


20. Install the crankshaft pulley (see page 6-68).

21. Rotate the crankshaft pulley about six turns clockwise so the timing belt positions itself on the pulleys.

22. Turn the crankshaft pulley so its white mark (A) lines up with the pointer (B).



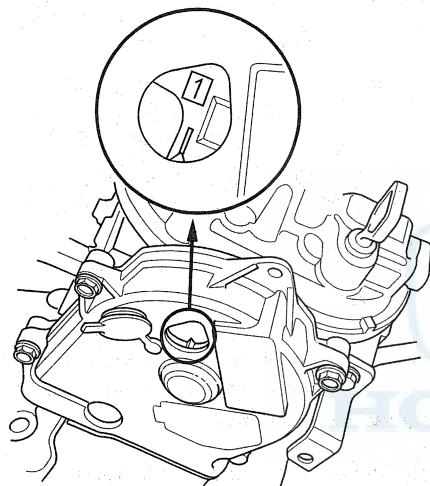


23. Check the camshaft pulley marks.

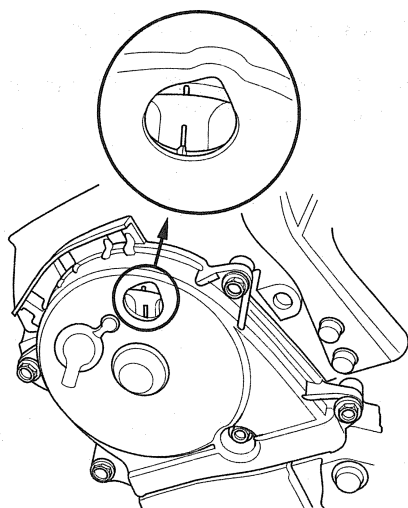
NOTE: If the marks are not aligned, rotate the crankshaft 360 degrees, and recheck the camshaft pulley mark.

- If the camshaft pulley marks are at TDC, go to step 24.
- If the camshaft pulley marks are not at TDC, remove the timing belt and repeat steps 3 through 23.

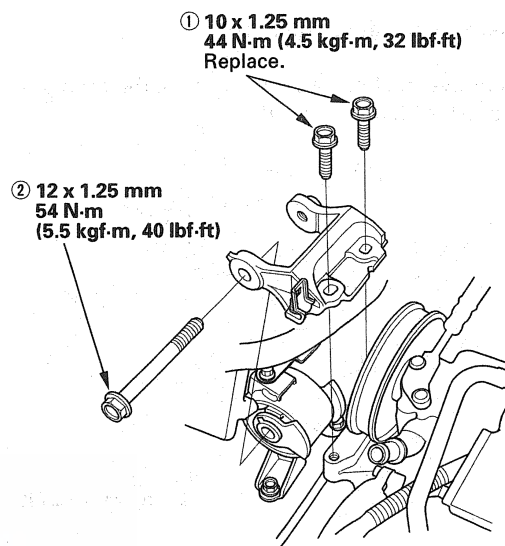
FRONT



REAR

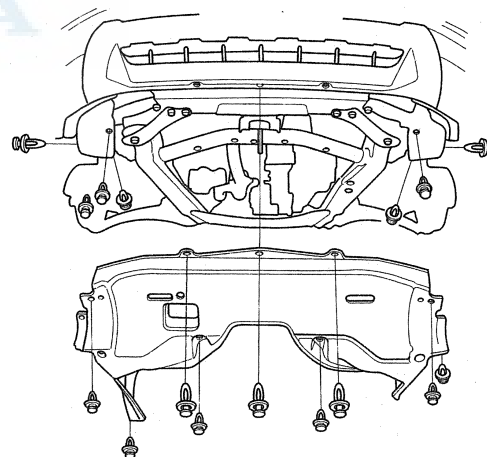


24. Install the upper half of the side engine mount bracket, then torque the mounting bolts in the numbered sequence shown.



25. Install the drive belt (see page 4-32).

26. Install the splash shield.



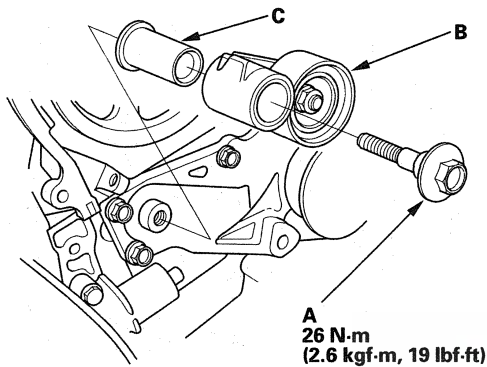
27. Install the right front wheel.

28. Do the crankshaft position (CKP) pattern clear/CKP pattern learn procedure (see page 11-5).

Cylinder Head

Timing Belt Adjuster Replacement

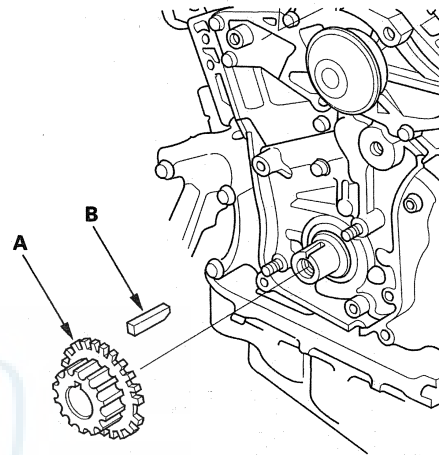
1. Remove the timing belt (see page 6-70).
2. Remove the battery clamp bolt from the back cover.
3. Remove the auto-tensioner.
4. Remove the bolt (A), then remove the timing belt adjuster (B) and collar (C).



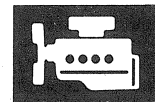
5. Install the timing belt adjuster in the reverse order of removal.
6. Install the timing belt (see page 6-72).

Timing Belt Drive Pulley Replacement

1. Remove the timing belt (see page 6-70).
2. Remove the crankshaft position (CKP) sensor (see page 11-228).
3. Remove the timing belt drive pulley (A) and key (B).



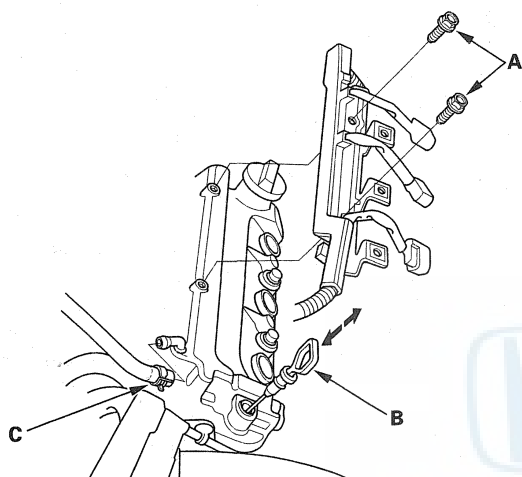
4. Inspect the timing belt drive pulley and key for damage. If it is cracked or damaged, replace the timing belt drive pulley.
5. Install the new timing belt drive pulley.
6. Install the CKP sensor (see page 11-228).
7. Install the timing belt (see page 6-72).
8. Do the CKP pattern clear/CKP pattern learn procedure (see page 11-5).



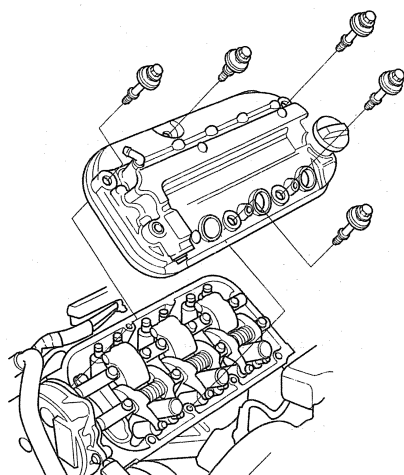
Cylinder Head Cover Removal

FRONT

1. Remove the intake manifold (see page 9-4).
2. Remove the three ignition coils from the front cylinder head (see page 4-19).
3. Remove the two bolts (A) securing the harness holder.

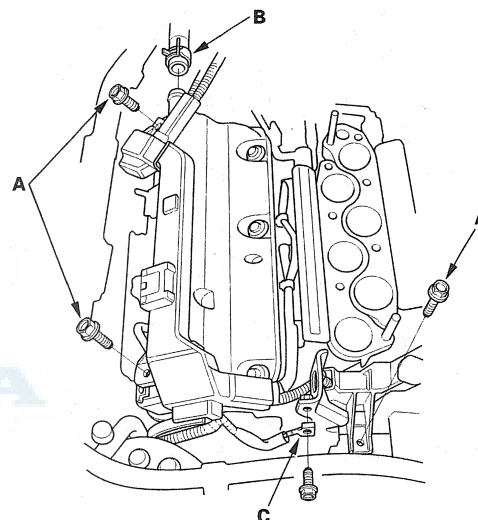


4. Remove the dipstick (B) and positive crankcase ventilation (PCV) hose (C).
5. Remove the front cylinder head cover.

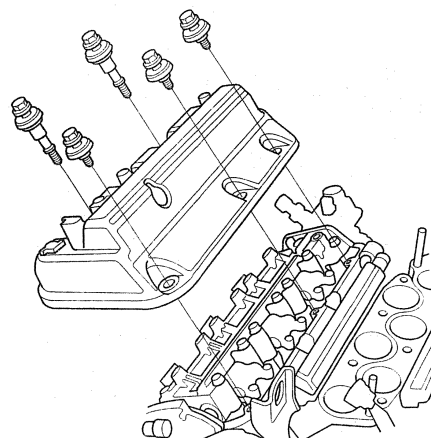


REAR

1. Remove the intake manifold (see page 9-4).
2. Remove the three ignition coils from the rear cylinder head (see page 4-19).
3. Disconnect the three injector connectors, rocker arm oil control solenoid connector, and engine oil pressure (EOP) sensor connector from the rear cylinder head.
4. Remove the three bolts (A) securing the harness holder.



5. Remove the breather hose (B) and ground cable (C).
6. Remove the rear cylinder head cover.

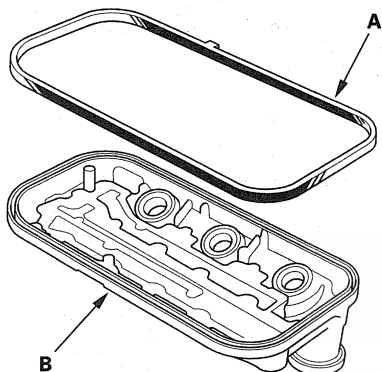


Cylinder Head

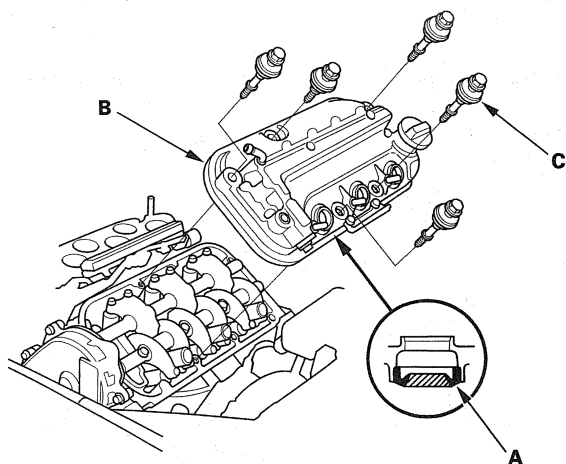
Cylinder Head Cover Installation

FRONT

1. Check the spark plug seals for damage. If any seal is damaged, replace it.
2. Thoroughly clean the head cover gasket and the groove.
3. Install the head cover gasket (A) in the groove of the cylinder head cover (B). Make sure the head cover gasket is seated securely.

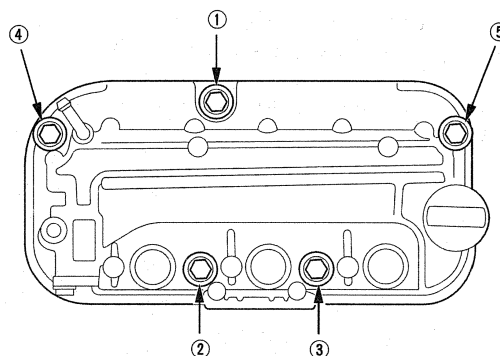


4. Clean the head cover contacting surfaces with a shop towel.
5. Set the spark plug seals (A) on the spark plug tubes, and install the cylinder head cover (B).

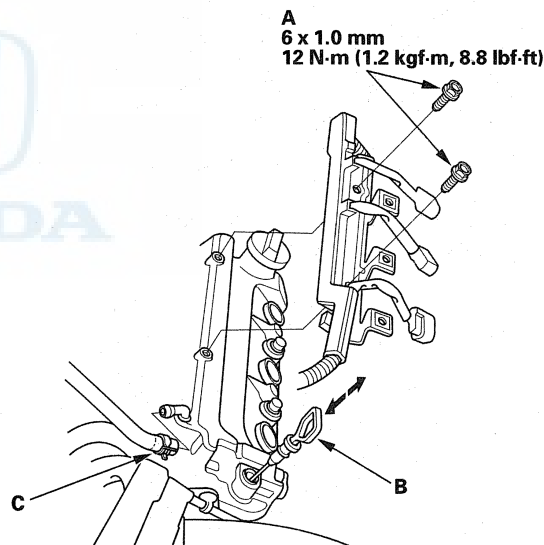


6. Visually check the spark plug seals for damage.
7. Inspect the cover washers (C). Replace any washer that is damaged or deteriorated.

8. Torque the bolts in three steps. In the final step torque all bolts, in sequence, 12 N·m (1.2 kgf·m, 8.8 lbf·ft).



9. Torque the two bolts (A) securing the harness holder.

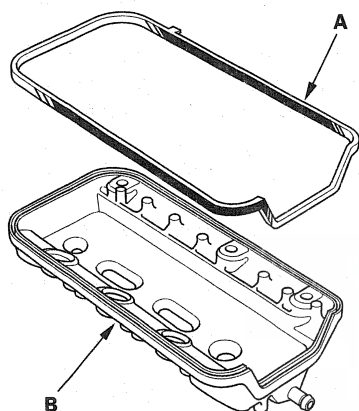


10. Install the dipstick (B) and positive crankcase ventilation (PCV) hose (C).
11. Install the three ignition coils to the front cylinder head (see page 4-19).
12. Install the intake manifold (see page 9-6).



REAR

1. Check the spark plug seals for damage. If any seal is damaged, replace it.
2. Thoroughly clean the head cover gasket and the groove.
3. Install the head cover gasket (A) in the groove of the cylinder head cover (B). Make sure the head cover gasket is seated securely.

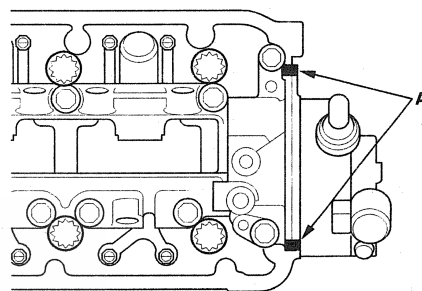


4. Remove all of the old liquid gasket from the rocker shaft holder and cylinder head.
5. Clean the head cover contacting surfaces with a shop towel.

6. Apply liquid gasket, P/N 08717-0004, 08718-0001, 08718-0003, or 08718-0009, evenly to the rocker shaft holder mating areas (A). Install the component within 5 minutes of applying the liquid gasket.

NOTE:

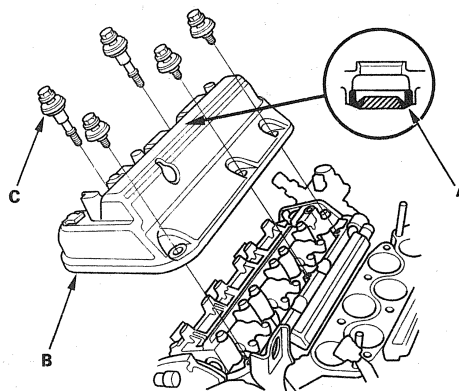
- If you apply liquid gasket P/N 08718-0012, the component must be installed within 4 minutes.
- If too much time has passed after applying the liquid gasket, remove the old liquid gasket and residue, then reapply the new liquid gasket.



7. Set the spark plug seals (A) on the spark plug tubes, and install the rear cylinder head cover (B).

NOTE:

- Wait at least 30 minutes before filling the engine with oil.
- Do not run the engine for at least 3 hours after installing the cylinder head cover.



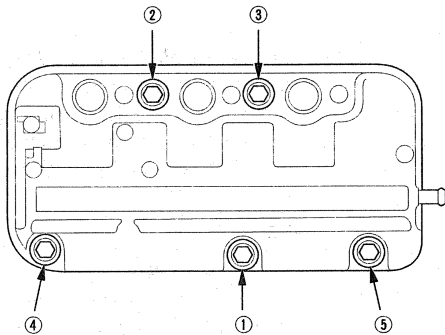
8. Visually check the spark plug seals for damage.
9. Inspect the cover washers (C). Replace any washer that is damaged or deteriorated.

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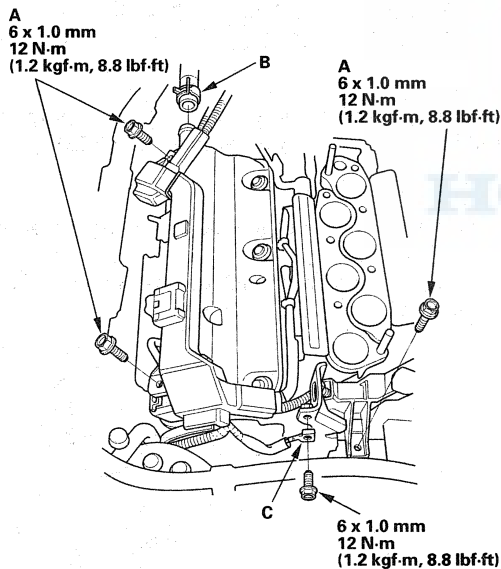
Cylinder Head

Cylinder Head Cover Installation (cont'd)

10. Torque the bolts in three steps. In the final step torque all bolts, in sequence, 12 N·m (1.2 kgf·m, 8.8 lbf·ft).



11. Torque the three bolts (A) securing the harness holder.



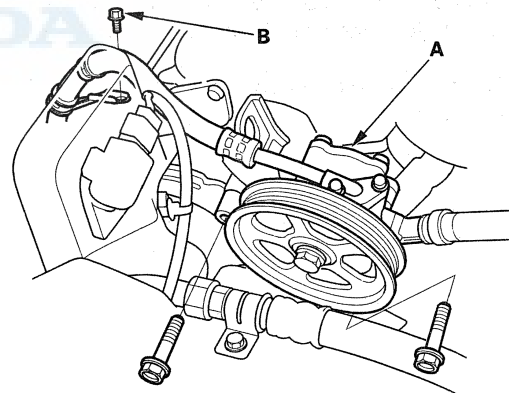
12. Install the breather hose (B) and ground cable (C).
13. Connect the three injector connectors, rocker arm oil control solenoid connector, and engine oil pressure (EOP) sensor connector to the rear cylinder head.
14. Install the three ignition coils from the rear cylinder head (see page 4-19).
15. Install the intake manifold (see page 9-6).

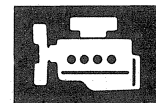
Cylinder Head Removal

NOTE:

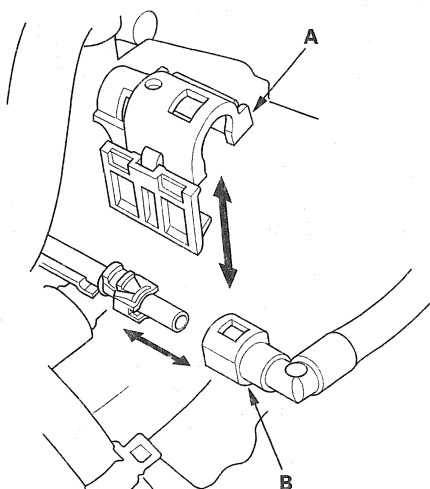
- Use fender covers to avoid damaging painted surfaces.
- To avoid damaging the wires and terminals, unplug the wiring connectors carefully while holding the connector portion.
- To avoid damaging the cylinder head, wait until the engine coolant temperature drops below 100 °F (38 °C) before loosening the cylinder head bolts.
- Mark all wiring and hoses to avoid misconnection. Also, be sure that they do not contact any other wiring or hoses, or interfere with any other parts.

1. Make sure you have the anti-theft codes for the audio system and the navigation system (if equipped), then write down the audio presets.
2. Relieve the fuel pressure (see page 11-372).
3. Disconnect the negative cable from the battery.
4. Drain the engine coolant (see page 10-6).
5. Remove the drive belt (see page 4-32).
6. Remove the power steering (P/S) pump (A) and the bolt (B) securing the P/S hose bracket.

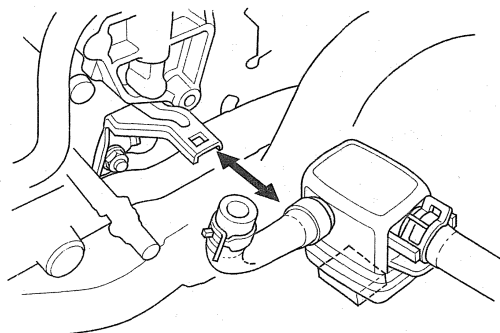




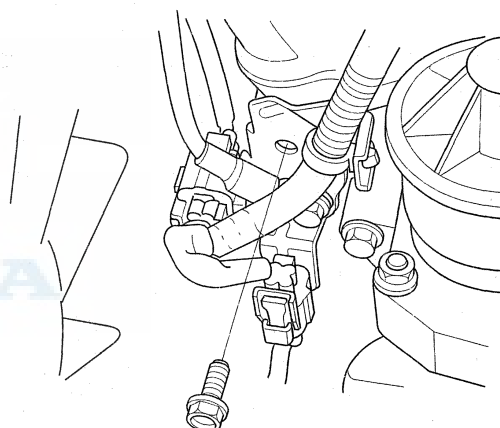
7. Remove the alternator (see page 4-36).
8. Remove the intake manifold (see page 9-4).
9. Remove the six ignition coils (see page 4-19).
10. Remove the timing belt (see page 6-70).
11. Remove the engine wire harness connectors and wire harness clamps from the cylinder head.
 - Six injector connectors
 - Engine coolant temperature (ECT) sensor 1 connector
 - Engine coolant temperature (ECT) sensor 2 connector
 - Crankshaft position (CKP) sensor connector
 - Exhaust gas recirculation (EGR) valve connector
 - Rocker arm oil control solenoid connector
 - Engine oil pressure (EOP) sensor connector
 - Oil pressure switch connector
 - Two air fuel ratio (A/F) sensor connectors
 - Two secondary heated oxygen sensor (secondary HO2S) connectors
12. Remove the front warm up three way catalytic converter (front WU-TWC) (see page 11-412) and rear warm up three way catalytic converter (rear WU-TWC) (see page 11-413).
13. Remove the quick-connect fitting cover (A), then disconnect the fuel feed hose (B) (see page 11-380).



14. Remove the evaporative emission (EVAP) canister purge valve joint from the bracket.



15. Remove the connector bracket from the front cylinder head.

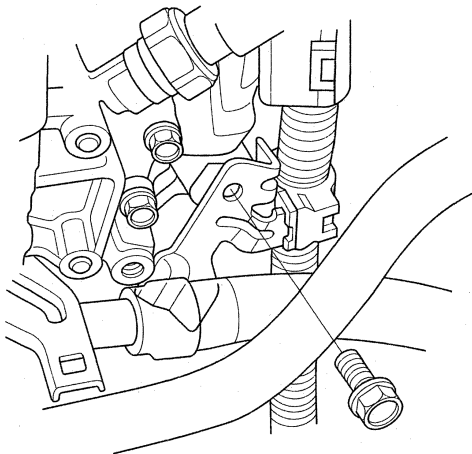


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Cylinder Head

Cylinder Head Removal (cont'd)

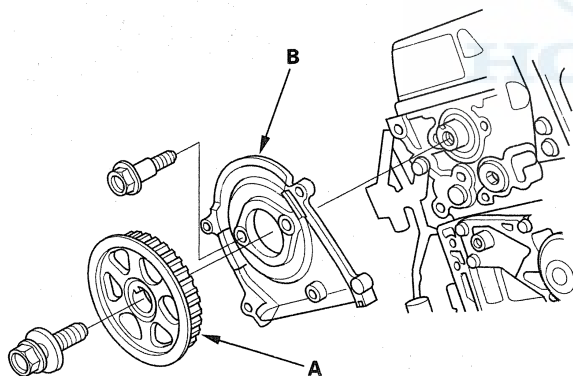
16. Remove the harness clamp bracket from the rear cylinder head.



17. Remove the fuel rails (see step 5 on page 11-222).

18. Remove the water passage (see page 10-10).

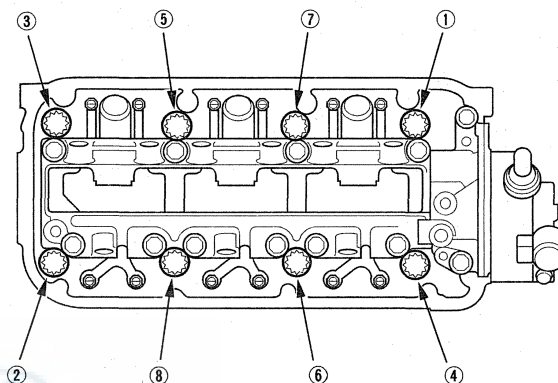
19. Remove the front and rear camshaft pulleys (A) and front and rear back covers (B).



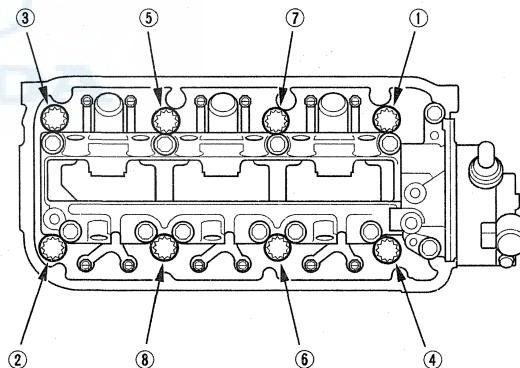
20. Remove the cylinder head covers (see page 6-83).

21. Remove the cylinder head bolts. To prevent warpage, unscrew the bolts in sequence 1/3 turn at a time; repeat the sequence until all bolts are loosened.

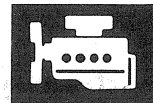
FRONT



REAR



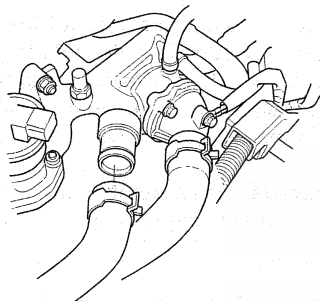
22. Remove the cylinder heads.



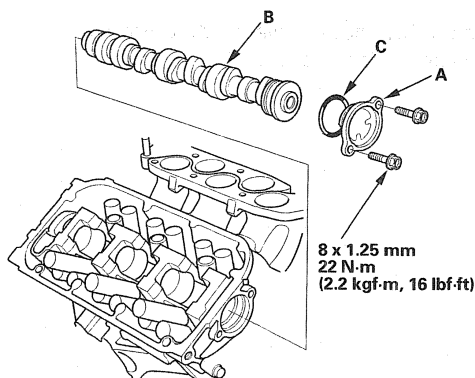
Camshaft Replacement

FRONT

1. Make sure you have the anti-theft codes for the audio system and the navigation system (if equipped), then write down the audio presets.
2. Disconnect the negative cable from the battery first, then disconnect the positive cable.
3. Remove the battery and battery tray.
4. Drain the engine coolant (see page 10-6).
5. Remove the upper radiator hose.



6. Remove the exhaust gas recirculation (EGR) valve (see page 11-429).
7. Remove the timing belt (see page 6-70).
8. Remove the rocker arm assembly (see page 6-92).
9. Remove the front camshaft pulley.
10. Remove the thrust cover (A), then remove the camshaft (B).



11. Install the camshaft in the reverse order of removal with a new O-ring (C). Apply new engine oil to the camshaft journals and lobes.
12. Apply new engine oil to the threads of the camshaft pulley mounting bolt, then install the front camshaft pulley (see step 11 on page 6-108).
13. Install the rocker arm assembly, then torque the mounting bolts (see step 6 on page 6-107).
14. Install the timing belt (see page 6-72).
15. Adjust the valve clearance (see page 6-64).
16. Install the EGR valve (see page 11-429), then install the upper radiator hose.
17. Install the battery and battery tray. Clean the battery posts and cable terminals, then assemble them and apply grease to prevent corrosion.
18. Fill the radiator with engine coolant, and bleed air from the cooling system (see step 8 on page 10-7).
19. Do the crankshaft position (CKP) pattern clear/CKP pattern lean procedure (see page 11-5).
20. Do the powertrain control module (PCM) idle learn procedure (see page 11-359) and the power window control unit reset procedure (see page 22-255).
21. Enter the anti-theft codes for the audio system and the navigation system (if equipped), then enter the audio presets.
22. Set the clock (on vehicles without navigation).

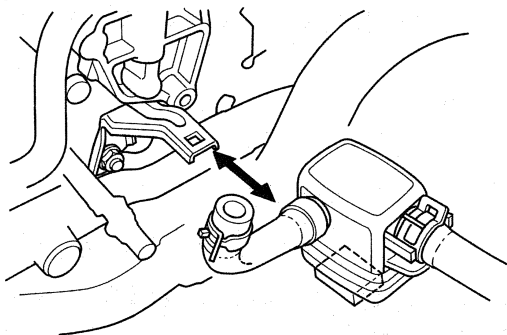
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Cylinder Head

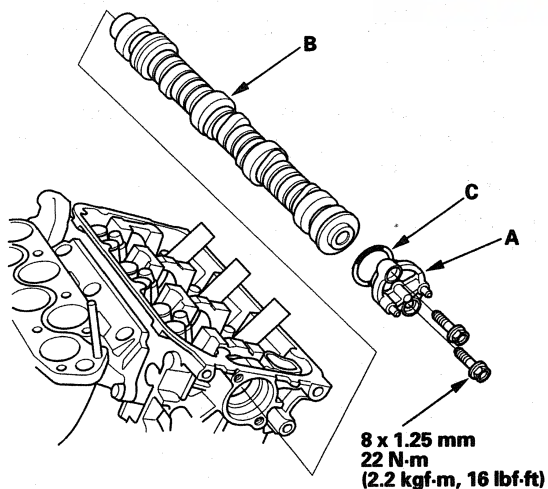
Camshaft Replacement (cont'd)

REAR

1. Remove the evaporative emission (EVAP) canister purge valve joint from the bracket.



2. Remove the brake lines from the master cylinder (see page 19-16).
3. Remove the timing belt (see page 6-70).
4. Remove the rocker arm assembly (see page 6-92).
5. Remove the rear camshaft pulley.
6. Remove the thrust cover (A), then remove the camshaft (B).



7. Install the camshaft in the reverse order of removal. Always use a new O-ring (C). Apply new engine oil to the journals and cam lobes.
8. Apply new engine oil to the threads of the camshaft pulley mounting bolt, then install the rear camshaft pulley (see step 12 on page 6-110).
9. Apply liquid gasket, P/N 08717-0004, 08718-0001, 08718-0003, or 08718-0009, evenly to the rocker shaft holder mating surface of the cylinder head (see step 8 on page 6-109). Install the component within 5 minutes of applying the liquid gasket.

NOTE:

- If you apply liquid gasket P/N 08718-0012, the component must be installed within 4 minutes.
- If too much time has passed after applying the liquid gasket, remove the old liquid gasket and residue, then reapply the new liquid gasket.

10. Install the rocker arm assembly, then torque the mounting bolts (see step 9 on page 6-109).

NOTE:

- Wait at least 30 minutes before filling the engine with oil.
- Do not run the engine for at least 3 hours after installing the rocker arm assembly.

11. Install the timing belt (see page 6-72).
12. Adjust the valve clearance (see page 6-64).
13. Install the brake lines (see page 19-16) and do the brake system bleeding procedure (see page 19-8).
14. Install the EVAP canister purge valve joint.
15. Do the CKP pattern clear/CKP pattern learn procedure (see page 11-5).



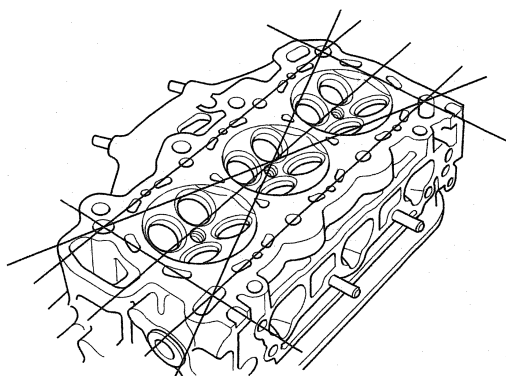
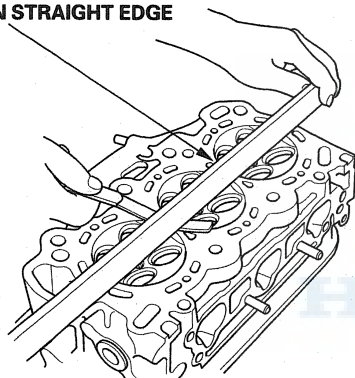
Cylinder Head Inspection for Warpage

1. Remove the cylinder head (see page 6-86).
2. Inspect the camshaft (see page 6-97).
3. Check the cylinder head for warpage. Measure along the edges, and three ways across the center.
 - If warpage is less than 0.05 mm (0.002 in.), cylinder head resurfacing is not required.
 - If warpage is between 0.05 mm (0.002 in.) and 0.2 mm (0.008 in.), resurface the cylinder head.
 - Maximum resurface limit is 0.2 mm (0.008 in.) based on a height of 121 mm (4.76 in.).

Cylinder Head Height

Standard (New): 120.95—121.05 mm
(4.762—4.766 in.)

PRECISION STRAIGHT EDGE

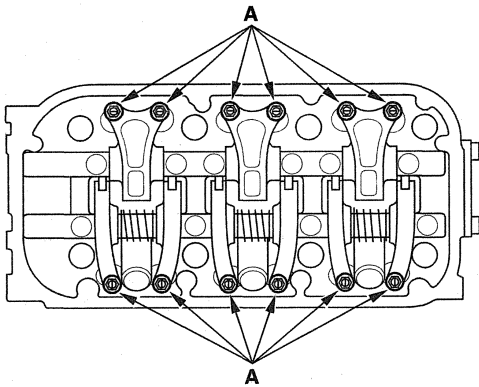


Cylinder Head

Rocker Arm Assembly Removal

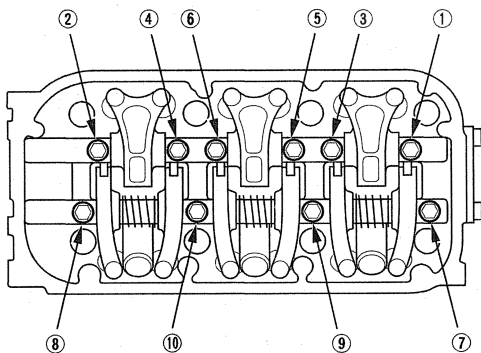
FRONT

1. Remove the cylinder head cover (see page 6-83).
2. Loosen the locknuts and adjusting screws (A).



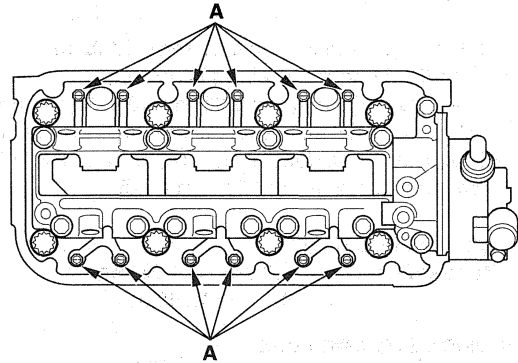
3. Remove the rocker shaft mounting bolts and the rocker arm assembly.

- 1 Loosen the rocker shaft mounting bolts in sequence two turns at a time, to prevent damaging the valves or rocker arm assembly.
- 2 When removing the rocker arm assembly, do not remove the rocker shaft mounting bolts. The bolts will keep the springs and the rocker arms on the shafts.



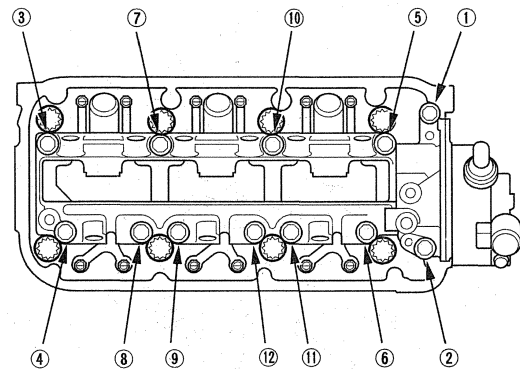
REAR

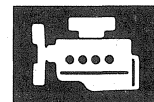
4. Remove the cylinder head cover (see page 6-83).
5. Loosen the locknuts and adjusting screws (A).



6. Remove the rocker shaft mounting bolts and the rocker arm assembly.

- 1 Loosen the rocker shaft bridge mounting bolts and rocker shaft holder mounting bolts in sequence two turns at a time, to prevent damaging the valves or rocker arm assembly.
- 2 When removing the rocker arm assembly, do not remove the rocker shaft bridge mounting bolts and rocker shaft holder mounting bolts. The bolts will keep the rocker arms on the shafts.



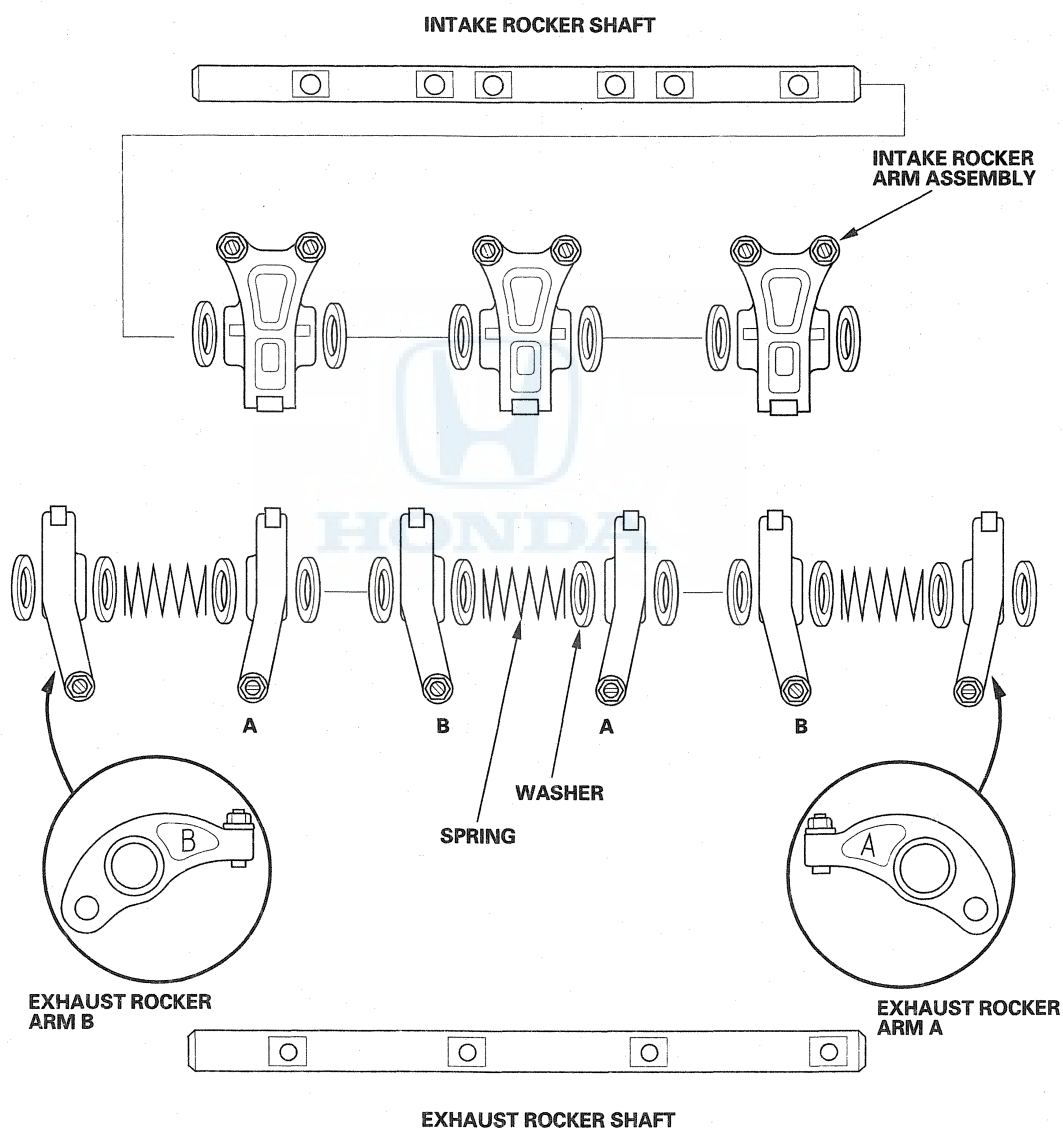


Rocker Arm and Shaft Disassembly/Reassembly

FRONT

NOTE:

- Identify parts as they are removed so they can be reinstalled in their original locations.
- Inspect the rocker shafts and rocker arms (see page 6-95).
- If reused, the rocker arms must be installed in their original location.
- When removing or installing the rocker arm assembly, do not remove the rocker shaft mounting bolts. The bolts will keep the springs and rocker arms on the shaft.
- Prior to reassembling, clean all the parts in solvent, dry them, and apply new engine oil to any contact points.



(cont'd)

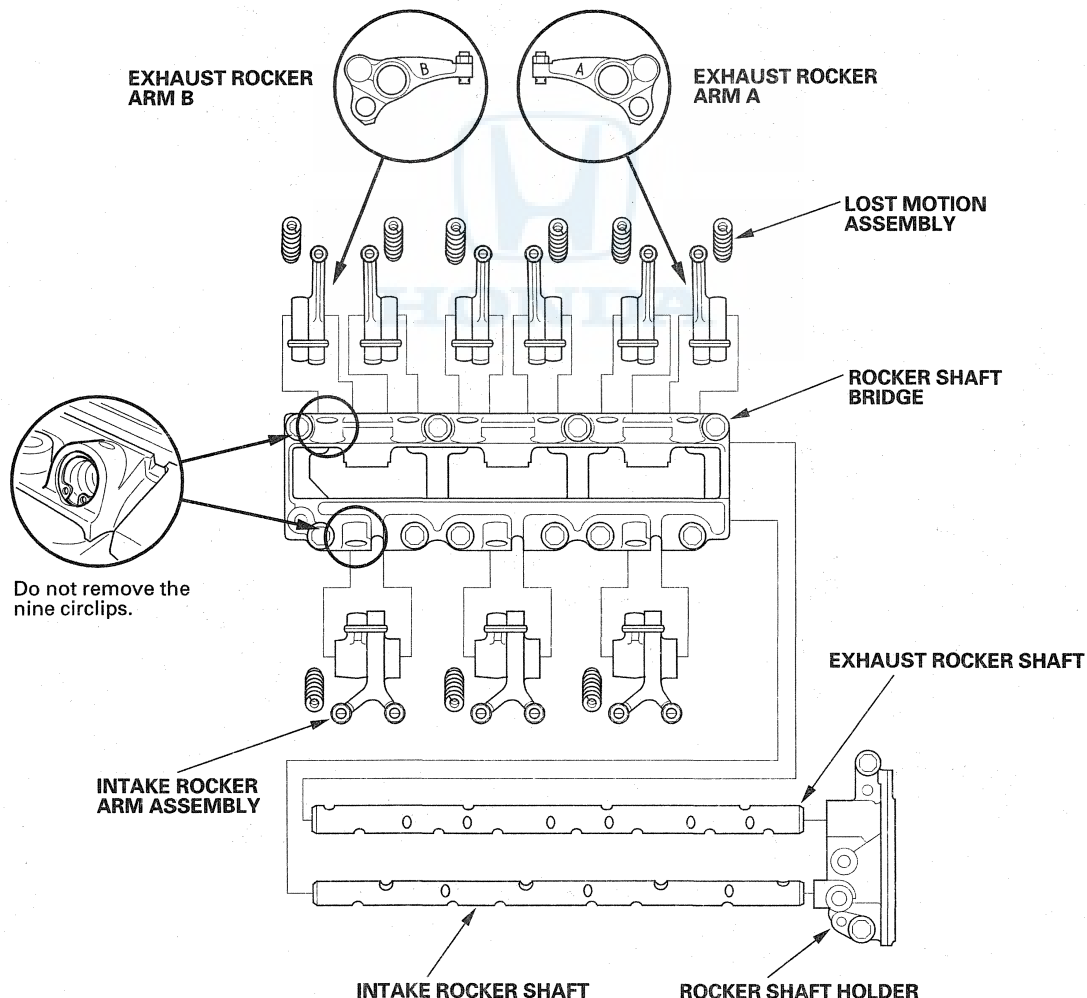
Cylinder Head

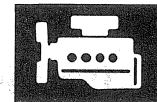
Rocker Arm and Shaft Disassembly/Reassembly (cont'd)

REAR

NOTE:

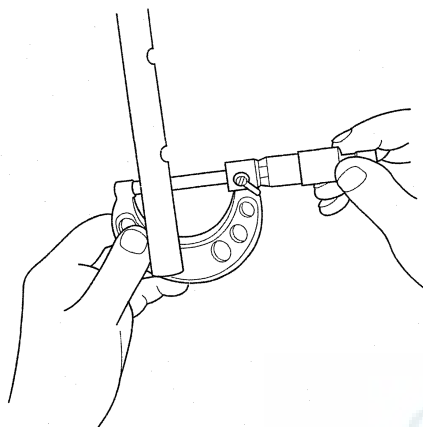
- Identify parts as they are removed so they can be reinstalled in their original locations.
- Inspect the rocker shafts and rocker arms (see page 6-95).
- If reused, the rocker arms must be installed in their original locations.
- When removing or installing the rocker arm assembly, do not remove the mounting bolts. The bolts will keep the rocker arms, rocker shaft bridge, and rocker shaft holder on the shaft.
- If the rocker shaft does not remove or does not install by hand, remove or install the rocker shaft by heating the rocker shaft bridge.
- Bundle the rocker arms with rubber bands to keep them together as a set, and remove the bands after the rocker arms have been installed.
- Prior to reassembling, clean all the parts in solvent, dry them, and apply new engine oil to any contact points.
- When replacing the rocker arm assembly, remove the fastening hardware from the new rocker arm assembly.
- Never remove any of the circlips that retain the lost motion assemblies in the rocker shaft bridge. The circlips are not available separately, and are factory installed in the rocker shaft bridge. To remove the lost motion assemblies, first remove the rocker shafts and rocker arms.



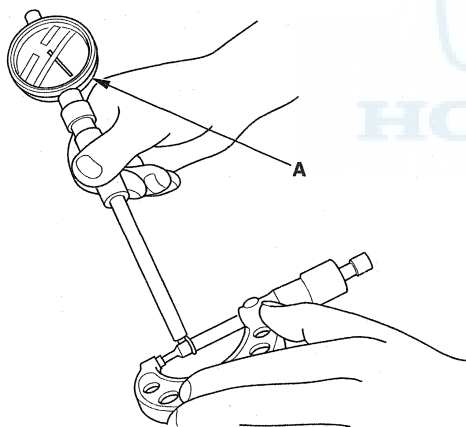


Rocker Arm and Shaft Inspection

1. Remove the rocker arm assembly (see page 6-92).
2. Disassemble the rocker arm assembly (see page 6-93).
3. Measure the diameter of the shaft at the first rocker location.



4. Zero the gauge (A) to the shaft diameter.



5. Measure the inside diameter of the rocker arm, and check it for an out-of-round condition.

FRONT

Intake Rocker Arm-to-Shaft Clearance:

Standard (New): 0.019—0.067 mm
(0.0007—0.0026 in.)

Service Limit: 0.067 mm (0.0026 in.)

Exhaust Rocker Arm-to-Shaft Clearance:

Standard (New): 0.019—0.058 mm
(0.0007—0.0023 in.)

Service Limit: 0.058 mm (0.0023 in.)

REAR

Intake Rocker Arm-to-Shaft Clearance:

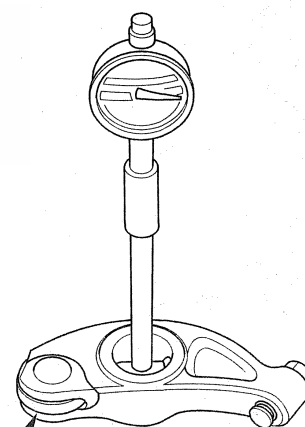
Standard (New): 0.015—0.046 mm
(0.0006—0.0018 in.)

Service Limit: 0.046 mm (0.0018 in.)

Exhaust Rocker Arm-to-Shaft Clearance:

Standard (New): 0.015—0.046 mm
(0.0006—0.0018 in.)

Service Limit: 0.046 mm (0.0018 in.)



Inspect rocker arm face for wear.

6. Repeat for all rockers and both shafts. If the clearance is over the limit, replace the rocker shaft and all over-tolerance rocker arms. If any variable cylinder management rocker arm needs replacement, replace all rocker arms in that set (primary and secondary).

(cont'd)

Cylinder Head

Rocker Arm and Shaft Inspection (cont'd)

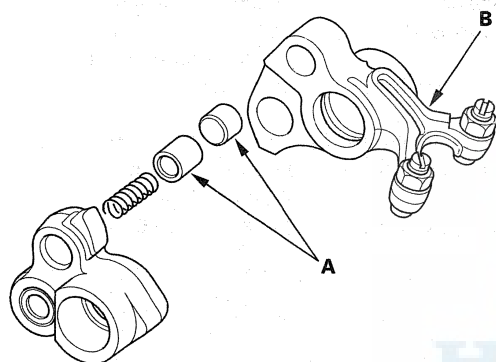
Variable Cylinder Management Rocker Arms

7. Inspect the rocker arm pistons (A). Slide them into the rocker arms. If they do not move smoothly, replace the rocker arm set.

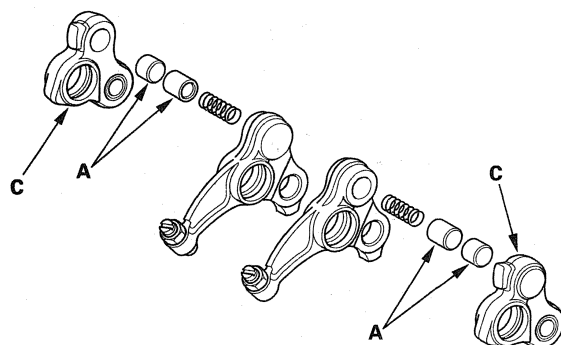
NOTE:

- Apply new engine oil to the rocker arm pistons when reassembling.
- When removing the rocker arm pistons from the intake primary rocker arm (B) and exhaust primary rocker arms (C), carefully apply air pressure to the oil passage of the rocker arm.

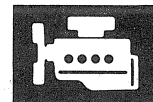
INTAKE



EXHAUST



8. Install the rocker arm assembly (see page 6-107).

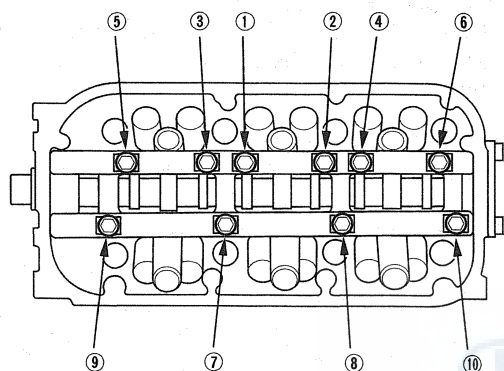


Camshaft Inspection

1. Remove the cylinder head (see page 6-86).
2. Remove the rocker arms (see page 6-92).
3. Front: Put the rocker shafts on the front cylinder head, then torque the bolts to the specified torque.

Specified Torque

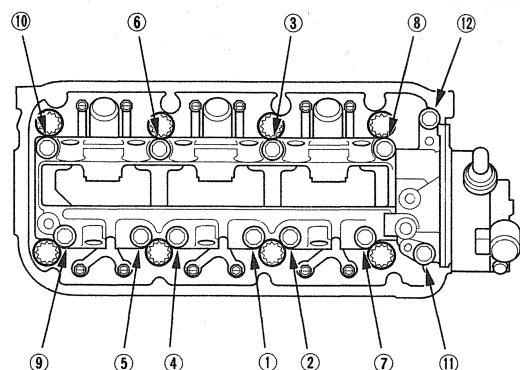
8 x 1.25 mm: 24 N·m (2.4 kgf·m, 18 lbf·ft)



4. Rear: Put the rocker shaft bridge and rocker shaft holder on the rear cylinder head, then torque the bolts to the specified torque.

Specified Torque

8 x 1.25 mm: 22 N·m (2.2 kgf·m, 16 lbf·ft)

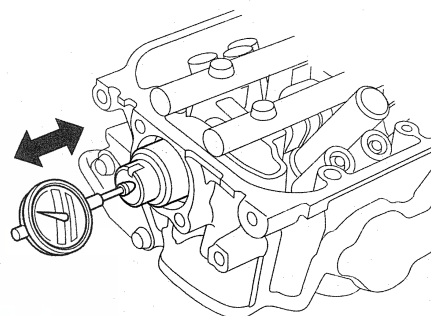


5. Seat the camshaft by pushing it toward the rear of the cylinder head.
6. Zero the dial indicator against the end of the camshaft. Push the camshaft back and forth and read the end play. If the end play is beyond the service limit, replace the thrust cover and recheck. If it is still beyond the service limit, replace the camshaft.

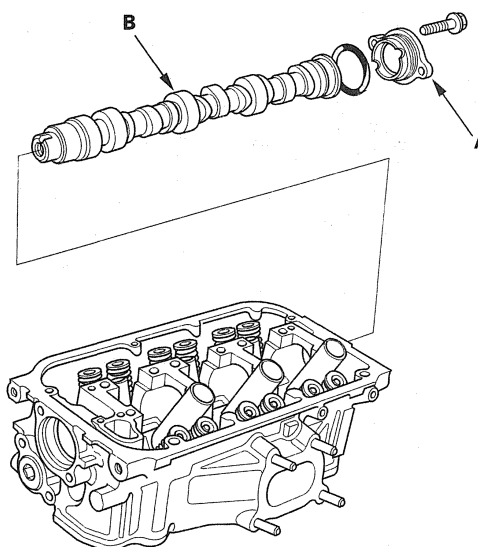
Camshaft End Play

Standard (New): 0.05—0.20 mm
(0.002—0.008 in.)

Service Limit: 0.20 mm (0.008 in.)



7. Remove the camshaft thrust cover (A), then pull out the camshaft (B).

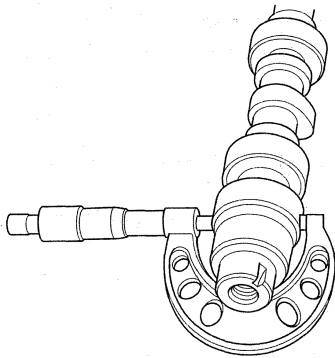


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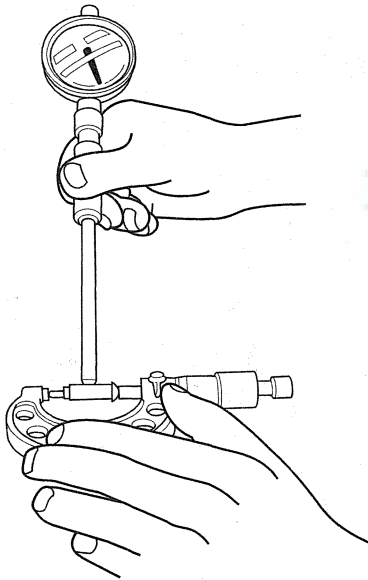
Cylinder Head

Camshaft Inspection (cont'd)

8. Wipe the camshaft clean, then inspect the lift ramps. Replace the camshaft if any lobes are pitted, scored, or excessively worn.
9. Measure the diameter of each camshaft journal.



10. Zero the gauge to the journal diameter.



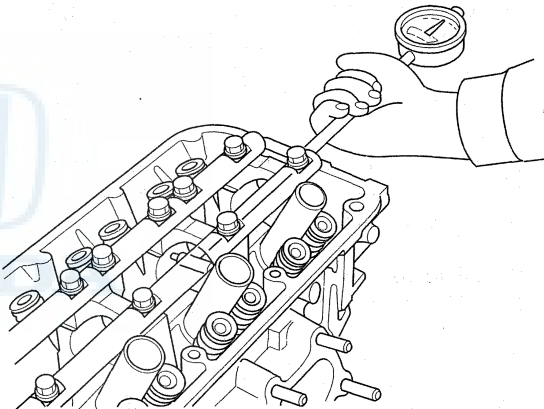
11. Clean the camshaft bearing surfaces in the cylinder head. Measure the inside diameter of each camshaft bearing surface, and check for an out-of-round condition.

- If the camshaft-to-holder clearance is within limits, go to step 13.
- If the camshaft-to-holder clearance is beyond the service limit and the camshaft has been replaced, replace the cylinder head.
- If the camshaft-to-holder clearance is beyond the service limit and the camshaft has not been replaced, go to step 12.

Camshaft-to-Holder Oil Clearance

Standard (New): 0.050—0.089 mm
(0.0020—0.0035 in.)

Service Limit: 0.15 mm (0.006 in.)





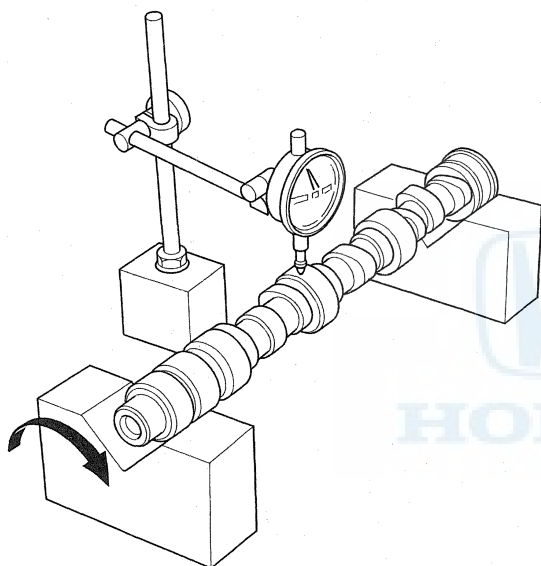
12. Check total runout with the camshaft supported on V-blocks.

- If the total runout of the camshaft is within the service limit, replace the cylinder head.
- If the total runout is beyond the service limit, replace the camshaft and recheck the oil clearance. If the oil clearance is still out of tolerance, replace the cylinder head.

Camshaft Total Runout

Standard (New): 0.03 mm (0.001 in.) max.

Service Limit: 0.04 mm (0.002 in.)



13. Measure cam lobe height.

NOTE: When measuring the cam lobe height of the rear camshaft, measure the secondary cam lobes.

Cam Lobe Height Standard (New)

Front:

Intake: 36.149 mm (1.4232 in.)

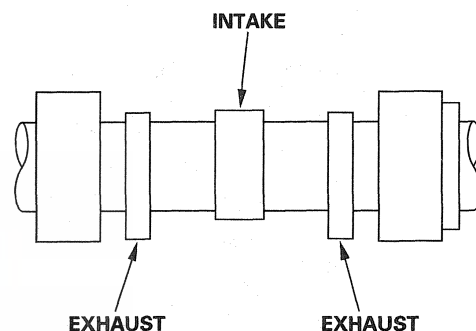
Exhaust: 35.864 mm (1.4120 in.)

Rear:

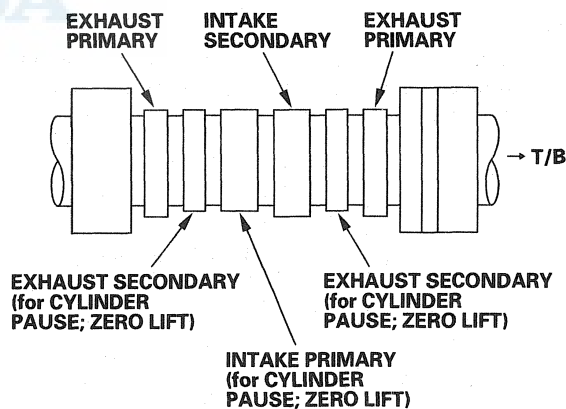
Intake: 35.096 mm (1.3817 in.)

Exhaust: 36.509 mm (1.4374 in.)

FRONT



REAR



Cylinder Head

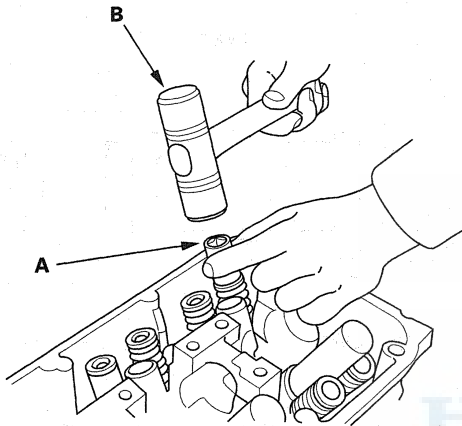
Valve, Spring, and Valve Seal Removal

Special Tools Required

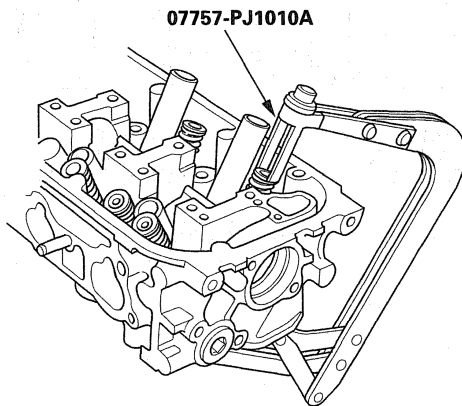
Valve spring compressor attachment
07757-PJ1010A

Identify the valves and valve springs as they are removed so that each item can be reinstalled in its original position.

1. Remove the cylinder head (see page 6-86).
2. Using an appropriate-sized socket (A) and plastic mallet (B), lightly tap the spring retainer to loosen the valve cotters.

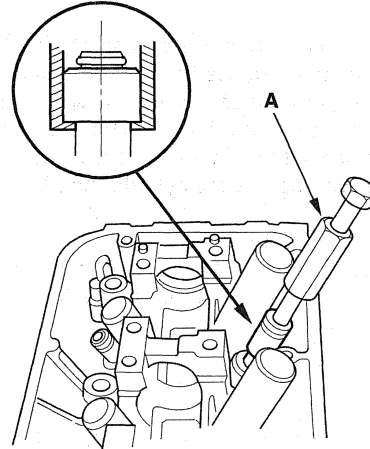


3. Install the valve spring compressor attachment and spring compressor. Compress the spring and remove the valve cotters.

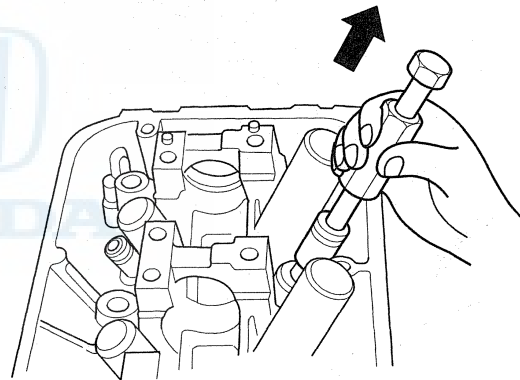


4. Remove the spring compressor and valve spring compressor attachment, then remove the spring retainer, valve spring, and valve.

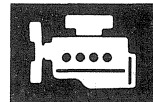
5. Install the valve guide seal remover (A).



6. Remove the valve seal.



7. Remove the valve spring seat.



Valve Inspection

1. Remove the valves (see page 6-100).
2. Measure the valve in these areas.

Intake Valve Dimensions

A Standard (New): 34.90—35.10 mm
(1.374—1.382 in.)

B Standard (New): 115.70—116.30 mm
(4.555—4.579 in.)

C Standard (New): 5.485—5.495 mm
(0.2159—0.2163 in.)

C Service Limit: 5.455 mm (0.2148 in.)

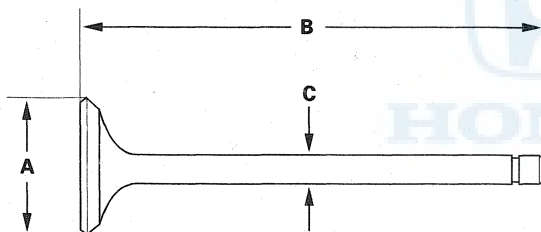
Exhaust Valve Dimensions

A Standard (New): 29.90—30.10 mm
(1.177—1.185 in.)

B Standard (New): 113.90—114.50 mm
(4.484—4.508 in.)

C Standard (New): 5.450—5.460 mm
(0.2146—0.2150 in.)

C Service Limit: 5.420 mm (0.2134 in.)



Valve Stem-to-Guide Clearance Inspection

1. Remove the valves (see page 6-100).
2. Slide the valve out of its guide about 10 mm (0.39 in.), then measure the guide-to-stem clearance with a dial indicator while rocking the stem in the direction of normal thrust (wobble method).
 - If the measurement exceeds the service limit, recheck it using a new valve.
 - If the measurement is now within the service limit, reassemble using a new valve.
 - If the measurement with a new valve still exceeds the service limit, go to step 3.

Intake Valve Stem-to-Guide Clearance

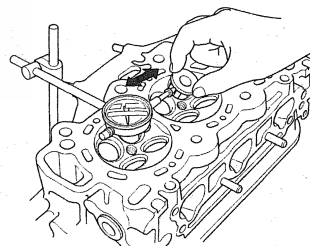
Standard (New): 0.04—0.09 mm
(0.002—0.004 in.)

Service Limit: 0.16 mm (0.006 in.)

Exhaust Valve Stem-to-Guide Clearance

Standard (New): 0.11—0.16 mm
(0.004—0.006 in.)

Service Limit: 0.22 mm (0.009 in.)



3. Subtract the O.D. of the valve stem, measured with a micrometer, from the I.D. of the valve guide, measured with an inside micrometer or ball gauge. Take the measurements in three places along the valve stem and three places inside the valve guide. The difference between the largest guide measurement and the smallest stem measurement should not exceed the service limit.

Intake Valve Stem-to-Guide Clearance

Standard (New): 0.020—0.045 mm
(0.0008—0.0018 in.)

Service Limit: 0.08 mm (0.003 in.)

Exhaust Valve Stem-to-Guide Clearance

Standard (New): 0.055—0.080 mm
(0.0022—0.0031 in.)

Service Limit: 0.11 mm (0.004 in.)

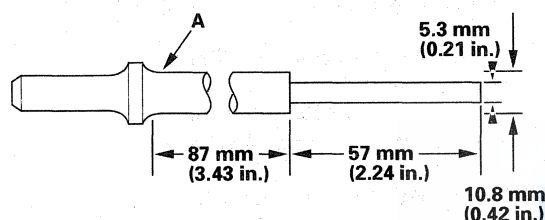
Cylinder Head

Valve Guide Replacement

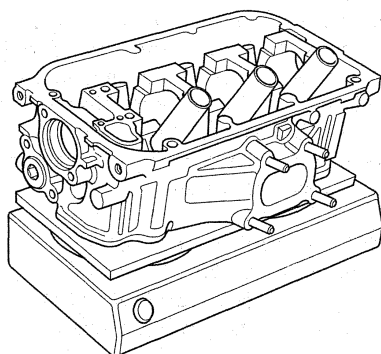
Special Tools Required

- Valve guide driver, 5.5 mm 07742-0010100
- Valve guide reamer, 5.5 mm 07HAH-PJ7A100

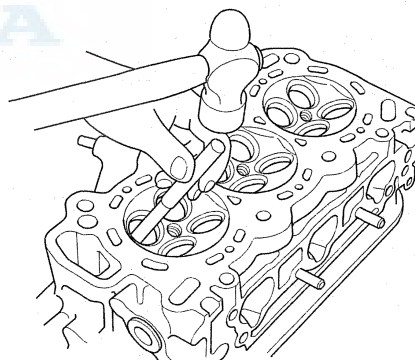
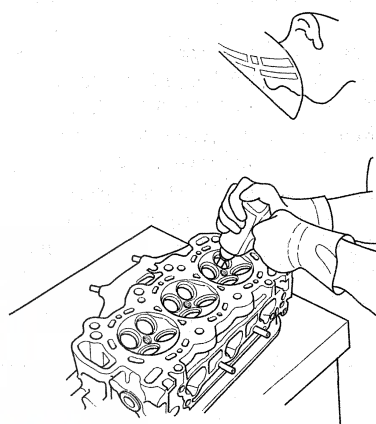
1. Inspect valve stem-to-guide clearance (see page 6-101).
2. As illustrated, use a commercially available air-impact valve guide driver (A) modified to fit the diameter of the valve guides. In most cases, the same procedure can be done using the special tool and a conventional hammer.



3. Select the proper replacement guides, and chill them in the freezer section of a refrigerator for about an hour.
4. Use a hot plate or oven to evenly heat the cylinder head to 300 °F (150 °C). Monitor the temperature with a cooking thermometer. Do not get the head hotter than 300 °F (150 °C); excessive heat may loosen the valve seats.



5. Working from the combustion chamber side, use the driver and an air hammer to drive the guide about 2 mm (0.1 in.) towards the combustion chamber. This will knock off some of the carbon and make removal easier. Hold the air hammer directly in line with the valve guide to prevent damaging the driver. Wear safety goggles or a face shield.
6. Turn the head over, and drive the guide out toward the camshaft side of the head.



7. If a valve guide still won't move, drill it out with a 8 mm (5/16 in.) bit, then try again.

NOTE: Drill guides only in extreme cases; you could damage the cylinder head if the guide breaks.

8. Remove the new guide(s) from the freezer, one at a time, as you need them.

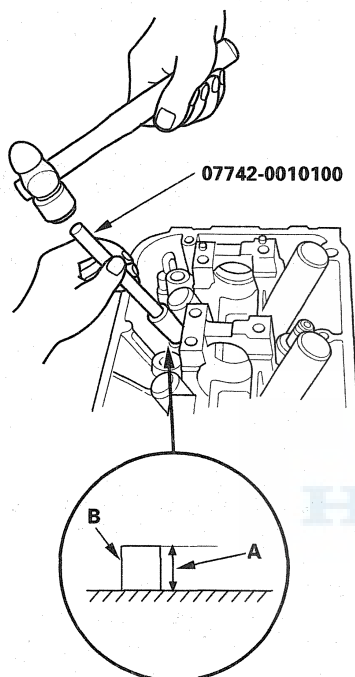


9. Apply a thin coat of new engine oil to the outside of the new valve guide. Install the guide from the camshaft side of the head; use the valve guide driver to drive the guide to the specified installed height (A) of the guide (B). If you have all 12 guides to do, you may have to reheat the head.

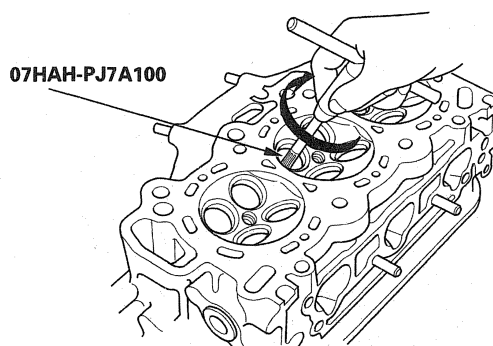
Valve Guide Installed Height

Intake: 21.20—22.20 mm (0.835—0.874 in.)

Exhaust: 20.60—21.60 mm (0.811—0.850 in.)



10. Coat both the reamer and the valve guide with cutting oil.
11. Rotate the reamer clockwise the full length of the valve guide bore.

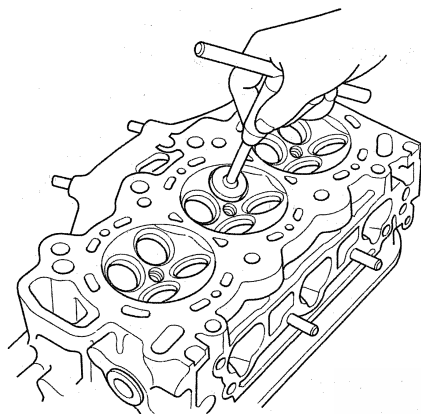


12. Continue to rotate the reamer clockwise while removing it from the bore.
13. Thoroughly wash the guide in detergent and water to remove any cutting residue.
14. Check the clearance with a valve (see page 6-101). Verify that a valve slides in the intake and exhaust valve guides without sticking.

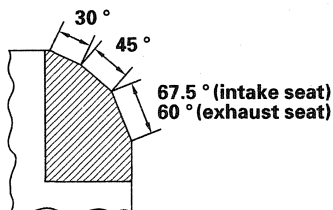
Cylinder Head

Valve Seat Reconditioning

1. Inspect valve stem-to-guide clearance (see page 6-101). If the valve guides are worn, replace them (see page 6-102) before cutting the valve seats.
2. Renew the valve seats in the cylinder head using a valve seat cutter.



3. Carefully cut a 45° seat, removing only enough material to ensure a smooth and concentric seat.
4. Bevel the upper edge of the seat with the 30° cutter and the lower edge of the seat with the 67.5° cutter (intake seat) or the 60° cutter (exhaust seat). Check the width of the seat and adjust accordingly.



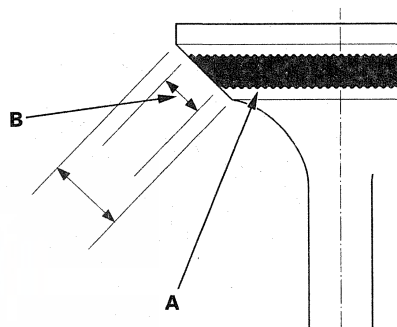
5. Make one more very light pass with the 45° cutter to remove any possible burrs caused by the other cutters.

Valve Seat Width

Standard (New): 1.25—1.55 mm (0.049—0.061 in.)

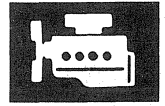
Service Limit: 2.00 mm (0.079 in.)

6. After resurfacing the seat, inspect it for even valve seating. Apply Prussian Blue compound (A) to the valve face. Insert the valve in its original location in the head, then lift it and snap it closed against the seat several times.



7. The actual valve seating surface (B), as shown by the blue compound, should be centered on the seat.
 - If it is too high (closer to the valve stem), you must make a second cut with the 67.5° cutter (intake seat) or the 60° cutter (exhaust seat) to move it down, then one more cut with the 45° cutter to restore seat width.
 - If it is too low (closer to the valve edge), you must make a second cut with the 30° cutter to move it up, then one more cut with the 45° cutter to restore seat width.

NOTE: The final cut should always be made with the 45° cutter.



8. Insert the intake and exhaust valves in the head, and measure the valve stem installed height (A).

Intake Valve Stem Installed Height

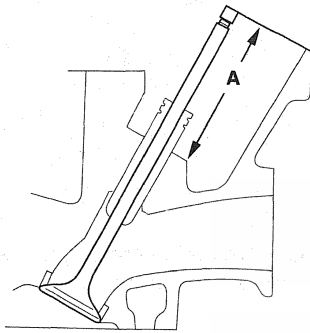
Standard (New): 46.75—47.55 mm
(1.841—1.872 in.)

Service Limit: 47.80 mm (1.882 in.)

Exhaust Valve Stem Installed Height

Standard (New): 46.68—47.48 mm
(1.838—1.869 in.)

Service Limit: 47.73 mm (1.879 in.)



9. If the valve stem installed height is over the service limit, replace the valve and recheck. If it is still over the service limit, replace the cylinder head; the valve seat in the head is too deep.

Cylinder Head

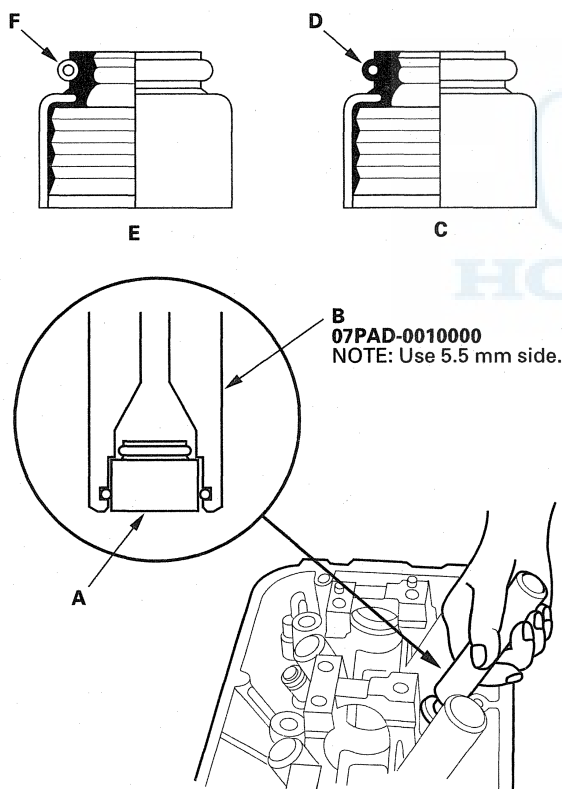
Valve, Spring, and Valve Seal Installation

Special Tools Required

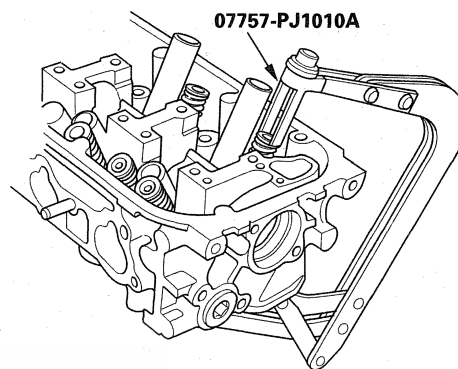
- Stem seal driver 07PAD-0010000
- Valve spring compressor attachment 07757-PJ1010A

1. Coat the valve stems with new engine oil. Install the valves in the valve guides.
2. Check that the valves move up and down smoothly.
3. Install the spring seats on the cylinder head.
4. Install the new valve seals (A) using the stem seal driver (B).

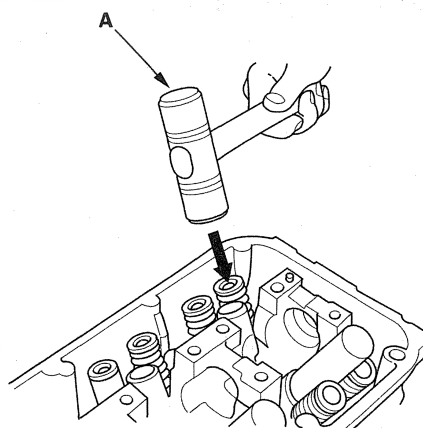
NOTE: Exhaust valve seals (C) have a black spring (D) and intake valve seals (E) have a white spring (F). They are not interchangeable.

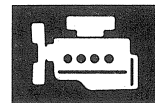


5. Install the valve spring and valve retainer. Place the end of the valve spring with closely wound coils toward the cylinder head.
6. Install the valve spring compressor attachment and spring compressor. Compress the spring and install the valve cotters.



7. Remove the valve spring compressor and valve spring compressor attachment.
8. Lightly tap the end of each valve stem two or three times with a plastic mallet (A) to ensure proper seating of the valve and valve cotters. Tap the valve stem only along its axis so you do not bend the stem.



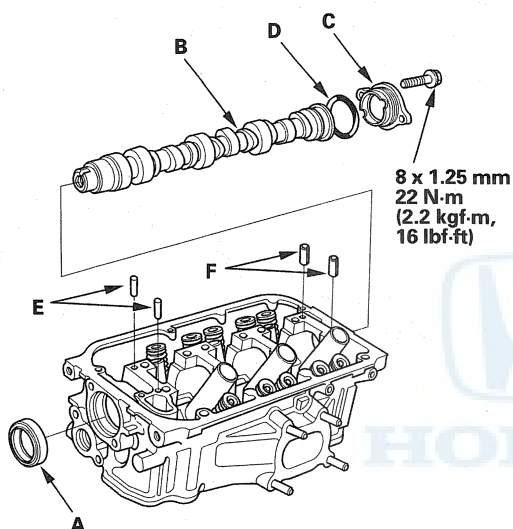


Camshaft, Rocker Arm Assembly, Camshaft Seal, and Pulley Installation

FRONT

1. Apply a light coat of new engine oil around the camshaft oil seal.
2. Gently tap the new camshaft oil seal (A) into the cylinder head.

- 1 Tap the camshaft oil seal in squarely.
- 2 Install the oil seal about 0.5 —1.5 mm (0.02—0.06 in.) below the surface of the cylinder head.

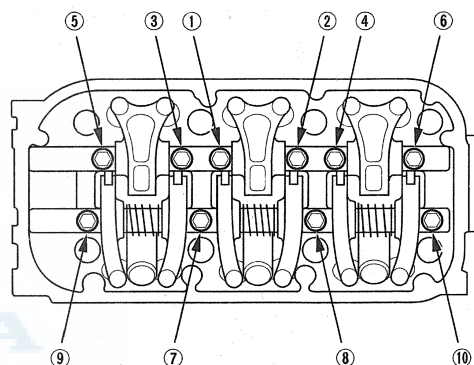


3. Insert the camshaft (B) into the cylinder head, then install the camshaft thrust cover (C). Always use a new O-ring (D). Apply new engine oil to the journals and cam lobes.
4. Check that the oil seal lips are not distorted.
5. Install the solid dowel pins (E) and the hollow dowel pins (F).

6. Loosen the valve adjusting screws.
7. If the rocker arm assembly is disassembled, reassemble the rocker arm assembly (see page 6-93).
8. Set the rocker arm assembly in place, and loosely install the bolts. Make sure the rocker arms are properly positioned on the valve stems.
9. Torque each bolt two turns at a time in the sequence shown to ensure that the rockers do not bind on the valves.

Specified Torque

8 x 1.25 mm: 24 N·m (2.4 kgf·m, 18 lbf·ft)



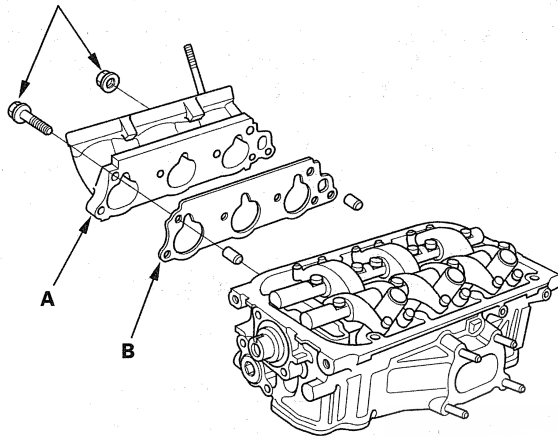
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Cylinder Head

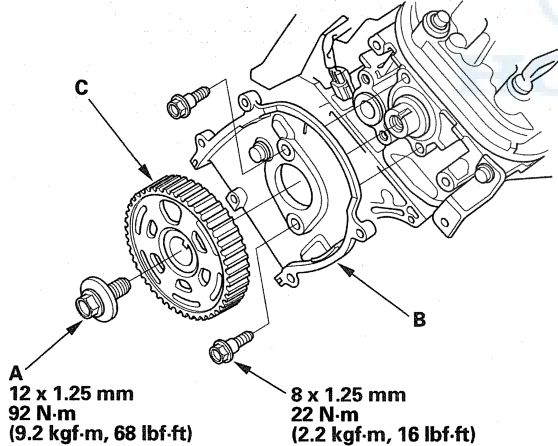
Camshaft, Rocker Arm Assembly, Camshaft Seal, and Pulley Installation (cont'd)

10. Install the injector base (A). Always use a new gasket (B).

8 x 1.25 mm
22 N·m (2.2 kgf·m, 16 lbf·ft)



11. Apply new engine oil to the threads of the camshaft pulley mounting bolt (A). Install the back cover (B), then install the camshaft pulley (C).

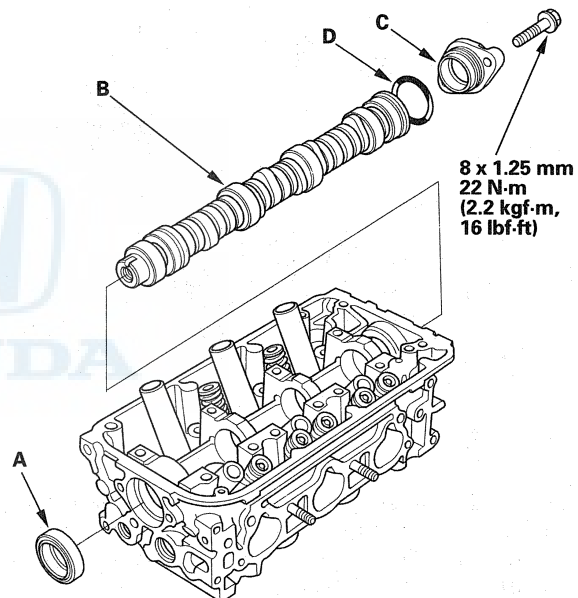


12. Set the camshaft pulleys to top dead center (TDC) before bolting them onto the engine block (see step 6 on page 6-111).

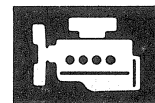
REAR

1. Loosen the valve adjusting screws.
2. Apply a light coat of new engine oil around the camshaft oil seal.
3. Gently tap the new camshaft oil seal (A) into the cylinder head.

- 1 Tap the camshaft oil seal in squarely.
- 2 Install the oil seal about 0.5 —1.5 mm (0.02—0.06 in.) below the surface of the cylinder head.



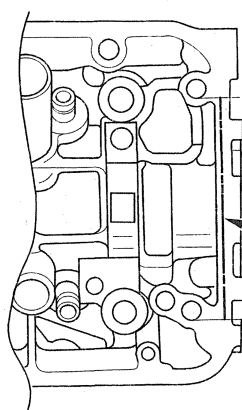
4. Insert the camshaft (B) into the cylinder head, then install the camshaft thrust cover (C). Always use a new O-ring (D). Apply new engine oil to the camshaft journals and lobes.
5. Check that the oil seal lips are not distorted.
6. If the rocker arm assembly is disassembled, reassemble the rocker arm assembly (see page 6-94).



7. Remove all of the old liquid gasket from the rocker shaft holder and cylinder head.
8. Apply liquid gasket, P/N 08717-0004, 08718-0001, 08718-0003, or 08718-0009, evenly to the rocker shaft holder mating surface of the cylinder head. Install the component within 5 minutes of applying the liquid gasket.

NOTE:

- If you apply liquid gasket P/N 08718-0012, the component must be installed within 4 minutes.
- If too much time has passed after applying the liquid gasket, remove the old liquid gasket and residue, then reapply the new liquid gasket.



Apply liquid gasket along the broken line.

9. Set the rocker arm assembly in place, and loosely install the bolts. Make sure that the rocker arms are properly positioned on the valve stems.

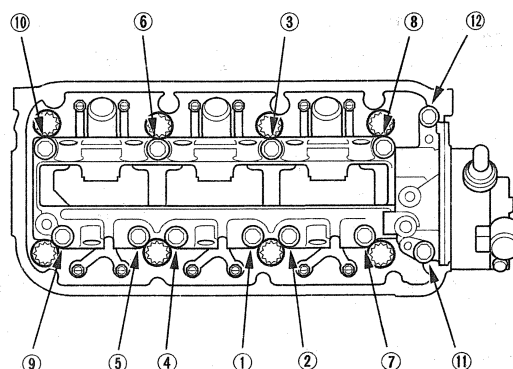
NOTE:

- Wait at least 30 minutes before filling the engine with oil.
- Do not run the engine for at least 3 hours after installing the rocker arm assembly.

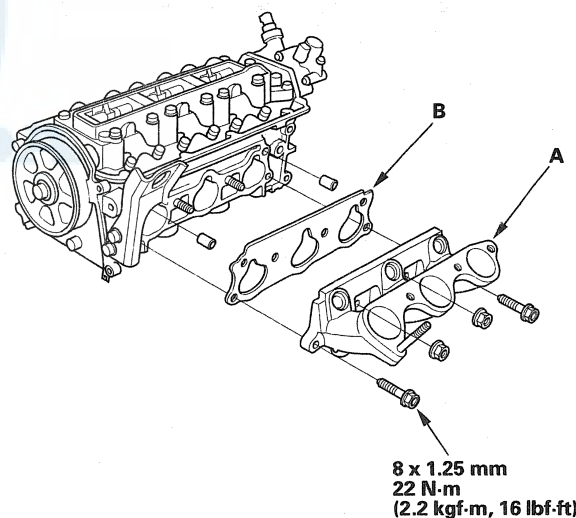
10. Torque each bolt two turns at a time in the sequence shown to ensure that the rockers do not bind on the valves.

Specified Torque

8 x 1.25 mm: 22 N·m (2.2 kgf·m, 16 lbf·ft)



11. Install the injector base (A). Always use a new gasket (B).

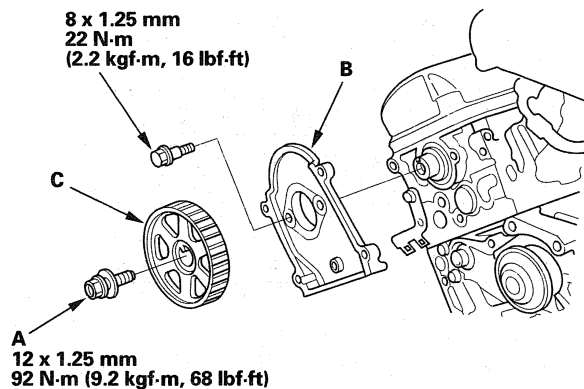


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Cylinder Head

Camshaft, Rocker Arm Assembly, Camshaft Seal, and Pulley Installation (cont'd)

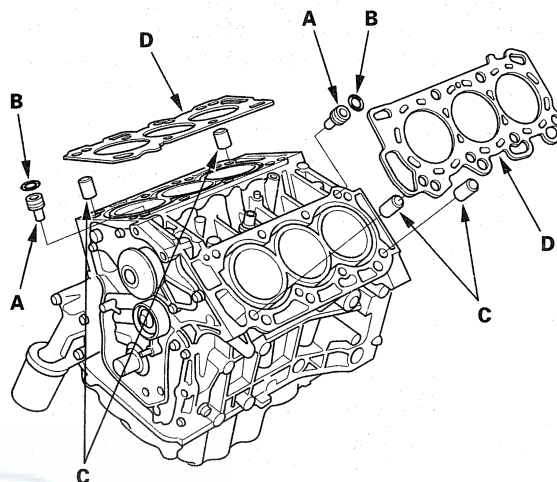
12. Apply new engine oil to the threads of the camshaft pulley mounting bolt (A). Install the back cover (B), then install the camshaft pulley (C).



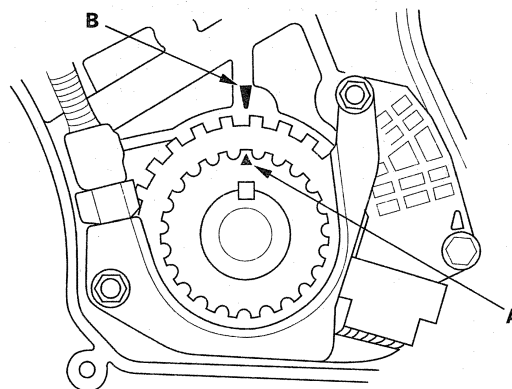
13. Set the camshaft pulleys to TDC before bolting them onto the engine block (see step 6 on page 6-111).

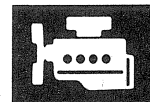
Cylinder Head Installation

1. Clean the cylinder head and engine block surface.
2. Clean and install the oil control orifices (A) with new O-rings (B).



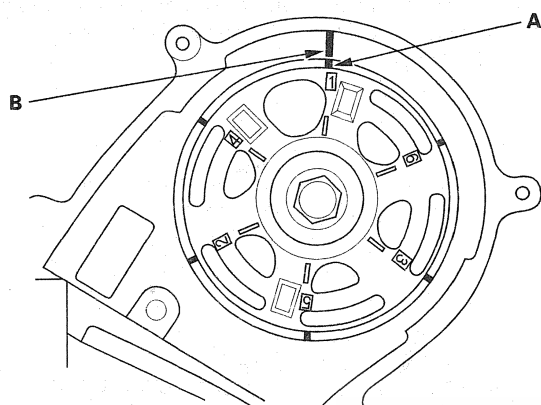
3. Install the dowel pins (C) and new cylinder head gaskets (D).
4. Clean the timing belt pulleys, timing belt guide plate, and the upper and lower covers.
5. Set the timing belt drive pulley to top dead center (TDC) by aligning the TDC mark (A) on the tooth of the timing belt drive pulley with the pointer (B) on the oil pump.



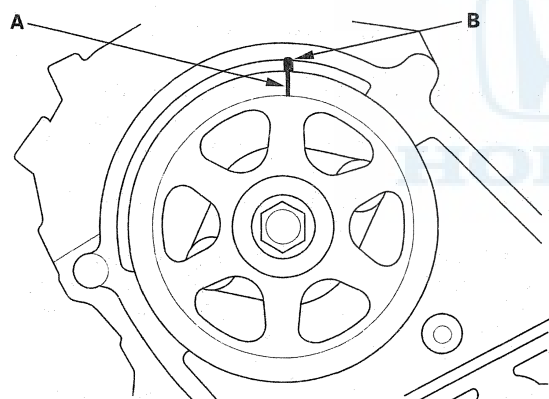


6. Set the camshaft pulleys to TDC by aligning the TDC marks (A) on the camshaft pulleys with the pointers (B) on the back covers.

FRONT

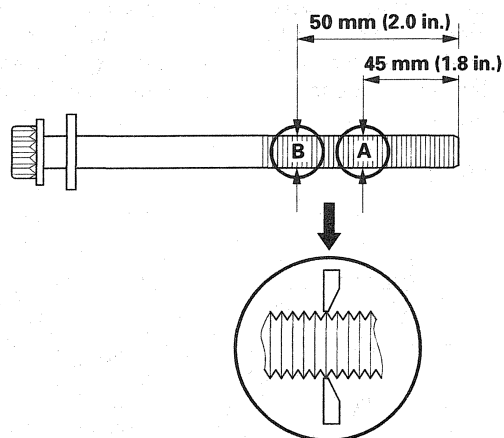


REAR



7. Install the cylinder heads on the engine block.

8. Measure the diameter of each cylinder head bolt at point A and point B.



9. If either diameter is less than 10.6 mm (0.42 in.), replace the cylinder head bolt.
10. Apply new engine oil to the threads and under the bolt heads of all cylinder head bolts.

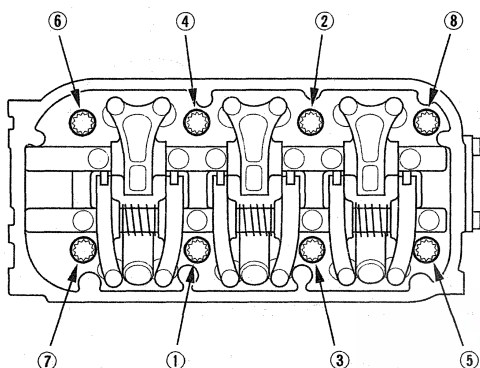
(cont'd)

Cylinder Head

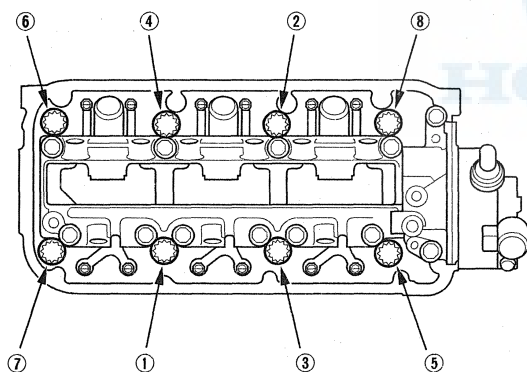
Cylinder Head Installation (cont'd)

11. Torque the cylinder head bolts in sequence to 30 N·m (3.0 kgf·m, 22 lbf·ft). Use a beam-type torque wrench. When using a preset-type torque wrench, be sure to tighten slowly and do not overtorque. If a bolt makes any noise while you are torquing it, loosen the bolt and retorque it from the first step.

FRONT

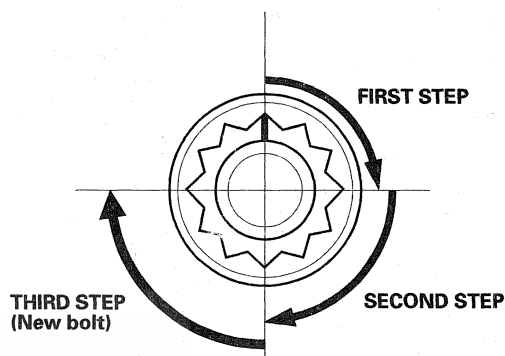


REAR

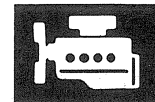


12. After torquing, torque all cylinder head bolts in two steps (90 ° per step). If you are using a new cylinder head bolt, tighten the bolt an extra 90°.

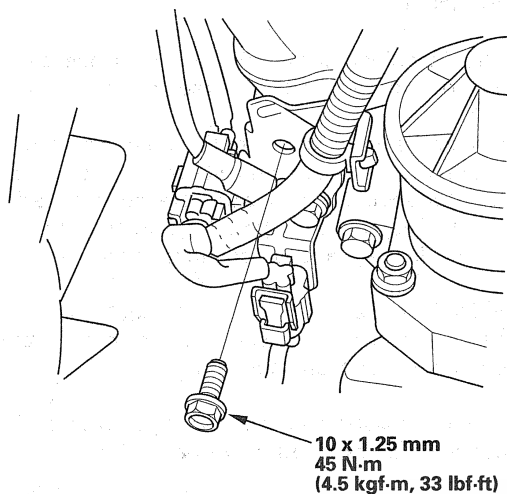
NOTE: Remove the cylinder head bolt if you torque it beyond the specified angle, and go back to step 8 of the procedure. Do not loosen it back to the specified angle.



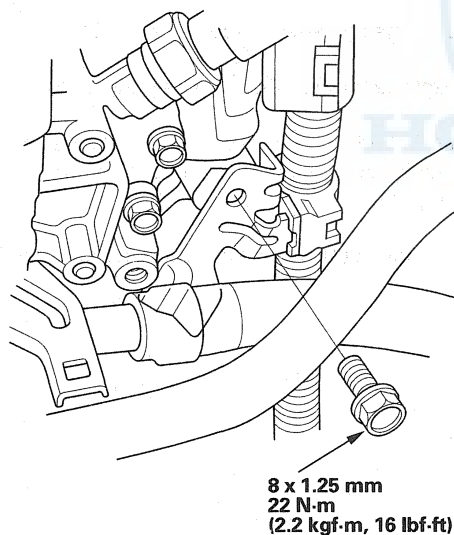
13. Install the timing belt (see page 6-72).
14. Adjust the valve clearance (see page 6-64).
15. Install the cylinder head covers (see page 6-84).
16. Install the water passage (see page 10-10).
17. Install the front warm up three way catalytic converter (front WU-TWC) (see page 11-412) and rear warm up three way catalytic converter (rear WU-TWC) (see page 11-413).
18. Install the fuel rails (see step 5 on page 11-222).



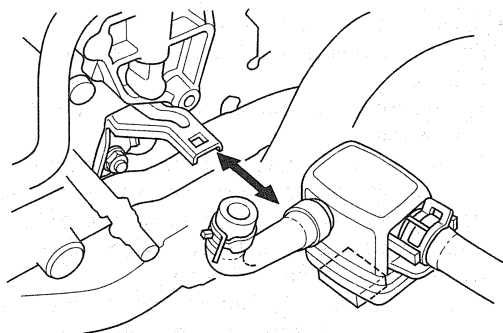
19. Install the connector bracket to the front cylinder head.



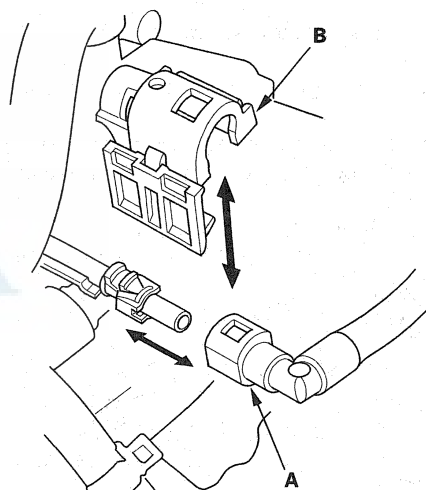
20. Install the harness clamp bracket to the rear cylinder head.



21. Install the evaporative emission (EVAP) canister purge valve joint.



22. Connect the fuel feed hose (A) (see page 11-381), then install the quick-connect fitting cover (B).



(cont'd)

Cylinder Head

Cylinder Head Installation (cont'd)

23. Connect the engine wire harness connectors, and install the wire harness clamps to the cylinder head.

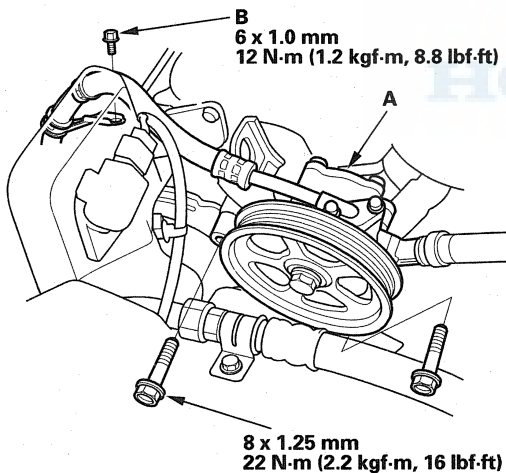
- Six injector connectors
- Engine coolant temperature (ECT) sensor 1 connector
- Engine coolant temperature (ECT) sensor 2 connector
- Crankshaft position (CKP) sensor connector
- Exhaust gas recirculation (EGR) valve connector
- Rocker arm oil control solenoid connector
- Engine oil pressure (EOP) sensor connector
- Oil pressure switch connector
- Two air fuel ratio (A/F) sensor connectors
- Two secondary heated oxygen sensor (secondary HO2S) connectors

24. Install the intake manifold (see page 9-6).

25. Install the alternator (see page 4-37).

26. Install the six ignition coils (see page 4-19).

27. Install the power steering (P/S) pump (A) and torque the bolt (B) securing the P/S hose bracket.



28. Install the drive belt (see page 4-32).

29. Clean the battery posts and cable terminals, then assemble them and apply grease to prevent corrosion.

30. After installation, check that all tubes, hoses and connectors are installed correctly.

31. Inspect for fuel leaks. Turn the ignition switch ON (II) (do not operate the starter) so the fuel pump runs for about 2 seconds and pressurizes the fuel line. Repeat this operation three times, then check for fuel leakage at any point in the fuel line.

32. Refill the radiator with engine coolant, and bleed air from the cooling system with the heater valve open (see step 8 on page 10-7).

33. Do the crankshaft position (CKP) pattern clear/CKP pattern learn procedure (see page 11-5).

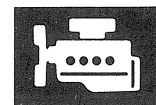
34. Do the powertrain control module (PCM) idle learn procedure (see page 11-359) and power window control unit reset procedure (see page 22-255).

35. Inspect the idle speed (see page 11-358).

36. Inspect the ignition timing (see page 4-18).

37. Enter the anti-theft codes for the audio system and the navigation system (if equipped), then enter the audio presets.

38. Set the clock (on vehicles without navigation).

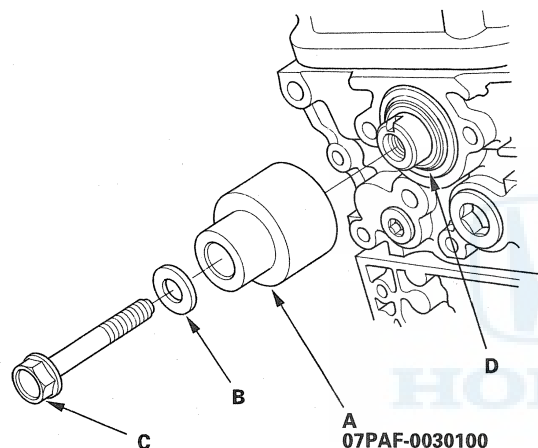


Camshaft Oil Seal Installation - In Car

Special Tools Required

Camshaft oil seal driver 07PAF-0030100

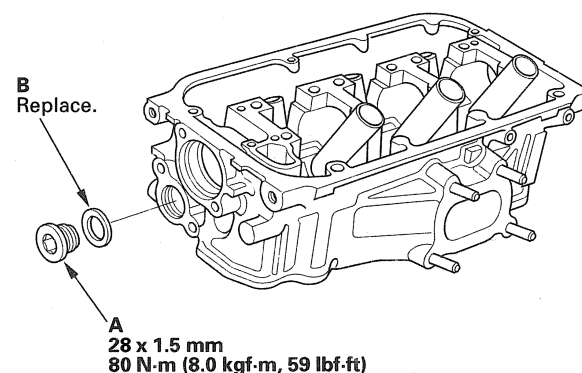
1. Dry the camshaft oil seal housing.
2. Apply a light coat of multipurpose grease to the lip of the camshaft oil seal.
3. Using the camshaft oil seal driver (A), washer (B), and a 12 x 75 x 1.25 mm bolt (C), press in the camshaft oil seal (D) about 0.5—1.5 mm (0.02—0.06 in.) below the surface of the cylinder head.



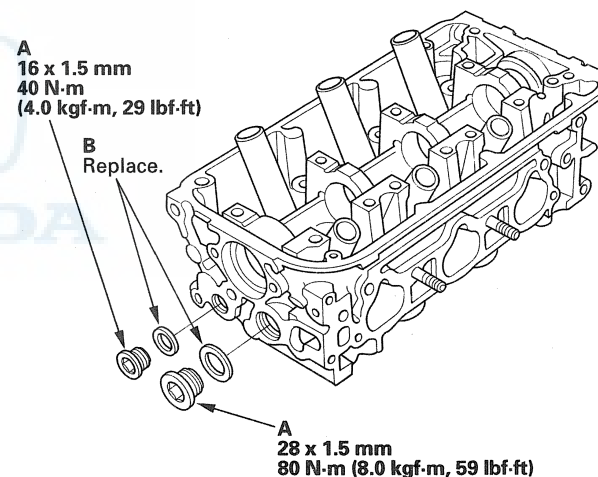
Sealing Bolt Installation

NOTE: When installing the sealing bolt (A), always use a new washer (B).

FRONT



REAR



Engine Mechanical

Engine Block

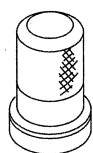
Special Tools	7-2
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Connecting Rod Bearing Replacement	7-9
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Cylinder Bore Honing	7-18
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Installation - In Car	7-31
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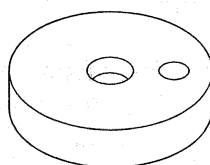
Engine Block

Special Tools

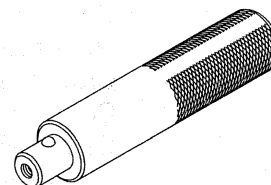
Ref. No.	Tool Number	Description	Qty
①	070AD-RCAA100	Oil Seal Driver, 64 mm	1
②	070AD-RCAA200	Driver Attachment, 106 mm	1
③	07749-0010000	Driver	1



①

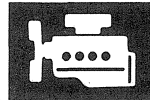


②

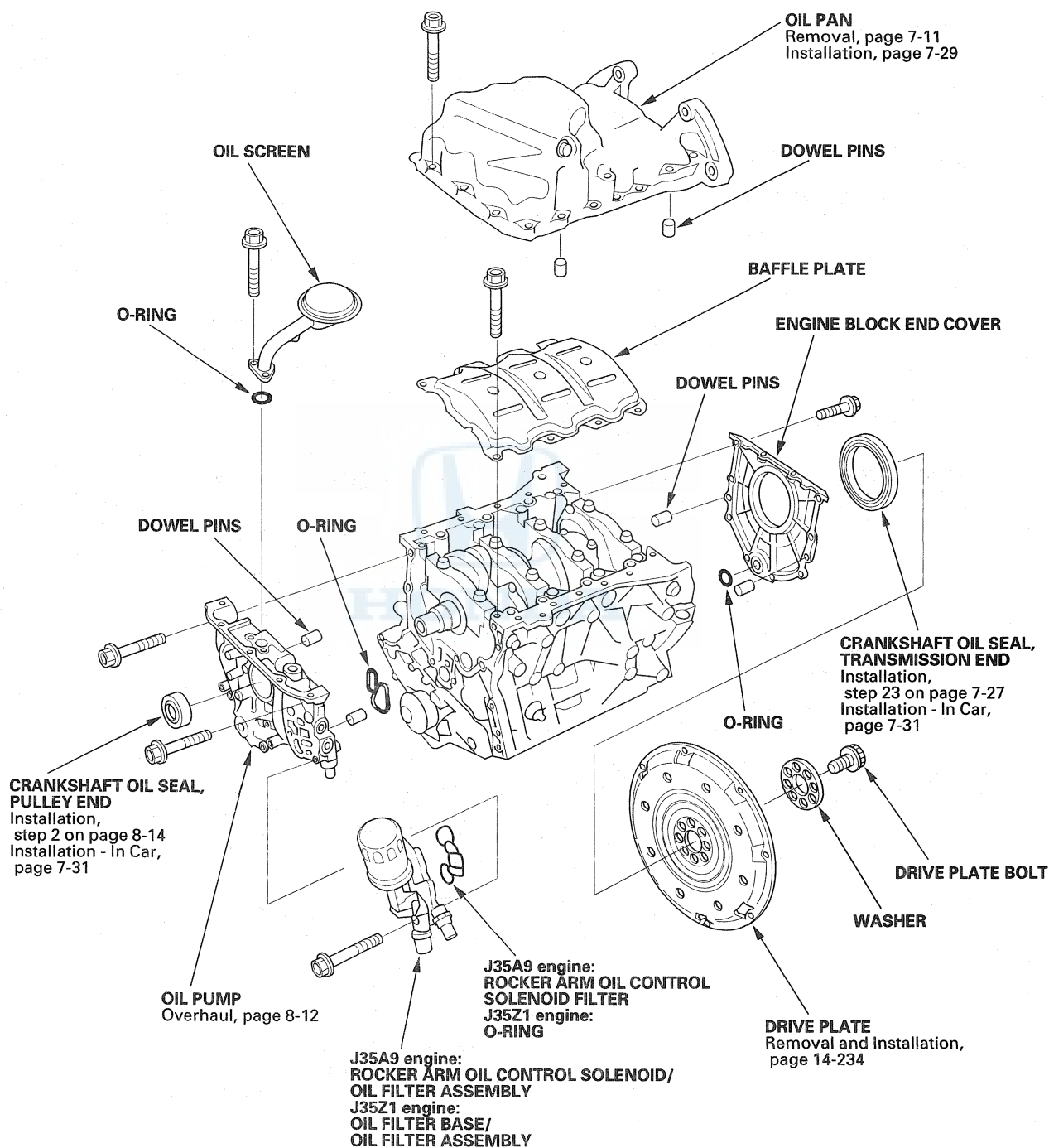


③





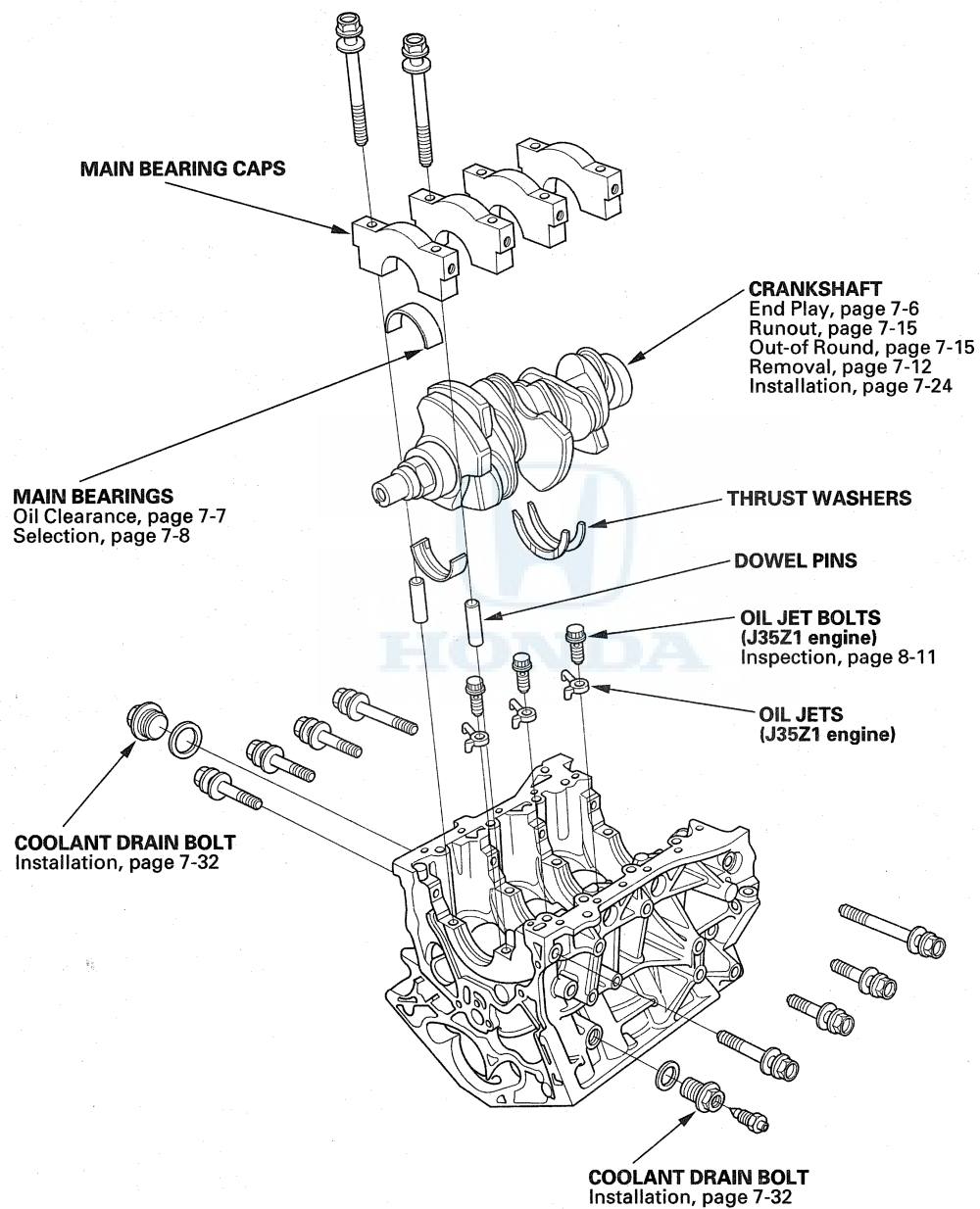
Component Location Index

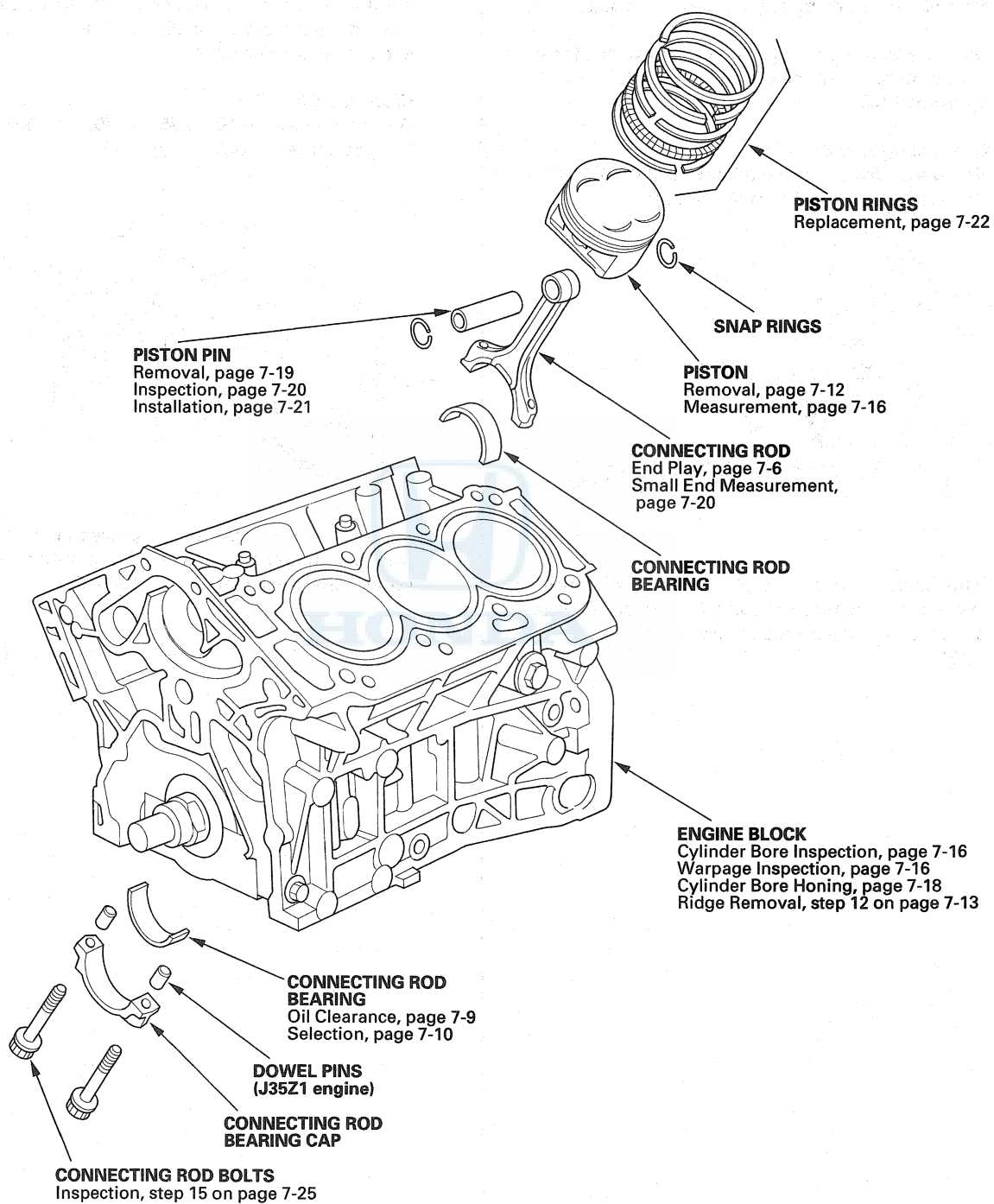
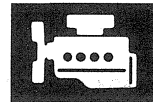


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Engine Block

Component Location Index (cont'd)





Engine Block

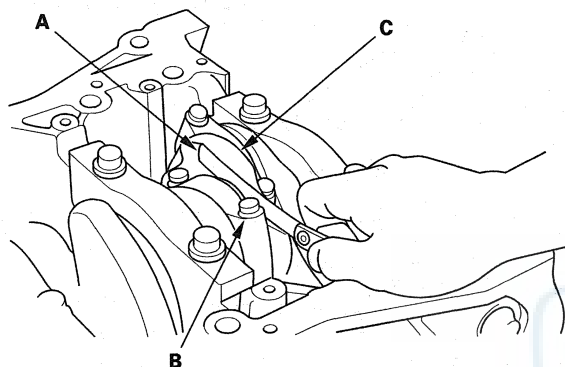
Connecting Rod and Crankshaft End Play Inspection

1. Remove the oil pump (see page 8-13).
2. Remove the baffle plate (see step 11 on page 7-13).
3. Measure the connecting rod end play with a feeler gauge (A) between the connecting rod (B) and crankshaft (C).

Connecting Rod End Play

Standard (New): 0.15—0.35 mm (0.006—0.014 in.)

Service Limit: 0.45 mm (0.018 in.)



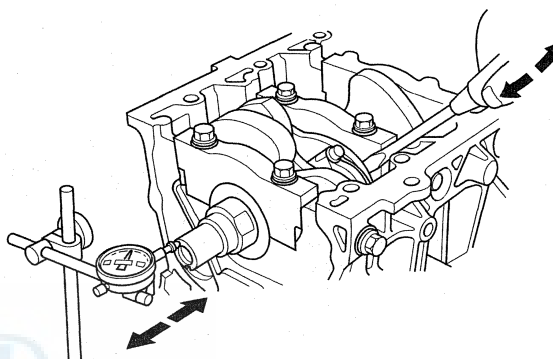
4. If the connecting rod end play is out-of-tolerance, install a new connecting rod and recheck. If it is still out-of-tolerance, replace the crankshaft (see page 7-12).

5. Push the crankshaft firmly away from the dial indicator, and zero the dial against the end of the crankshaft. Then pull the crankshaft firmly back toward the indicator; the dial reading should not exceed the service limit.

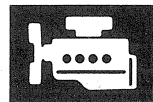
Crankshaft End Play

Standard (New): 0.10—0.35 mm (0.004—0.014 in.)

Service Limit: 0.45 mm (0.018 in.)



6. If the end play is excessive, replace the thrust washers and recheck. If it is still out-of-tolerance, replace the crankshaft (see page 7-12).



Crankshaft Main Bearing Replacement

Main Bearing Clearance Inspection

1. Remove the main bearing caps and bearing halves (see step 18 on page 7-14).
2. Clean each main journal and bearing half with a clean shop towel.
3. Place one strip of plastigage across each main journal.

NOTE: If the engine is still in the vehicle when you bolt the main cap down to check the clearance, the weight of the crankshaft and drive plate will flatten the plastigage further than just the torque on the cap bolt and give you an incorrect reading. For an accurate reading, support the crank with a jack under the counterweights, and check only one bearing at a time.

4. Reinstall the bearings and caps, then torque the bearing cap bolts to 74 N·m (7.5 kgf·m, 55 lbf·ft), and the bearing cap side bolts to 49 N·m (5.0 kgf·m, 36 lbf·ft) in the proper sequence (see step 22 on page 7-26).

NOTE:

- Apply new engine oil to the bolt threads and flanges.
- Do not rotate the crankshaft during inspection.

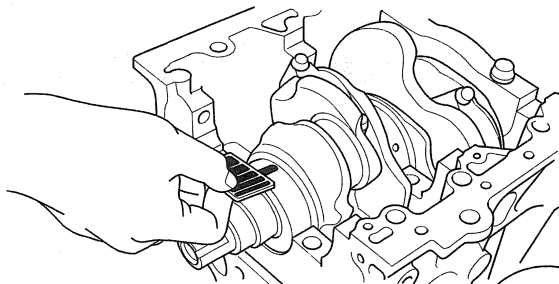
5. Remove the cap and bearing half, and measure the widest part of the plastigage.

Main Bearing-to-Journal Oil Clearance

Standard (New): 0.020—0.044 mm

(0.0008—0.0017 in.)

Service Limit: 0.050 mm (0.0020 in.)



6. If the plastigage measures too wide or too narrow, remove the crankshaft, and remove the upper half of the bearing. Install a new, complete bearing with the same color code, and recheck the clearance. Do not file, shim, or scrape the bearings or the caps to adjust clearance.
7. If the plastigage shows the clearance is still incorrect, try the next larger or smaller bearing (the color listed above or below that one), and check again. If the proper clearance cannot be obtained by using the appropriate larger or smaller bearings, replace the crankshaft and start over (see page 7-12).

(cont'd)

Engine Block

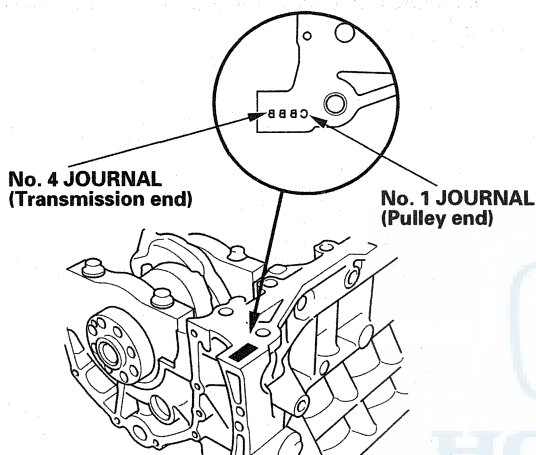
Crankshaft Main Bearing Replacement (cont'd)

Main Bearing Selection

Crankshaft Bore Code Location

Letters or bars have been stamped on the end of the block as a code for the size of each of the four main journal bores.

Use them, and the numbers stamped on the crankshaft (codes for main journal size), to choose the correct bearings. If the codes are indecipherable because of an accumulation of dirt and dust, do not scrub them with a wire brush or scraper. Clean them only with solvent or detergent.



Bearing Identification

Color code is on the edge of the bearing

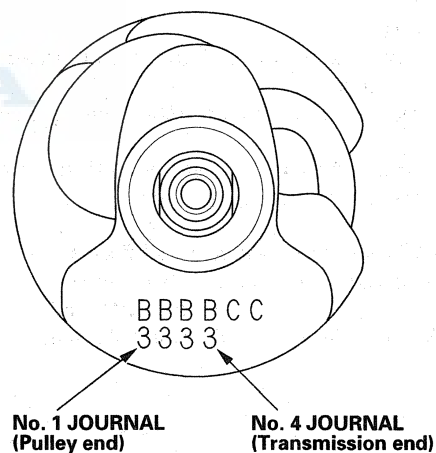
Larger crank bore			
A or I	B or II	C or III	D or IIII

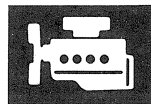
Smaller bearing (Thicker)

	1 or I	2 or II	3 or III	4 or IIII	5 or IIIII	6 or IIIIII
Smaller main journal	Red/Pink	Pink	Pink/Yellow	Yellow		
Smaller bearing (Thicker)	Pink	Pink/Yellow	Yellow	Yellow/Green		
	Pink/Yellow	Yellow	Yellow/Green	Green		
	Yellow	Yellow/Green	Green	Green/Brown		
	Yellow/Green	Green	Green/Brown	Brown		
	Green	Green/Brown	Brown	Brown/Black		

NOTE: When using bearing halves of different colors, it does not matter which color is used in the top or bottom.

Main Journal Code Locations (Numbers or Bars)





Connecting Rod Bearing Replacement

Connecting Rod Bearing Clearance Inspection

1. Remove the connecting rod cap and bearing half (see page 7-12).
2. Clean the crankshaft rod journal and bearing half with a clean shop towel.
3. Place a strip of plastigage across the rod journal.
4. Reinstall the bearing half and cap, and torque the bolts.

NOTE:

- Apply new engine oil to the bolt threads and flanges.
- Do not rotate the crankshaft during inspection.

Tightening Torque:

20 N·m (2.0 kgf·m, 15 lbf·ft) \pm 90°

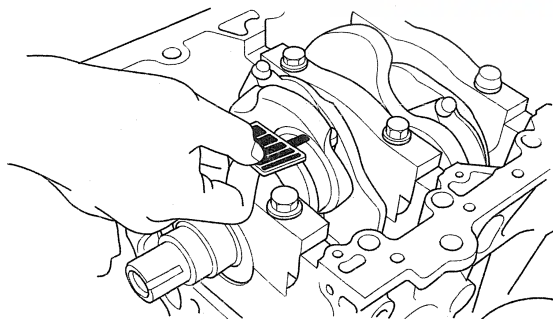
5. Remove the rod cap and bearing half and measure the widest part of the plastigage.

Connecting Rod Bearing-to-Journal Oil Clearance

Standard (New): 0.020—0.044 mm

(0.0008—0.0017 in.)

Service Limit: 0.050 mm (0.0020 in.)



6. If the plastigage measures too wide or too narrow, remove the upper half of the bearing, then install a new, complete bearing with the same color code, and recheck the clearance. Do not file, shim, or scrape the bearings or the caps to adjust clearance.
7. If the plastigage shows the clearance is still incorrect, try the next larger or smaller bearing (the color listed above or below that one), and check clearance again. If the proper clearance cannot be obtained by using the appropriate larger or smaller bearings, replace the crankshaft and start over (see page 7-12).

(cont'd)

Engine Block

Connecting Rod Bearing Replacement (cont'd)

Connecting Rod Bearing Selection

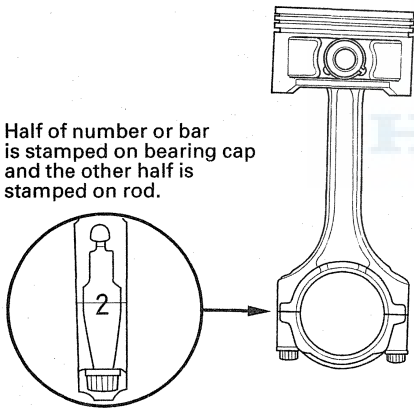
Each connecting rod falls into one of four tolerance ranges (from 0 to 0.024 mm (0.0009 in.), in 0.006 mm (0.0002 in.) increments) depending on the size of its big end bore. It's then stamped with a number or bar (1, 2, 3, or 4/I, II, III, or IIII) indicating the range. You may find any combination of 1, 2, 3, or 4/I, II, III, or IIII in any engine.

Normal Bore Size: 58.0 mm (2.28 in.)

Inspect the connecting rod for cracks and heat damage.

Connecting Rod Journal Code Locations

Numbers or bars have been stamped on the side of each connecting rod as a code for the size of the big end. Use them, and the letters or bars stamped on the crank (codes for rod journal size), to choose the correct bearings. If the codes are indecipherable because of an accumulation of dirt and dust, do not scrub them with a wire brush or scraper. Clean them only with solvent or detergent.

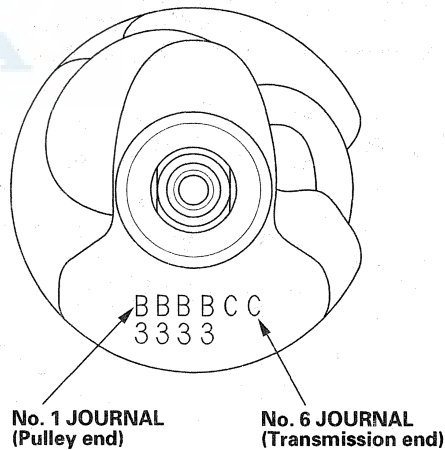


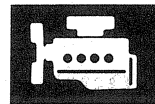
Bearing Identification
Color code is on the edge of the bearing

	1 or I	2 or II	3 or III	4 or IIII
→ Larger big end bore				
→ Smaller bearing (Thicker)				
A or I	Pink	Pink/Yellow	Yellow	Yellow/Green
B or II	Pink/Yellow	Yellow	Yellow/Green	Green
C or III	Yellow	Yellow/Green	Green	Green/Brown
D or IIII	Yellow/Green	Green	Green/Brown	Brown
E or IIII	Green	Green/Brown	Brown	Brown/Black
F or IIII	Green/Brown	Brown	Brown/Black	Black

NOTE: When using bearing halves of different colors, it does not matter which color is used in the top or bottom.

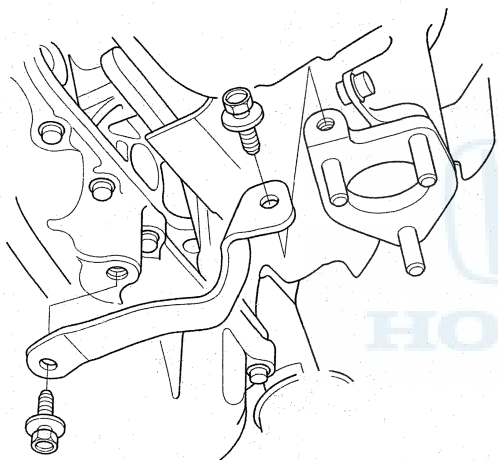
Connecting Rod Journal Code Locations (Letters or Bars)



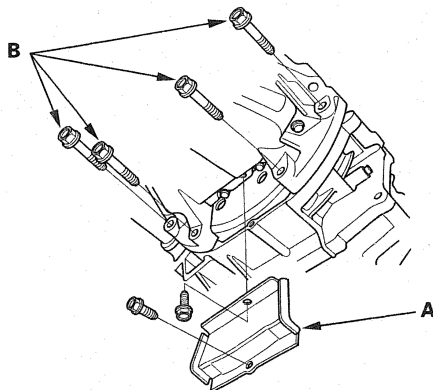


Oil Pan Removal

1. If the engine is already out of the vehicle, go to step 7.
2. Raise the vehicle on the lift to full height.
3. Drain the engine oil (see page 8-8).
4. Remove the splash shield (see step 30 on page 5-5).
5. Remove the front subframe stiffener (see step 34 on page 5-5).
6. Remove exhaust pipe A (see step 35 on page 5-5).
7. Remove the rear warm up three way catalytic converter (rear WU-TWC) bracket.

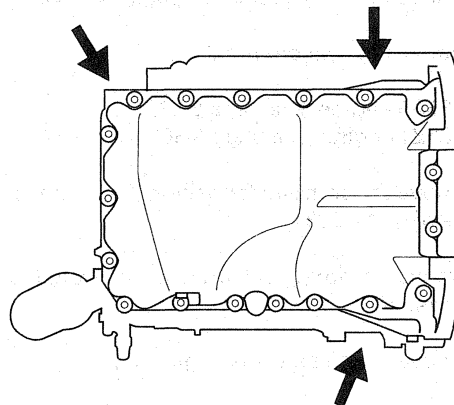


8. Remove the torque converter cover (A) and the four bolts (B) securing the transmission.



9. Remove the bolts securing the oil pan.

10. Using a flat blade screwdriver, separate the oil pan from the engine block in the places shown.

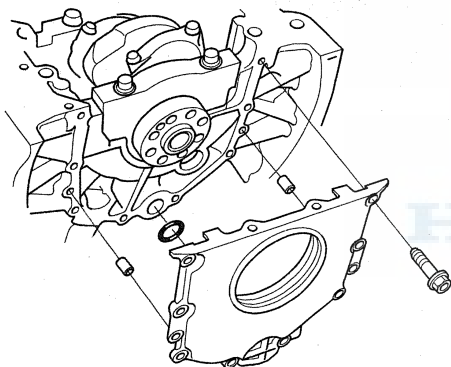


11. Remove the oil pan.

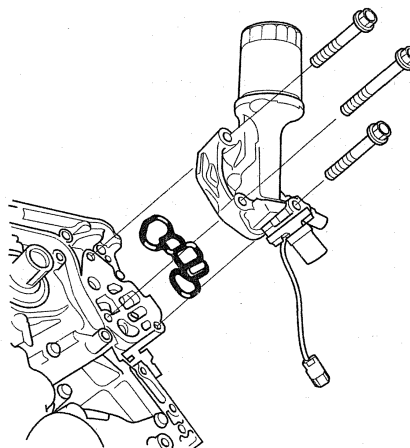
Engine Block

Crankshaft and Piston Removal

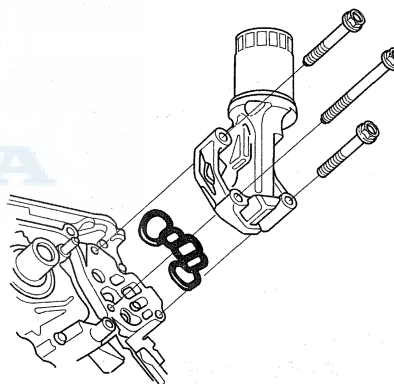
1. Remove the engine/transmission (see page 5-2).
2. Remove the transmission (see page 14-222).
3. Remove the drive plate (see page 14-234).
4. Remove the cylinder heads:
 - J35A9 engine (see page 6-28)
 - J35Z1 engine (see page 6-86)
5. Remove the crankshaft position (CKP) sensor (see page 11-228).
6. Remove the timing belt drive pulley from the crankshaft.
7. Remove the oil pan (see page 7-11).
8. Remove the engine block end cover.

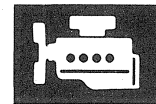


9. Remove the rocker arm oil control solenoid/oil filter assembly (J35A9 engine).

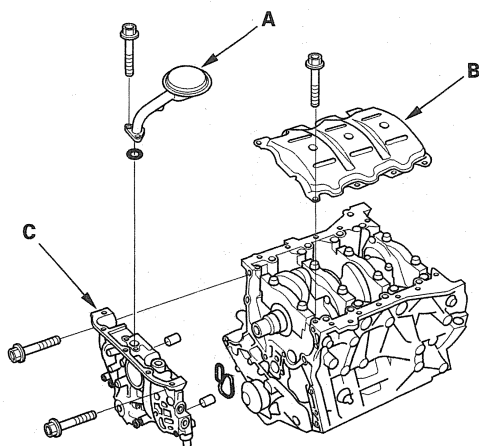


10. Remove the oil filter base/oil filter assembly (J35Z1 engine).

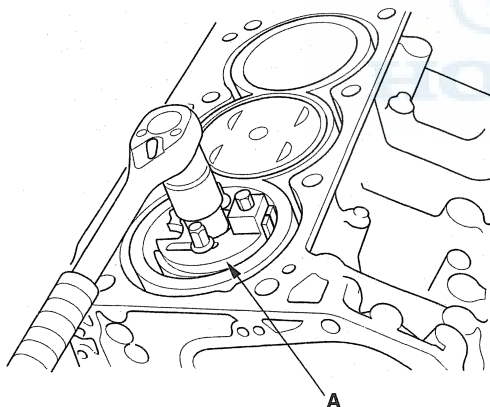




11. Remove the oil screen (A), baffle plate (B), and oil pump (C).

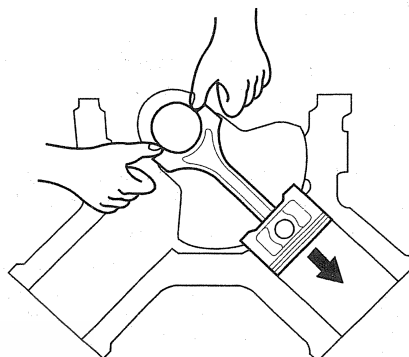


12. If you can feel a ridge of metal or hard carbon around the top of any cylinder, remove it with a ridge reamer (A). Follow the reamer manufacturer's instructions. If the ridge is not removed, it may damage the piston as it's pushed out.

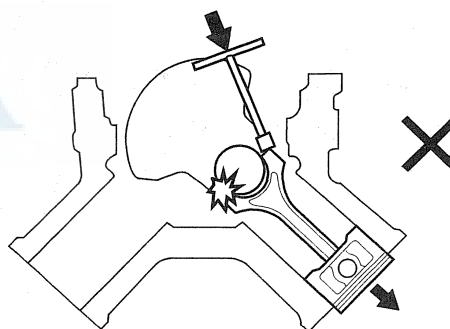


13. Remove the connecting rod caps after setting the crank pin at bottom dead center (BDC) for each cylinder. Remove the piston/connecting rod assembly by pushing on the connecting rod. Take care not to damage the oil jets, crank pin, or cylinder with the connecting rod.

CORRECT



INCORRECT

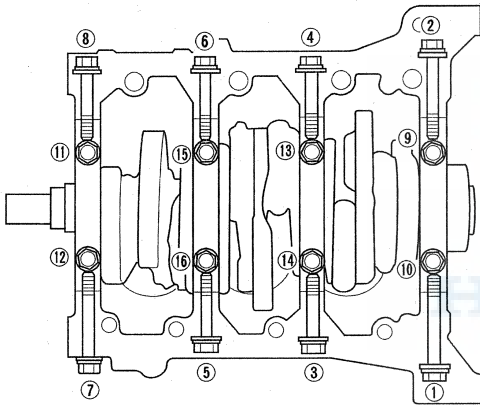


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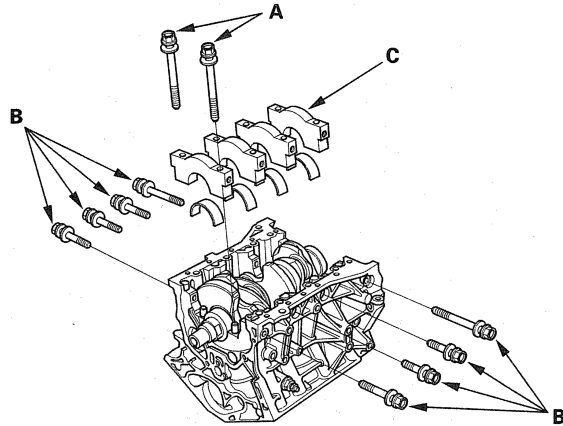
Engine Block

Crankshaft and Piston Removal (cont'd)

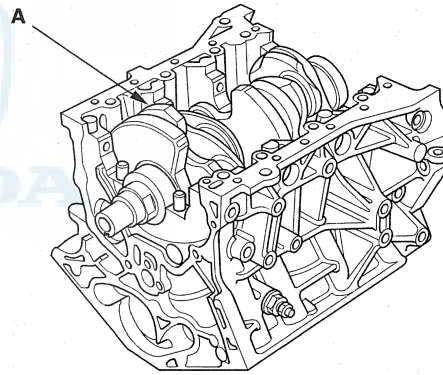
14. Remove the bearing from the cap. Keep all caps/bearings in order.
15. Remove the upper bearing halves from the connecting rods, and set them aside with their respective caps.
16. After removing a piston/connecting rod assembly, reinstall the cap on the rod.
17. To avoid confusion during reassembly, mark each piston/connecting rod assembly with its cylinder number.
18. Loosen the bearing cap bolts and bearing cap side bolts in sequence 1/3 turn at a time; repeat the sequence until all bolts are loosened.



19. Remove the bearing cap bolts (A) and bearing cap side bolts (B), then remove the bearing cap (C).



20. Lift the crankshaft (A) out of the engine block, being careful not to damage the journals.



21. Reinstall the main caps and bearings on the engine block in the proper order.



Crankshaft Inspection

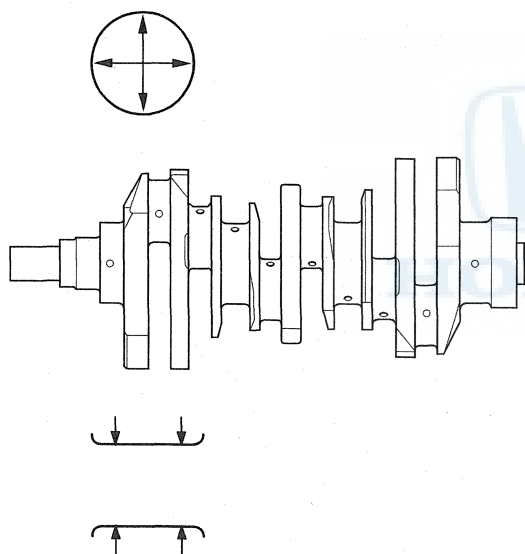
Out-of-Round and Taper

1. Remove the crankshaft from the engine block (see page 7-12).
2. Clean the crankshaft oil passages with pipe cleaners or a suitable brush.
3. Check the keyway and threads.
4. Measure out-of-round at the middle of each rod and main journal in two places. The difference between measurements on each journal must not be more than the service limit.

Journal Out-of-Round

Standard (New): 0.005 mm (0.0002 in.) max.

Service Limit: 0.010 mm (0.0004 in.)



5. Measure taper at the edges of each rod and main journal. The difference between measurements on each journal must not be more than the service limit.

Journal Taper

Standard (New): 0.005 mm (0.0002 in.) max.

Service Limit: 0.010 mm (0.0004 in.)

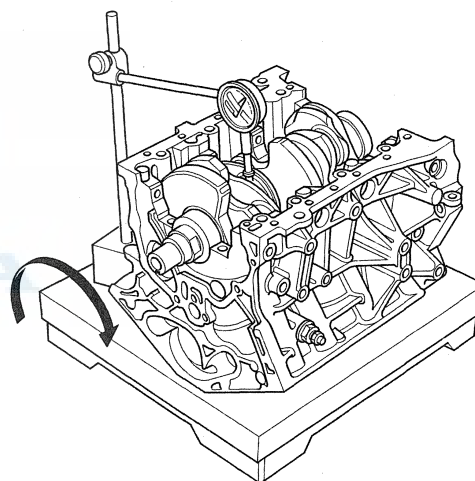
Straightness

6. Place the engine block on the flat surface, crankshaft side up.
7. Clean and install the bearings on the No. 1 and No. 4 journal of the engine block.
8. Lower the crankshaft into the engine block.
9. Measure the runout on all of the main journals. Rotate the crankshaft two complete revolutions. The difference between measurements on each journal must not be more than the service limit.

Crankshaft Total Runout

Standard (New): 0.025 mm (0.0010 in.) max.

Service Limit: 0.030 mm (0.0012 in.)



Engine Block

Block and Piston Inspection

1. Remove the pistons from the engine block (see page 7-12).
2. Check the pistons for distortion or cracks.
3. Measure the piston diameter at a point 16.0 mm (0.63 in.) from the bottom of the skirt.

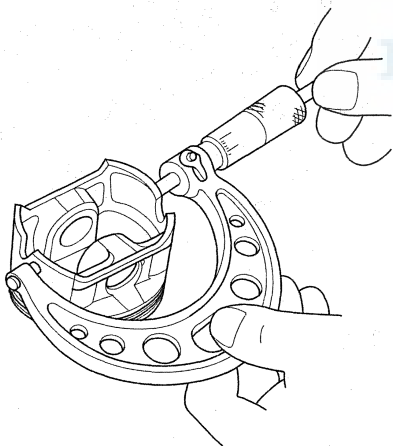
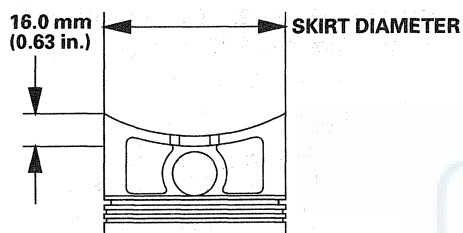
Piston Diameter

Standard (New): 88.975—88.985 mm
(3.5029—3.5033 in.)

Service Limit: 88.965 mm (3.5026 in.)

Oversize Piston Diameter

0.25: 89.225—89.235 mm (3.5128—3.5132 in.)



4. Measure wear and taper in direction X and Y at three levels in each cylinder as shown. If measurements in any cylinder are beyond the oversize bore service limit, replace the engine block. If the engine block has to be rebored, refer to step 7 after reboring.

Cylinder Bore Size

Standard (New): 89.000—89.015 mm
(3.5039—3.5045 in.)

Service Limit: 89.065 mm (3.5065 in.)

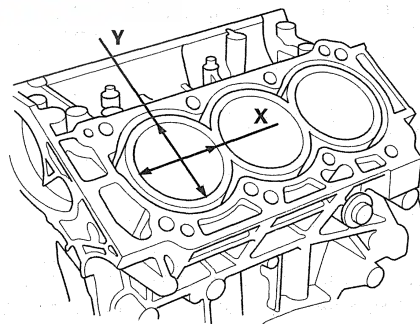
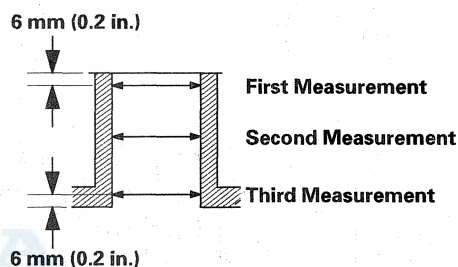
Oversize

0.25: 89.250—89.265 mm (3.5138—3.5144 in.)

Reboring Limit: 0.25 mm (0.01 in.)

Bore Taper

Limit: (Difference between first and third measurement) 0.05 mm (0.002 in.)



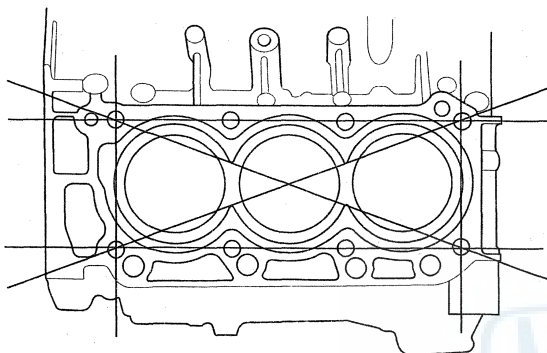


5. Hone any scored or scratched cylinder bores. (see page 7-18).
6. Check the top of the engine block for warpage. Measure along the edges and across the center as shown.

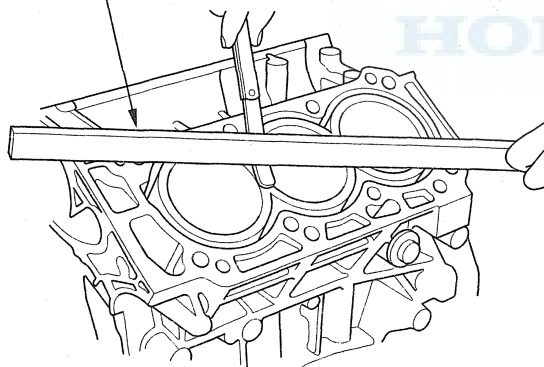
Engine Block Warpage

Standard (New): 0.07 mm (0.003 in.) max.

Service Limit: 0.10 mm (0.004 in.)



PRECISION STRAIGHT EDGE



7. Calculate the difference between cylinder bore diameter and piston diameter. If the clearance is near or exceeds the service limit, inspect the piston and cylinder bore for excessive wear.

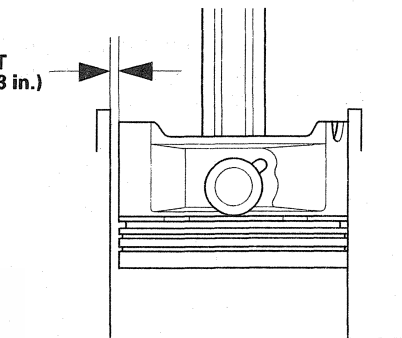
Piston-to-Cylinder Bore Clearance

Standard (New): 0.015—0.040 mm

(0.0006—0.0016 in.)

Service Limit: 0.08 mm (0.003 in.)

SERVICE LIMIT
0.08 mm (0.003 in.)



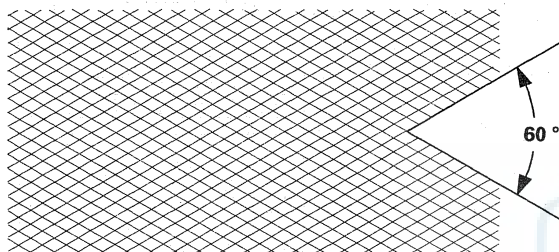
Engine Block

Cylinder Bore Honing

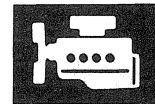
1. Measure the cylinder bores (see step 4 on page 7-16). If the engine block is to be reused, hone the cylinders and remeasure the bores. Only scored or scratched cylinder bores must be honed.
2. Remove the oil jets (J35Z1 engine) (see page 8-11).
3. Hone the cylinder bores with honing oil and a fine (400 grit) stone in a 60 degree crosshatch pattern.

NOTE:

- Use only a rigid hone with 400 grit or finer stone, such as Sunnen, Ammco, or equivalent.
- Do not use stones that are worn or broken.



4. When honing is complete, thoroughly clean the engine block of all metal particles. Wash the cylinder bores with hot soapy water, then dry and oil them immediately to prevent rusting. Never use solvent, it will only redistribute the grit on the cylinder walls.
5. If scoring or scratches are still present in the cylinder bores after honing to the service limit, rebore the engine block. Some light vertical scoring and scratching is acceptable if it is not deep enough to catch your fingernail and does not run the full length of the bore.
6. Install the oil jets (J35Z1 engine) (see page 8-11).

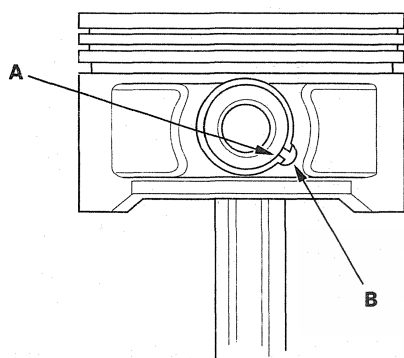


Piston, Pin, and Connecting Rod Replacement

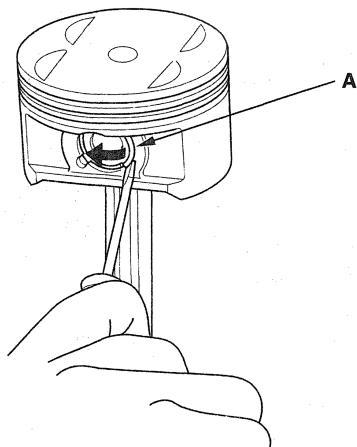
Disassembly

1. Remove the pistons from the engine block (see page 7-12).
2. Apply new engine oil to the piston pin snap rings (A) and turn them in the ring grooves until the end gaps are lined up with the cutouts in the piston pin bores (B).

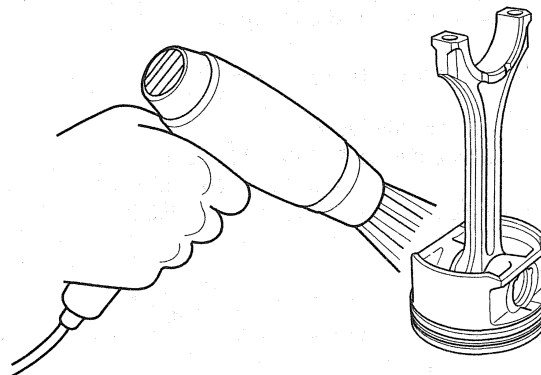
NOTE: Take care not to damage the ring grooves.



3. Remove snap rings (A) from both sides of the piston. Start at the cutout in the piston pin bore. Remove the snap rings carefully so they do not go flying or get lost. Wear eye protection.



4. Heat the piston and connecting rod assembly to about 158 °F (70 °C), then remove the piston pin.



(cont'd)

Engine Block

Piston, Pin, and Connecting Rod Replacement (cont'd)

Inspection

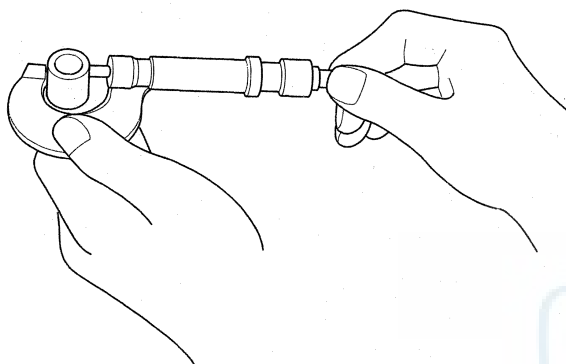
NOTE: Inspect the piston, piston pin, and connecting rod when they are at room temperature.

1. Measure the diameter of the piston pin.

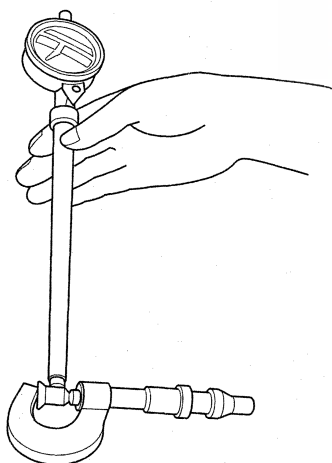
Piston Pin Diameter

Standard (New): 21.962—21.965 mm
(0.8646—0.8648 in.)

Service Limit: 21.954 mm (0.8643 in.)



2. Zero the dial indicator to the piston pin diameter.

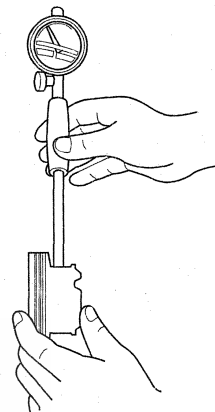


3. Check the difference between the piston pin diameter and piston pin hole diameter on the piston.

Piston Pin-to-Piston Clearance

Standard (New): -0.0050 to $+0.0010$ mm
(-0.00020 to $+0.00004$ in.)

Service Limit: 0.004 mm (0.0002 in.)

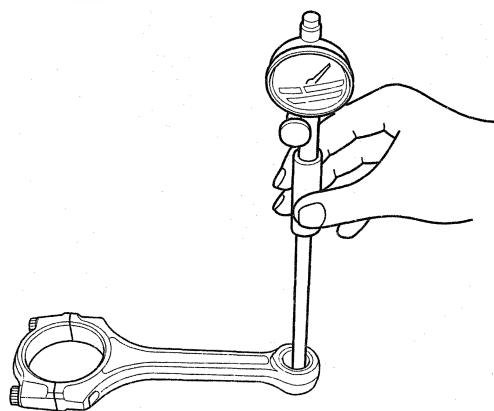


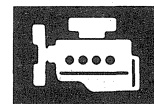
4. Measure the piston pin-to-connecting rod clearance.

Piston Pin-to-Connecting Rod Clearance

Standard (New): 0.005—0.014 mm
(0.0002—0.0006 in.)

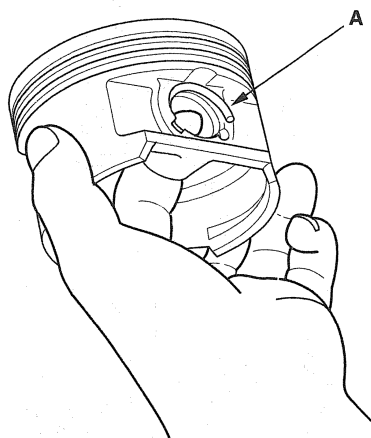
Service Limit: 0.019 mm (0.0007 in.)





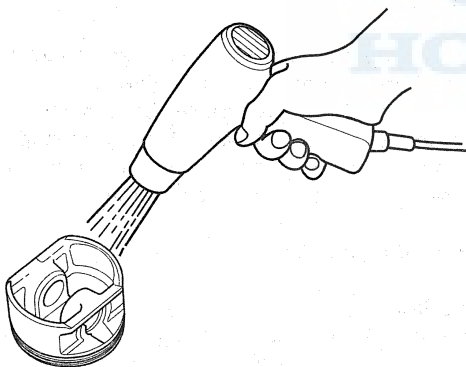
Reassembly

1. Install a piston pin snap ring (A) only on one side.

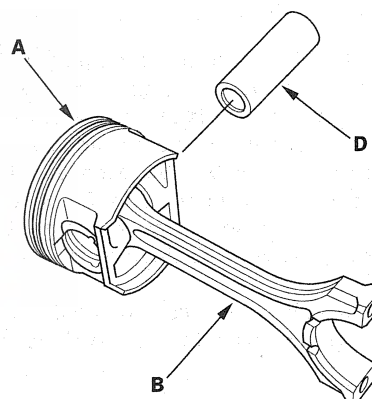
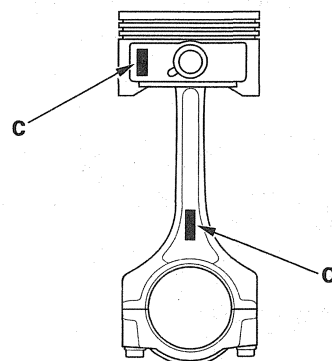


2. Coat the piston pin bore in the piston, the bore in the connecting rod, and the piston pin with new engine oil.

3. Heat the piston to about 158 °F (70 °C).



4. Assemble the piston (A) and connecting rod (B) with the embossed marks (C) on the same side. Install the piston pin (D).

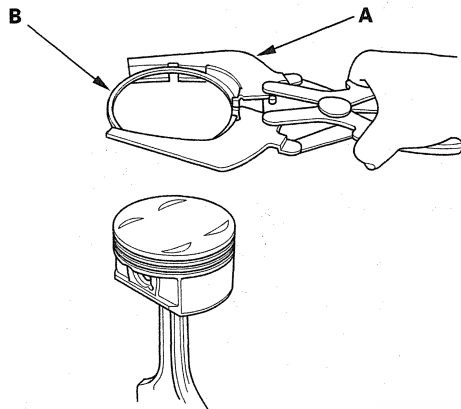


5. Install the remaining snap ring.

Engine Block

Piston Ring Replacement

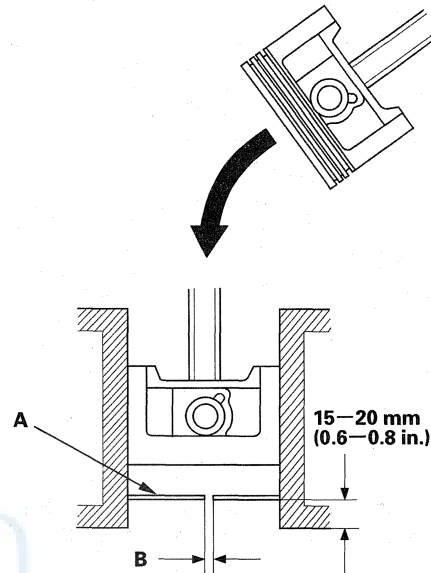
1. Remove the pistons from the engine block (see page 7-12).
2. Using a ring expander (A), remove the old piston rings (B).



3. Clean all the ring grooves thoroughly with a squared-off broken ring, or a ring groove cleaner with a blade to fit the piston grooves. File down the blade, if necessary. The top ring and second ring grooves are 1.2 mm (0.05 in.) wide, and the oil ring groove is 2.8 mm (0.11 in.) wide. Do not use a wire brush to clean the ring grooves, or cut the ring grooves deeper with the cleaning tool.

NOTE: If the piston is to be separated from the connecting rod, do not install new rings yet.

4. Using a piston, push a new ring (A) into the cylinder bore 15–20 mm (0.6–0.8 in.) from the bottom.



5. Measure the piston ring end-gap (B) with a feeler gauge:

- If the gap is too small, check to see if you have the proper rings for your engine.
- If the gap is too large, recheck the cylinder bore diameter against the wear limits (see step 4 on page 7-16). If the bore is over the service limit, the engine block must be rebored.

Piston Ring End-Gap

Top Ring:

Standard (New): 0.20–0.35 mm
(0.008–0.014 in.)

Service Limit: 0.60 mm (0.024 in.)

Second Ring:

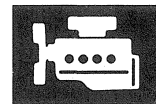
Standard (New): 0.40–0.55 mm
(0.016–0.022 in.)

Service Limit: 0.70 mm (0.028 in.)

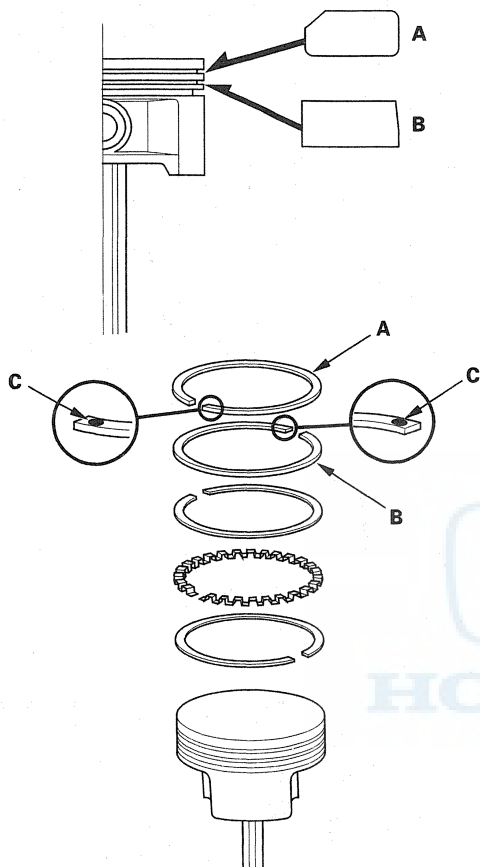
Oil Ring:

Standard (New): 0.20–0.70 mm
(0.008–0.028 in.)

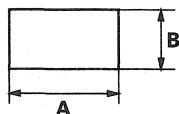
Service Limit: 0.80 mm (0.031 in.)



6. Install the rings as shown. The top ring (A) has a 1D mark and the second ring (B) has a 2C mark. The manufacturing marks (C) must be facing upward.



Piston Ring Dimensions:



Top Ring (Standard)
A: 3.1 mm (0.12 in.)
B: 1.2 mm (0.05 in.)

Second Ring (Standard)
A: 3.4 mm (0.13 in.)
B: 1.2 mm (0.05 in.)

7. After installing a new set of rings, measure the ring-to-groove clearance:

Top Ring Clearance

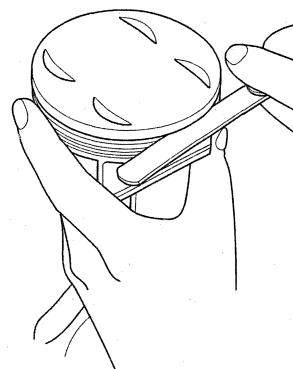
Standard (New): 0.055—0.080 mm
(0.0022—0.0031 in.)

Service Limit: 0.15 mm (0.006 in.)

Second Ring Clearance

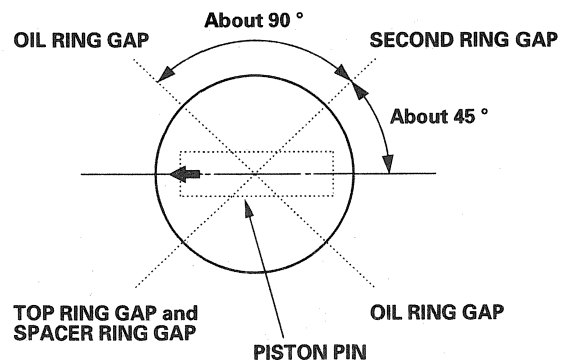
Standard (New): 0.030—0.055 mm
(0.0012—0.0022 in.)

Service Limit: 0.13 mm (0.005 in.)



8. Rotate the rings in their grooves to make sure they do not bind.

9. Position the ring end gaps as shown:



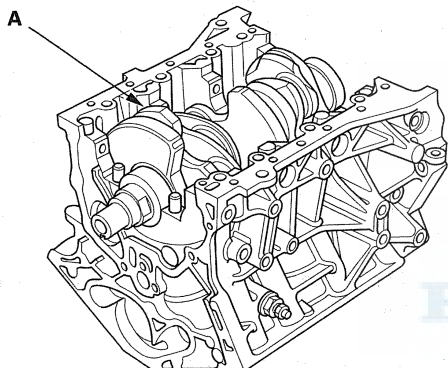
Engine Block

Crankshaft and Piston Installation

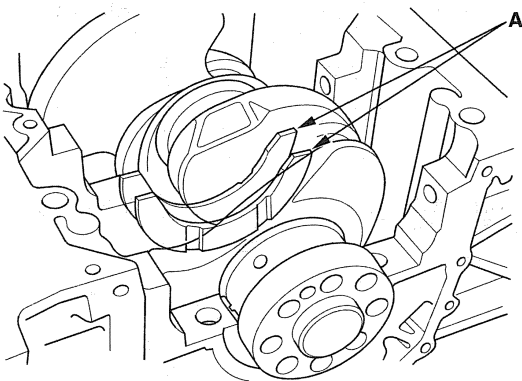
Special Tools Required

- Driver 07749-0010000
- Driver attachment, 106 mm 070AD-RCAA200

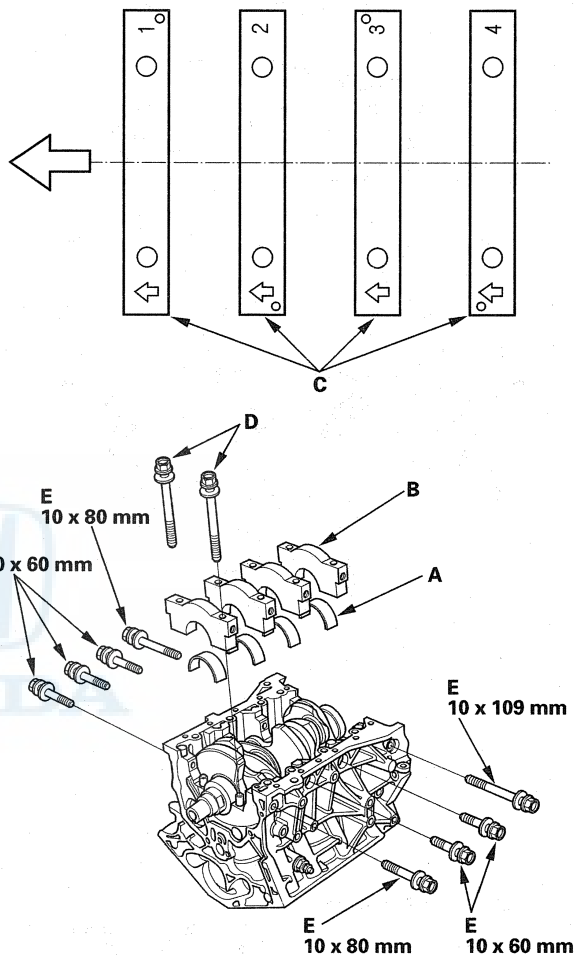
1. Check the connecting rod bearing clearance with plastigage (see page 7-9).
2. Check the main bearing clearance with plastigage (see page 7-7).
3. Install the bearing halves in the engine block and connecting rods.
4. Apply new engine oil to the inside of the main bearings and rod bearings.
5. Lower the crankshaft (A) into the engine block.



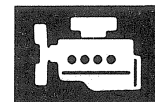
6. Apply new engine oil to the side with the thrust washer groove. Install the thrust washers (A) in the No. 3 journal.



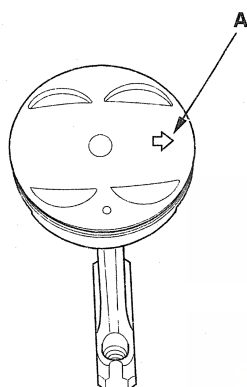
7. Install the bearings (A) and bearing caps (B) with the arrow (C) facing the timing belt end of the engine block.



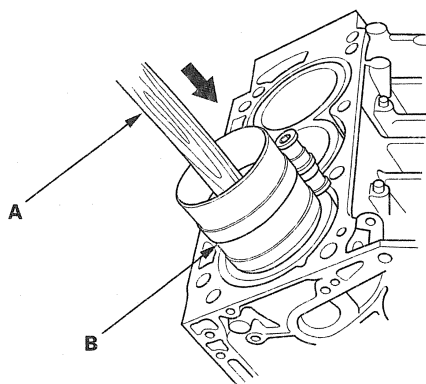
8. Apply new engine oil to the bolt threads and flanges, then loosely install the bearing cap bolts (D) and bearing cap side bolts (E).



9. Set the crankshaft to bottom dead center (BDC) for the cylinder you are installing the piston in.
10. Apply new engine oil to the piston, inside of the ring compressor, and the cylinder bore.
11. Attach the ring compressor to the piston/connecting rod assembly, and check that the bearing is securely in place.
12. Position the piston/connecting rod assembly with the arrow (A) facing the timing belt side of the engine.

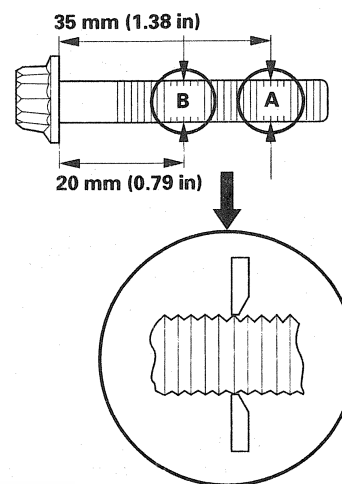


13. Position the piston/connecting rod assembly in the cylinder, and tap it in using the wooden handle of a hammer (A). Maintain downward force on the ring compressor (B) to prevent the rings from expanding before entering the cylinder bore.



14. Stop after the ring compressor pops free, and check the connecting rod-to-crank journal alignment before pushing the piston into place.

15. Measure the diameter of each connecting rod bolt at point A and point B.



16. Calculate the difference in diameter between point A and point B.

Point A—Point B = Difference in Diameter

Difference in Diameter
Specification: 0—0.1 mm (0—0.004 in.)

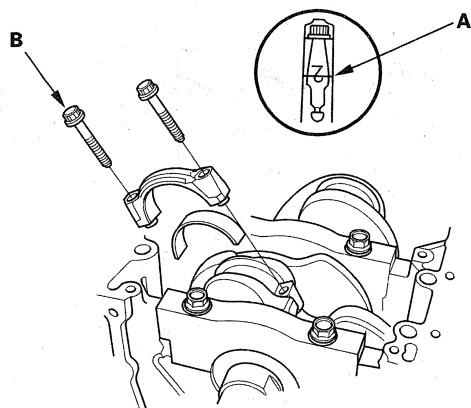
17. If the difference in diameter is out of tolerance, replace the connecting rod bolt.

(cont'd)

Engine Block

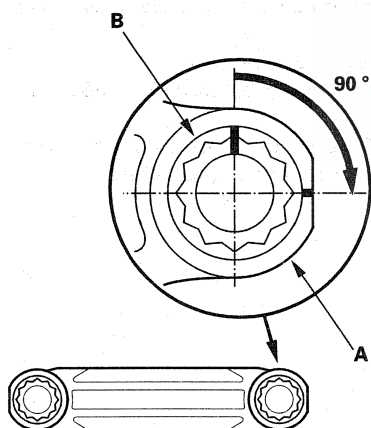
Crankshaft and Piston Installation (cont'd)

18. Line up the mark (A) on the connecting rod and cap, then install the cap.



19. Apply new engine oil to the bolt threads and flanges. Torque the bolts (B) to 20 N·m (2.0 kgf·m, 15 lbf·ft).

20. Mark the connecting rod (A) and bolt head (B) as shown.



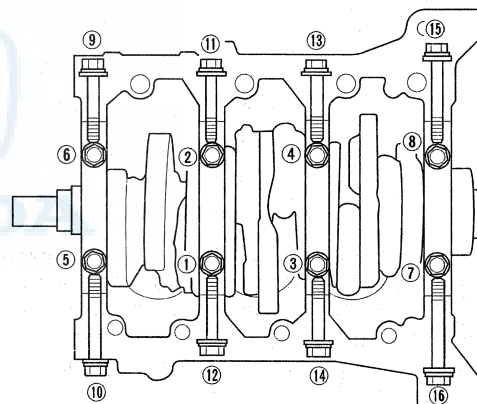
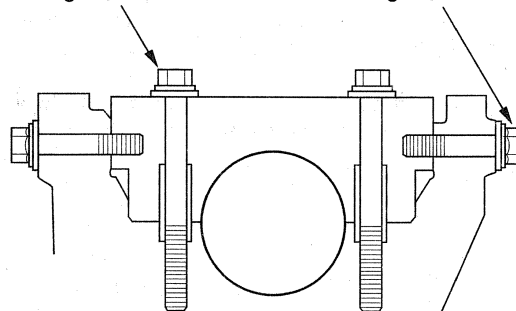
21. Tighten the bolt until the mark on the bolt head lines up with the mark on the connecting rod (turn the bolt 90°).

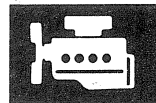
NOTE: Remove the connecting rod bolt if you torqued it beyond the specified angle, and go back to step 15 of the procedure. Do not loosen it back to the specified angle.

22. Torque the bearing cap bolts, and then the bearing cap side bolts to the specified torque in the sequence as shown. Repeat the torque sequence again to measure the bolts are properly torqued.

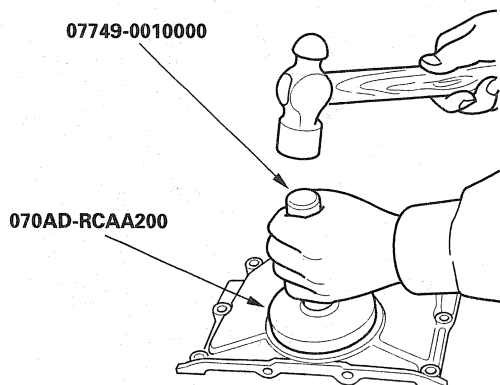
11 x 1.5 mm
74 N·m
(7.5 kgf·m, 55 lbf·ft)

10 x 1.25 mm
49 N·m
(5.0 kgf·m, 36 lbf·ft)





23. Apply a light coat of multipurpose grease to the crankshaft and to the lip of the seal.
24. Drive the new crankshaft oil seal until the driver attachment bottoms on the engine block end cover.

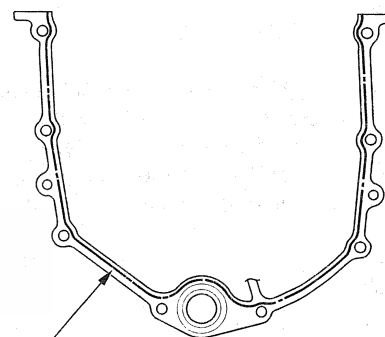


25. Remove all of the old liquid gasket from the engine block end cover mating surfaces, bolts, and bolt holes.
26. Clean and dry the engine block end cover mating surfaces.

27. Apply liquid gasket, P/N 08717-0004, 08718-0001, 08718-0003, or 08718-0009, evenly to the engine block mating surface of the engine block end cover. Install the component within 5 minutes of applying the liquid gasket.

NOTE:

- If you apply liquid gasket P/N 08718-0012, the component must be installed within 4 minutes.
- If too much time has passed after applying the liquid gasket, remove the old liquid gasket and residue, then reapply the new liquid gasket.

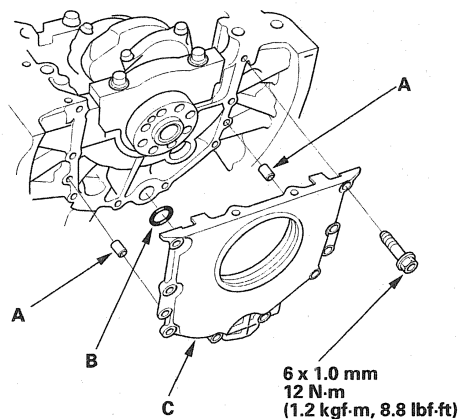


Apply liquid gasket along the broken line.

28. Install the dowel pins (A), new O-ring (B), and the engine block end cover (C) on the engine block.

NOTE:

- Wait at least 30 minutes before filling the engine with oil.
- Do not run the engine for at least 3 hours after installing the engine block end cover.



29. Clean the excess grease off the crankshaft, and check the seal for distortion.

(cont'd)

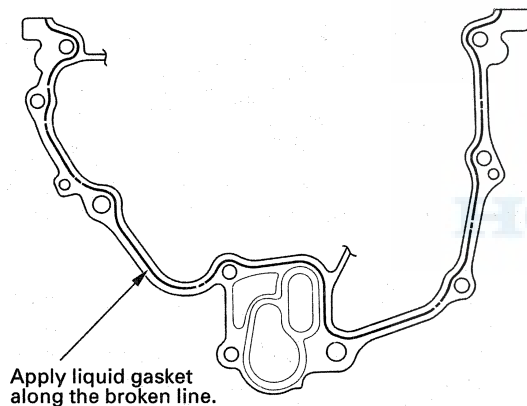
Engine Block

Crankshaft and Piston Installation (cont'd)

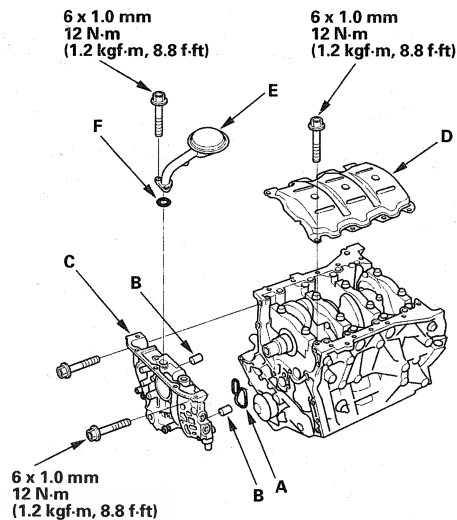
30. Install a new crankshaft oil seal in the oil pump (see step 2 on page 8-14).
31. Remove all of the old liquid gasket from the oil pump mating surfaces, bolts, and bolt holes.
32. Clean and dry the oil pump mating surfaces.
33. Apply liquid gasket, P/N 08717-0004, 08718-0001, 08718-0003, or 08718-0009, evenly to the engine block mating surface of the oil pump. Install the component within 5 minutes of applying the liquid gasket.

NOTE:

- If you apply liquid gasket P/N 08718-0012, the component must be installed within 4 minutes.
- If too much time has passed after applying the liquid gasket, remove the old liquid gasket and residue, then reapply the new liquid gasket.



34. Grease the lip of the oil seal, and apply new engine oil to the new O-ring (A).

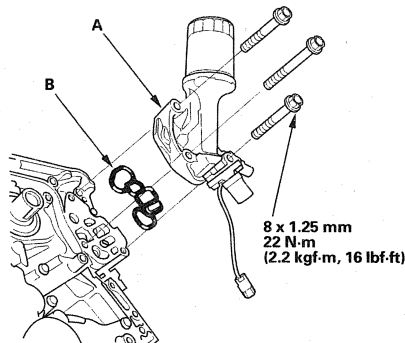


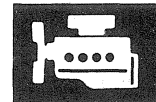
35. Install the dowel pins (B), then align the inner rotor with the crankshaft, and install the oil pump (C).

NOTE:

- Wait at least 30 minutes before filling the engine with oil.
- Do not run the engine for at least 3 hours after installing the oil pump.

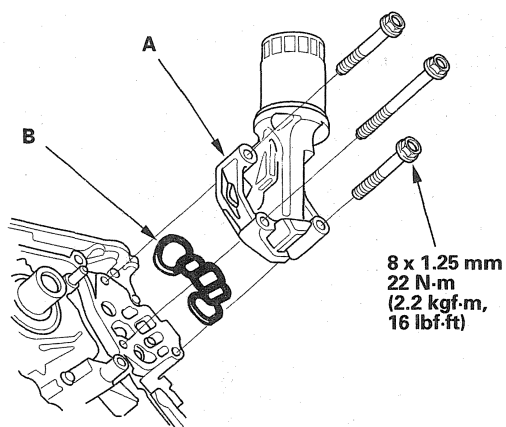
36. Clean the excess grease off the crankshaft, and check the seal for distortion.
37. Install the baffle plate (D), then install the oil screen (E) with new O-ring (F).
38. Install the rocker arm oil control solenoid/oil filter assembly (A), with a new rocker arm oil control solenoid filter (B) (J35A9 engine).





Oil Pan Installation

39. Install the oil filter base/oil filter assembly (A), with a new O-ring (B) (J35Z1 engine).



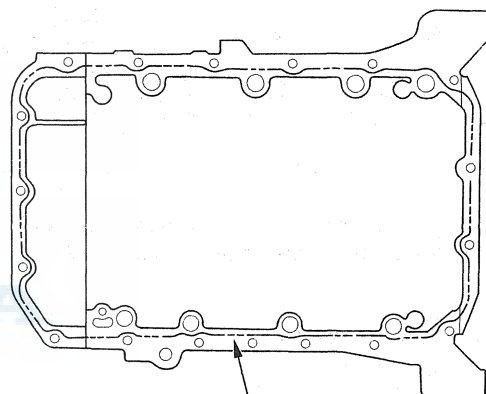
40. Install the oil pan (see page 7-29).
41. Install the timing belt drive pulley to the crankshaft.
42. Install the crankshaft position (CKP) sensor (see page 11-228).
43. Install the cylinder heads:
- J35A9 engine (see page 6-48)
 - J35Z1 engine (see page 6-110)
44. Install the drive plate (see page 14-234).
45. Install the transmission (see page 14-235).
46. Install the engine/transmission (see page 5-14).

NOTE: When any crankshaft or connecting rod bearing is replaced, after assembly it is necessary to run the engine at idling speed until it reaches normal operating temperature, then continue to run it for about 15 minutes.

1. Remove all of the old liquid gasket from the oil pan mating surfaces, bolts, and bolt holes.
2. Clean and dry the oil pan mating surfaces.
3. Apply liquid gasket, P/N 08717-0004, 08718-0001, 08718-0003, or 08718-0009, evenly to the oil pan mating surface of the engine block. Install the component within 5 minutes of applying the liquid gasket.

NOTE:

- If you apply liquid gasket P/N 08718-0012, the component must be installed within 4 minutes.
- If too much time has passed after applying the liquid gasket, remove the old liquid gasket and residue, then reapply the new liquid gasket.



4. Install the oil pan on the engine block.

(cont'd)

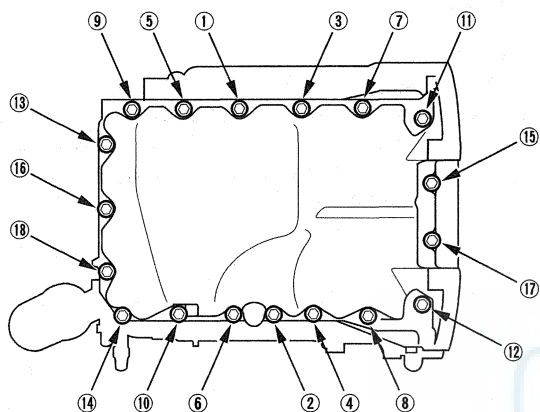
Engine Block

Oil Pan Installation (cont'd)

5. Torque the bolts in three steps. In the final step, torque all bolts, in sequence, to 12 N·m (1.2 kgf·m, 8.8 lbf·ft).

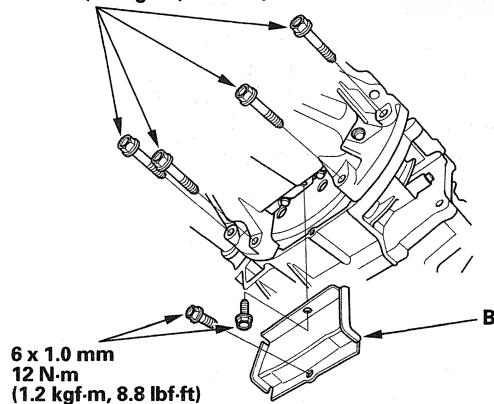
NOTE:

- Wait at least 30 minutes before filling the engine with oil.
- Do not run the engine for at least 3 hours after installing the oil pan.



6. Torque the four bolts (A) securing the transmission, then install the torque converter cover (B).

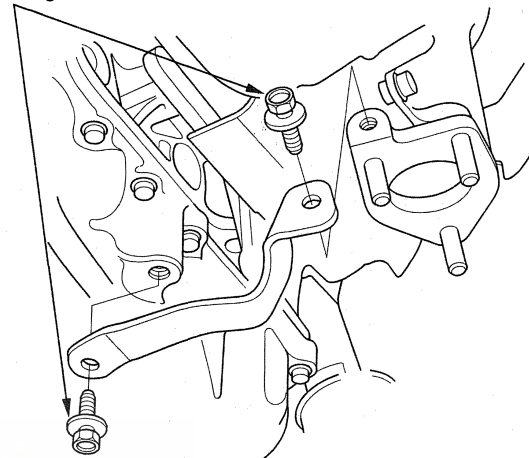
A
12 x 1.25 mm
75 N·m (7.5 kgf·m, 55 lbf·ft)



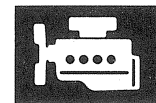
B
6 x 1.0 mm
12 N·m
(1.2 kgf·m, 8.8 lbf·ft)

7. Install the rear warm up three way catalytic converter (rear WU-TWC) bracket.

8 x 1.25 mm
22 N·m
(2.2 kgf·m, 16 lbf·ft)



8. If the engine is still in the vehicle, do the following steps.
9. Install exhaust pipe A using new gaskets and new self-locking nuts (see step 31 on page 5-20).
10. Install the front subframe stiffener using new bolts (see step 32 on page 5-20).
11. Install the splash shield (see step 33 on page 5-21).
12. Refill the engine with engine oil (see step 4 on page 8-8).
13. Lower the vehicle on the lift.

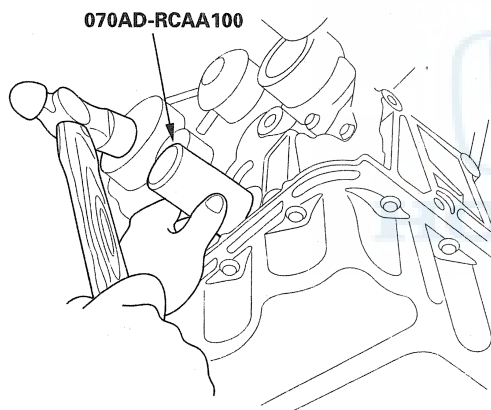


Pulley End Crankshaft Oil Seal Installation - In Car

Special Tools Required

Oil seal driver, 64 mm 070AD-RCAA100

1. Remove the crankshaft position (CKP) sensor, timing belt, and timing belt drive pulley.
2. Remove the pulley end crankshaft oil seal.
3. Clean and dry the crankshaft oil seal housing.
4. Apply a light coat of multipurpose grease to the crankshaft and to the lip of the seal.
5. Using the oil seal driver, drive in the crankshaft oil seal until the driver bottoms against the oil pump. When the seal is in place, clean any excess grease off the crankshaft, and check that the oil seal lip is not distorted.



6. Install the timing belt drive pulley, CKP sensor, and timing belt:

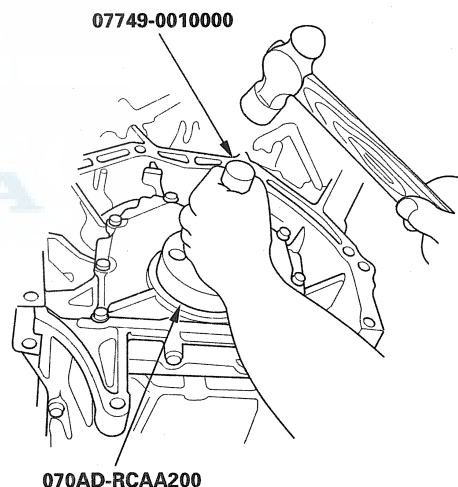
- J35A9 engine (see page 6-25)
- J35Z1 engine (see page 6-82)

Transmission End Crankshaft Oil Seal Installation - In Car

Special Tools Required

- Driver 07749-0010000
- Driver attachment, 106 mm 070AD-RCAA200

1. Remove the transmission (see page 14-222) and the drive plate (see page 14-234).
2. Remove the transmission end crankshaft oil seal.
3. Clean and dry the crankshaft oil seal housing.
4. Apply a light coat of multipurpose grease to the crankshaft and to the lip of the seal.
5. Using the driver and driver attachment, drive in the crankshaft oil seal until the driver attachment bottoms against the engine block end cover. Align the hole in the driver attachment with the pin on the crankshaft.

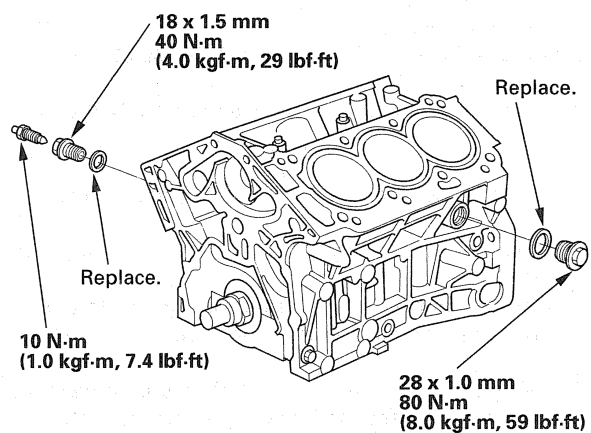


6. Clean any excess grease off the crankshaft, and check that the oil seal lip is not distorted.
7. Install the drive plate (see page 14-234) and the transmission (see page 14-235).

Engine Block

Drain Bolt Installation

NOTE: When installing the drain bolts, always use new washers.



Engine Mechanical



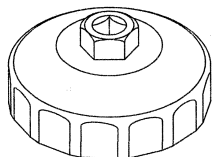
Engine Lubrication

Special Tools	8-2
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Symptom Troubleshooting Index	8-6
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Oil Pressure Switch Replacement	8-7
Oil Pressure Test	8-8
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Engine Oil Filter Replacement	8-9
Oil Filter Feed Pipe Replacement	8-10
Oil Jet Replacement	8-11
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Oil Pump Overhaul	8-12

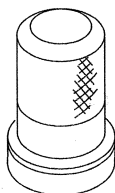
Engine Lubrication

Special Tools

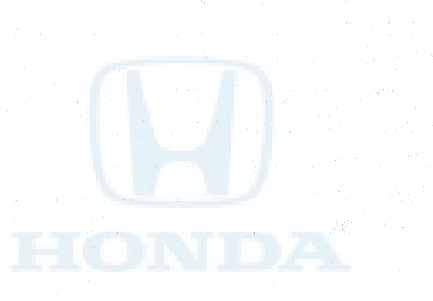
Ref. No.	Tool Number	Description	Qty
①	07HAA-PJ70100	Oil Filter Wrench	1
②	070AD-RCAA100	Oil Seal Driver, 64 mm	1

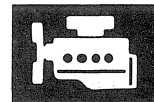


①



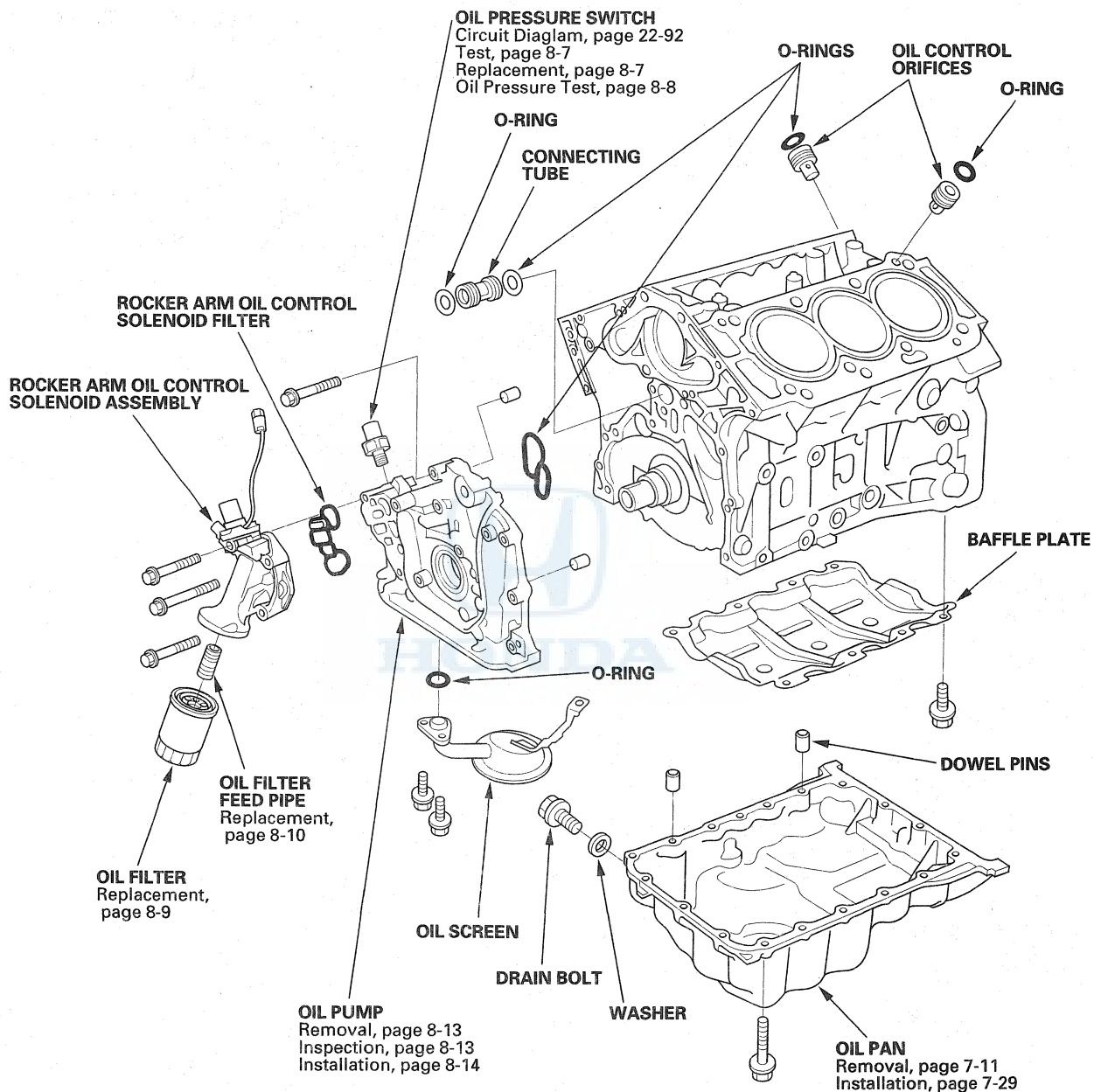
②





Component Location Index

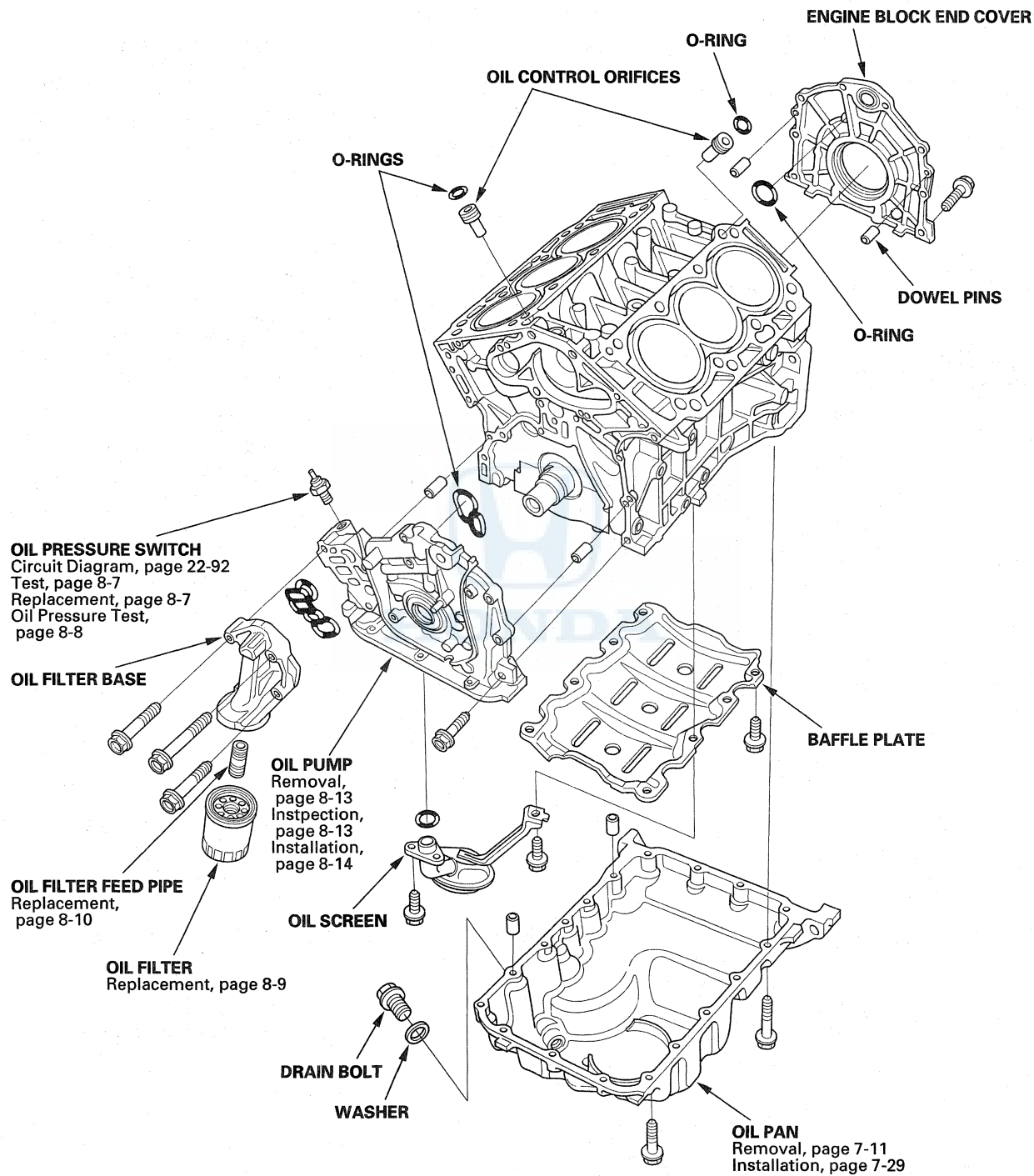
J35A9 engine

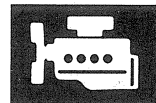


Engine Lubrication

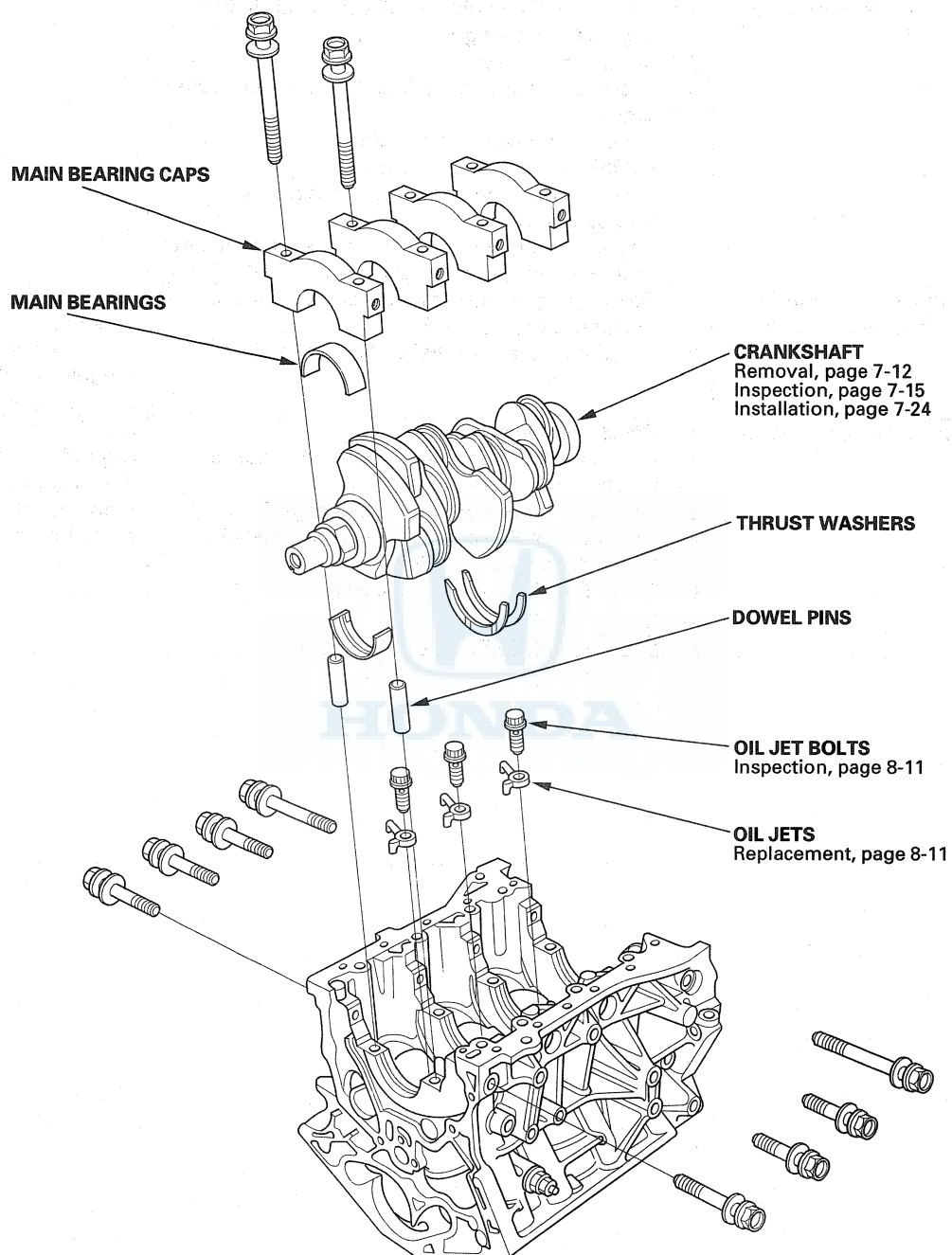
Component Location Index (cont'd)

J35Z1 engine





J35Z1 engine



Engine Lubrication

Symptom Troubleshooting Index

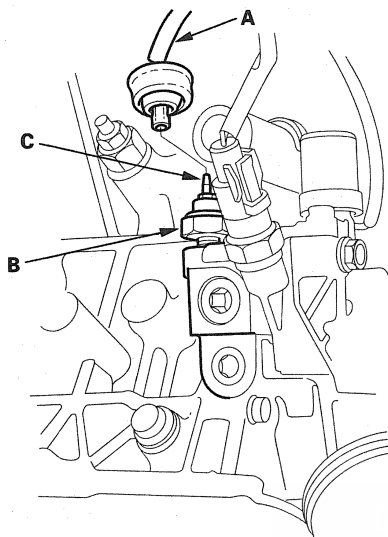
Symptom	Diagnostic procedure	Also check for
Excessive engine oil consumption	<ol style="list-style-type: none">1. Check that the engine oil fill cap, oil drain bolt, and oil filter are tight.2. Check for oil leaks.3. Check for worn valve guide(s) or worn valve stem seal(s):<ul style="list-style-type: none">• J35A9 engine (see page 6-41)• J35Z1 engine (see page 6-101)4. Check for damaged or worn piston ring(s) (see page 7-22).5. Check for damaged or worn engine internal parts (cylinder wall, pistons, etc.) (see page 7-16).	
Low oil pressure indicator does not come on with the ignition switch ON (II)	<ol style="list-style-type: none">1. Do the gauge control module self-diagnostic function (see page 22-90).2. Test the oil pressure switch (see page 8-7).	An open in the wire between the gauge control module and the oil pressure switch
Low oil pressure indicator stays on	<ol style="list-style-type: none">1. Check the engine oil level.2. Do the gauge control module self-diagnostic function (see page 22-90).3. Test the oil pressure switch (see page 8-7).4. Check the engine oil pressure (see page 8-8).5. Check the oil filter for clogging.6. Check the oil screen for clogging.7. Check the relief valve.8. Check the oil pump (see page 8-13).	A wire shorted to ground between the gauge control module and the oil pressure switch

HONDA



Oil Pressure Switch Test

1. Remove the BLU/YEL wire (A) from the engine oil pressure switch (B).

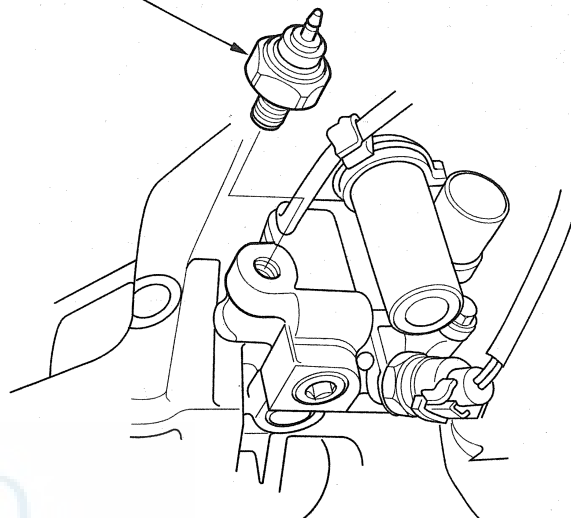


2. Check for continuity between the positive terminal (C) and the engine (ground). There should be continuity with the engine stopped. There should be no continuity with the engine running.

Oil Pressure Switch Replacement

1. Disconnect the oil pressure switch connector, then remove the oil pressure switch.

18 N·m
(1.8 kgf-m, 13 lbf-ft)



2. Remove any old liquid gasket from the switch and switch mounting hole.
3. Apply a very small amount of liquid gasket to the oil pressure switch threads, then install the oil pressure switch.

NOTE: Using too much liquid gasket may cause liquid gasket to get into the oil passage.

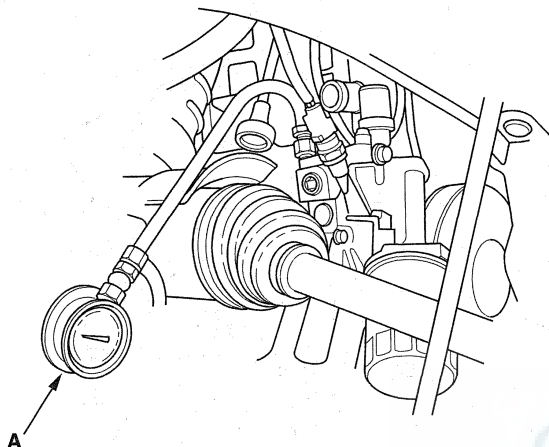
4. Connect the oil pressure switch connector.

Engine Lubrication

Oil Pressure Test

If the low oil pressure indicator stays on with the engine running, check the engine oil level. If the oil level is correct:

1. Remove the engine oil pressure switch, then install an oil pressure gauge (A).



2. Start the engine. Shut it off immediately if the gauge registers no oil pressure. Repair the problem before continuing.
3. Allow the engine to reach operating temperature (fan comes on at least twice). The pressure should be:

Engine Oil Temperature: 176 °F (80 °C)

Engine Oil Pressure:

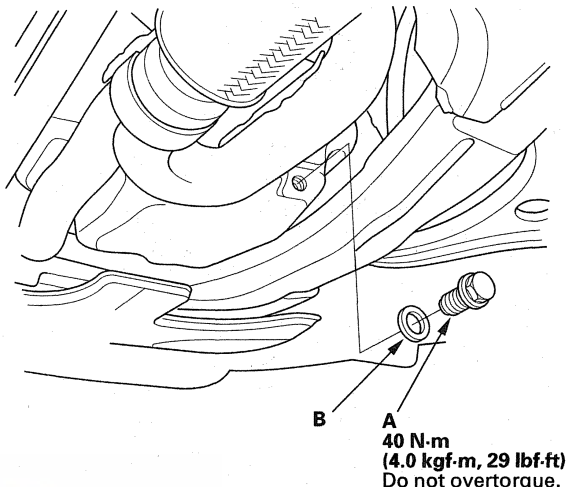
At Idle: 70 kPa (0.7 kgf/cm², 10 psi) min.

At 3,000 rpm: 490 kPa (5.0 kgf/cm², 71 psi) min.

4. If oil pressure is out of specifications, inspect these items:
 - Replace the oil filter (see page 8-9).
 - Inspect the oil pressure relief valve (see page 8-12).
 - Check the oil screen for clogging.
 - Inspect the oil pump (see page 8-13).

Engine Oil Replacement

1. Warm up the engine.
2. Remove the drain bolt (A), and drain the engine oil.



3. Reinstall the drain bolt with a new washer (B).
4. Refill with the recommended oil (see page 3-2).

Capacity

At Oil Change:

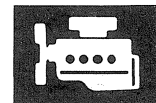
4.0 L (4.2 US qt)

At Oil Change including Filter:

4.3 L (4.5 US qt)

After Engine Overhaul:

5.0 L (5.3 US qt)



Engine Oil Filter Replacement

5. Connect the Honda Diagnostic System (HDS) to the data link connector (DLC) (see step 2 on page 11-3).
6. Turn the ignition switch ON (II).
7. Select BODY ELECTRICAL with the HDS.
8. Select ADJUSTMENT in the GAUGES MENU with the HDS.
9. Select RESET in the MAINTENANCE MINDER with the HDS.
10. Select RESETTNG THE ENGINE OIL LIFE with the HDS.

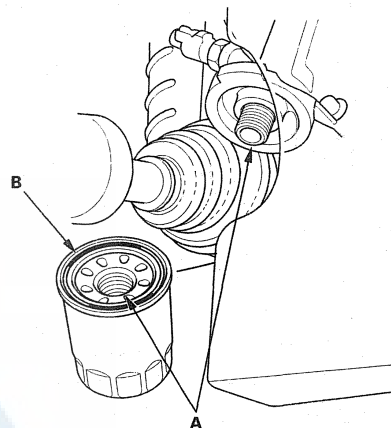
NOTE: If you changed the ATF at the same time with the engine oil, select RESETTNG THE ENGINE OIL LIFE AND ATF with the HDS instead.

11. Run the engine for more than 3 minutes, then check for oil leakage.
12. Reset the maintenance information display (see page 3-6).

Special Tools Required

Oil filter wrench 07HAA-PJ70100

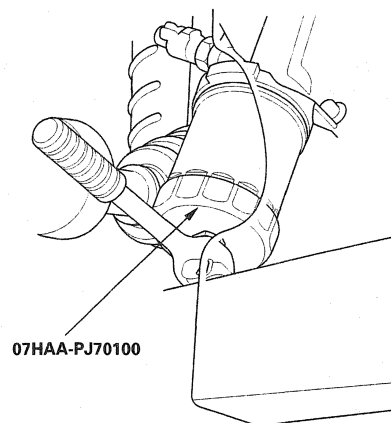
1. Remove the oil filter with the oil filter wrench.
2. Inspect the filter to make sure the rubber seal is not stuck to the oil filter seating surface of the engine.
3. Inspect the threads (A) and rubber seal (B) on the new filter. Clean the seat on the engine block, then apply a light coat of new engine oil to the filter rubber seal. Use only filters with a built-in bypass system.



4. Install the oil filter by hand.
5. After the rubber seal seats, torque the oil filter clockwise with the oil filter wrench.

Torque: 3/4 Turn Clockwise

Tightening Torque: 12 N·m (1.2 kgf·m, 8.8 lbf·ft)



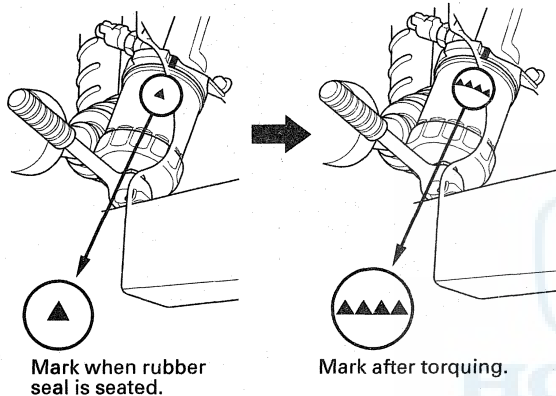
(cont'd)

Engine Lubrication

Engine Oil Filter Replacement (cont'd)

6. If four numbers or marks (1 to 4 or ▼ to ▼▼▼▼) are printed around the outside of the filter, you can use the following procedure to torque the filter.

- Spin the filter on until its seal lightly seats against the block, and note which number or mark is at the bottom.
- Torque the filter by turning it clockwise three numbers or marks from the one you noted. For example, if mark ▼ is at the bottom when the seal is lightly seated, torque the filter until the mark ▼▼▼▼ comes around to the bottom.

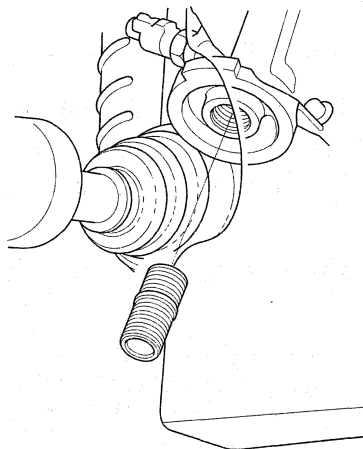


Number or Mark when rubber seal is seated	1 or ▼	2 or ▼▼	3 or ▼▼▼	4 or ▼▼▼▼
Number or Mark after torquing	4 or ▼▼▼▼	1 or ▼	2 or ▼▼	3 or ▼▼▼

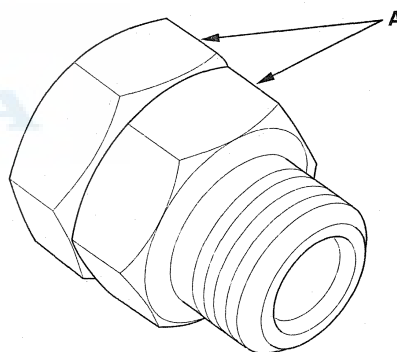
7. After installation, fill the engine with oil up to the specified level, run the engine for more than 3 minutes, then check for oil leakage.

Oil Filter Feed Pipe Replacement

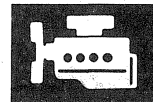
1. Remove the oil filter (see page 8-9).
2. Remove the oil filter feed pipe.



3. Install two 20 x 1.5 mm nuts (A) onto the new oil filter feed pipe, and hold one nut with a wrench, then torque the other nut.



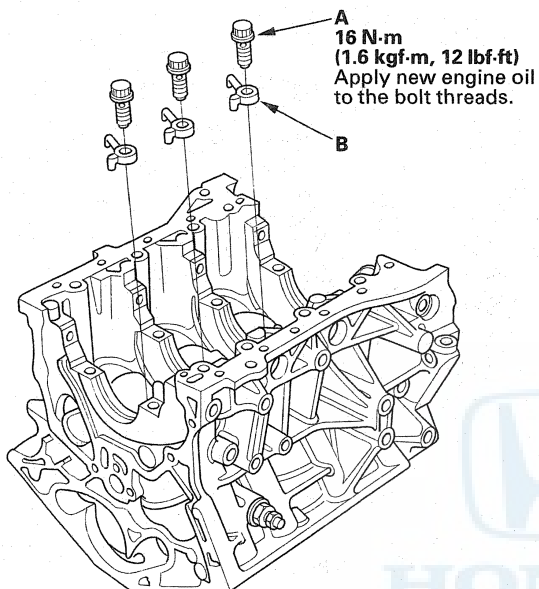
4. Torque the oil filter feed pipe to 50 N·m (5.0 kgf·m, 37 lbf·ft), then remove the nuts from the oil filter feed pipe.



Oil Jet Replacement

J35Z1 engine

1. Remove the crankshaft from the engine block (see page 7-12).
2. Remove the oil jet bolt (A), then remove the oil jet (B).

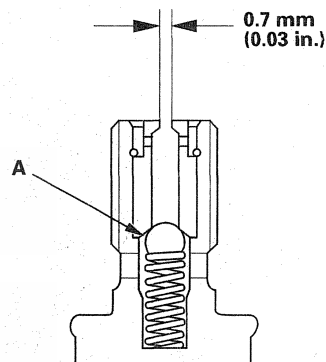


3. Carefully install the oil jet and torque the oil jet bolt.
4. Install the crankshaft (see page 7-24).

Oil Jet Bolt Inspection

J35Z1 engine

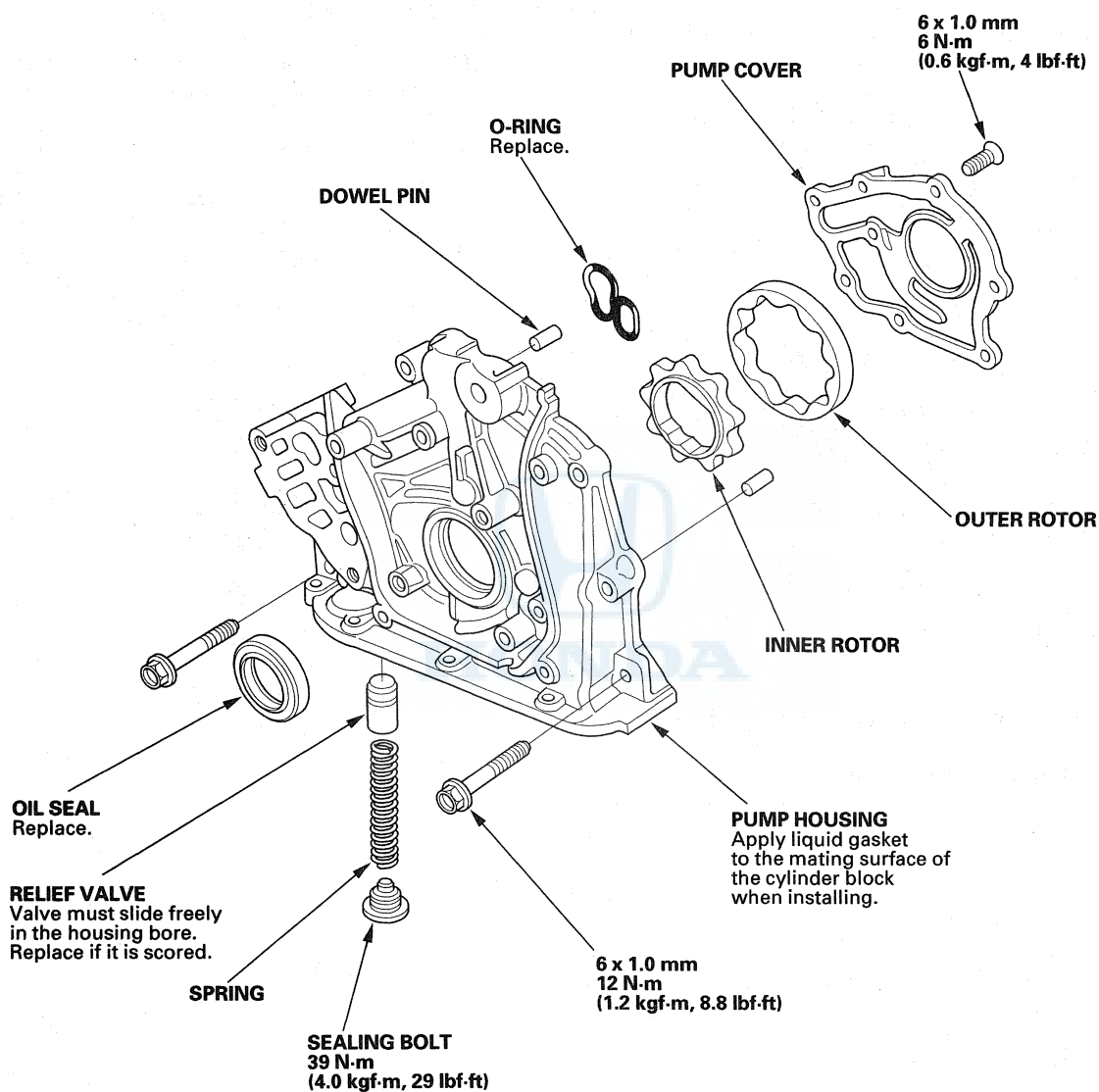
1. Remove the oil jet bolt (see page 8-11).
2. Inspect the oil jet bolt as follows.
 - Make sure that a 0.6 mm (0.02 in.) diameter drill will go through the oil intake (0.7 mm (0.03 in.) diameter). Make sure the check ball (A) moves smoothly and has a stroke of about 4.0 mm (0.16 in.)
 - Check the oil jet bolt operation with an air nozzle. It should take at least 120 kPa (1.2 kgf/cm, 17 psi) to unseat the check ball.

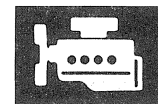


Engine Lubrication

Oil Pump Overhaul

Exploded View



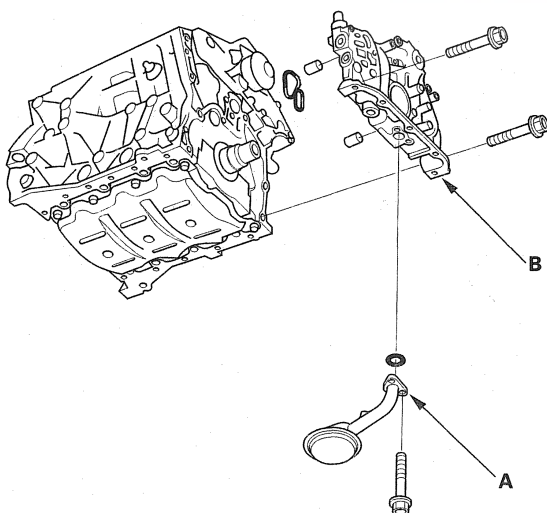


Special Tools Required

Oil seal driver, 64 mm 070AD-RCAA100

Removal

1. Drain the engine oil (see page 8-8).
2. Remove the timing belt:
 - J35A9 engine (see page 6-13)
 - J35Z1 engine (see page 6-70)
3. Remove the crankshaft position (CKP) sensor (see page 11-228).
4. Attach the chain hoist to the engine hanger on the power steering (P/S) pump bracket (see step 70 on page 5-13).
5. Remove the jack from under the oil pan.
6. Remove the rocker arm oil control solenoid/oil filter assembly (J35A9 engine) (see step 9 on page 7-12).
7. Remove the oil filter base/oil filter assembly (J35Z1 engine) (see step 10 on page 7-12).
8. Remove the oil pan (see page 7-11).
9. Remove the oil screen (A).

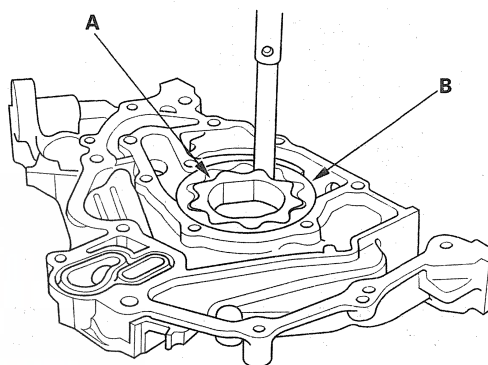


10. Remove the mounting bolts and the oil pump assembly (B).

Inspection

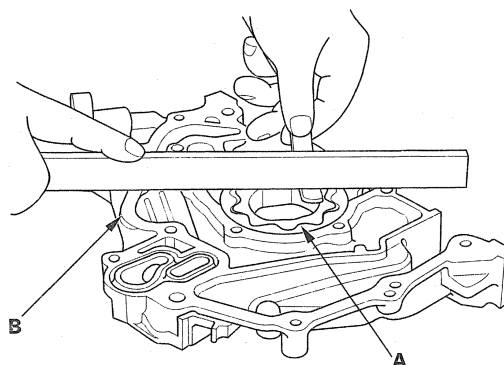
1. Remove the screws from the pump housing, then separate the housing and cover.
2. Check the inner-to-outer rotor radial clearance between the inner rotor (A) and outer rotor (B). If the inner-to-outer rotor clearance exceeds the service limit, replace the oil pump assembly.

Inner Rotor-to-Outer Rotor Radial Clearance
Standard (New): 0.04—0.16 mm (0.002—0.006 in.)
Service Limit: 0.20 mm (0.008 in.)



3. Check the housing-to-rotor axial clearance between the rotors (A) and pump housing (B). If the housing-to-rotor axial clearance exceeds the service limit, replace the oil pump assembly.

Housing-to-Rotor Axial Clearance
Standard (New): 0.02—0.07 mm (0.001—0.003 in.)
Service Limit: 0.12 mm (0.005 in.)



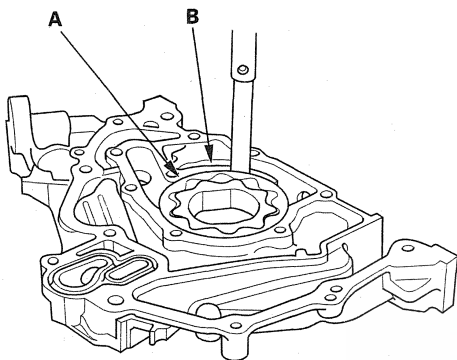
(cont'd)

Engine Lubrication

Oil Pump Overhaul (cont'd)

4. Check the housing-to-outer rotor radial clearance between the outer rotor (A) and pump housing (B). If the housing-to-outer rotor radial clearance exceeds the service limit, replace the oil pump assembly.

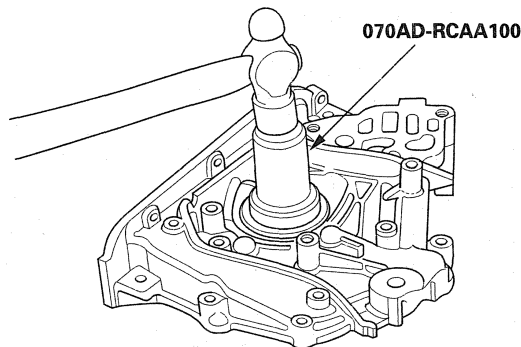
Housing-to-Outer Rotor Radial Clearance
Standard (New): 0.10—0.19 mm (0.004—0.007 in.)
Service Limit: 0.20 mm (0.008 in.)



5. Inspect both rotors and pump housing for scoring or other damage. Replace the parts, if necessary.
6. Apply liquid thread lock to the pump housing screws, then install the oil pump cover.
7. Check that the oil pump turns freely.

Installation

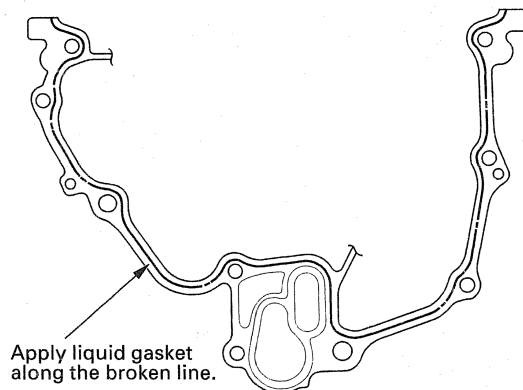
1. Remove the old oil seal from the oil pump.
2. Gently tap in the new oil seal until the oil seal driver bottoms on the pump.



3. Remove all of the old liquid gasket from the oil pump mating surfaces, bolts, and bolt holes.
4. Clean and dry the oil pump mating surfaces.
5. Apply liquid gasket, P/N 08717-0004, 08718-0001, 08718-0003, or 08718-0009, evenly to the engine block mating surface of the oil pump. Install the component within 5 minutes of applying the liquid gasket.

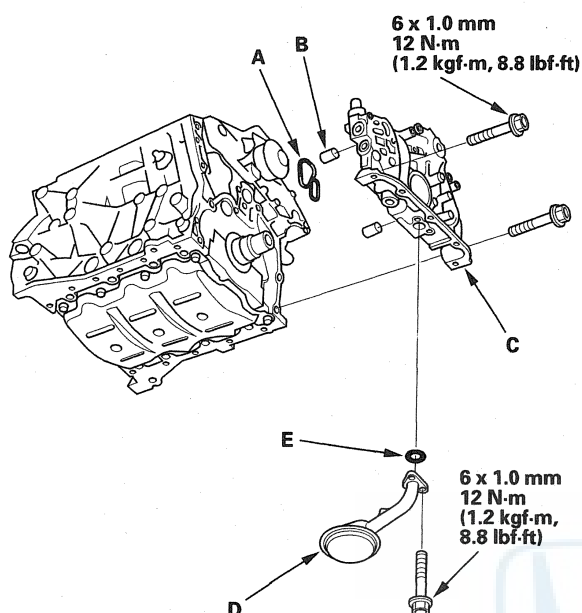
NOTE:

- If you apply liquid gasket P/N 08718-0012, the component must be installed within 4 minutes.
- If too much time has passed after applying the liquid gasket, remove the old liquid gasket and residue, then reapply the new liquid gasket.





6. Grease the lip of the oil seal, and apply new engine oil to the new O-ring (A).



7. Install the dowel pins (B), then align the inner rotor with the crankshaft, and install the oil pump (C).

NOTE:

- Wait at least 30 minutes before filling the engine with oil.
- Do not run the engine for at least 3 hours after installing the oil pump.

8. Clean the excess grease off the crankshaft, and check the seal for distortion.
9. Install the oil screen (D) with new O-ring (E).
10. Install the rocker arm oil control solenoid/oil filter assembly (J35A9 engine) (see step 38 on page 7-28).
11. Install the oil filter base/oil filter assembly (J35Z1 engine) (see step 39 on page 7-29).
12. Install the oil pan (see page 7-29).
13. Install the crankshaft position (CKP) sensor (see page 11-228).

14. Install the timing belt:

- J35A9 engine (see page 6-16)
- J35Z1 engine (see page 6-72)

15. Remove the chain hoist.

Engine Mechanical

Intake Manifold and Exhaust System

Intake Manifold Removal and Installation	9-2
Injector Base Removal and Installation	9-8
Exhaust Pipe and Muffler Replacement	9-10

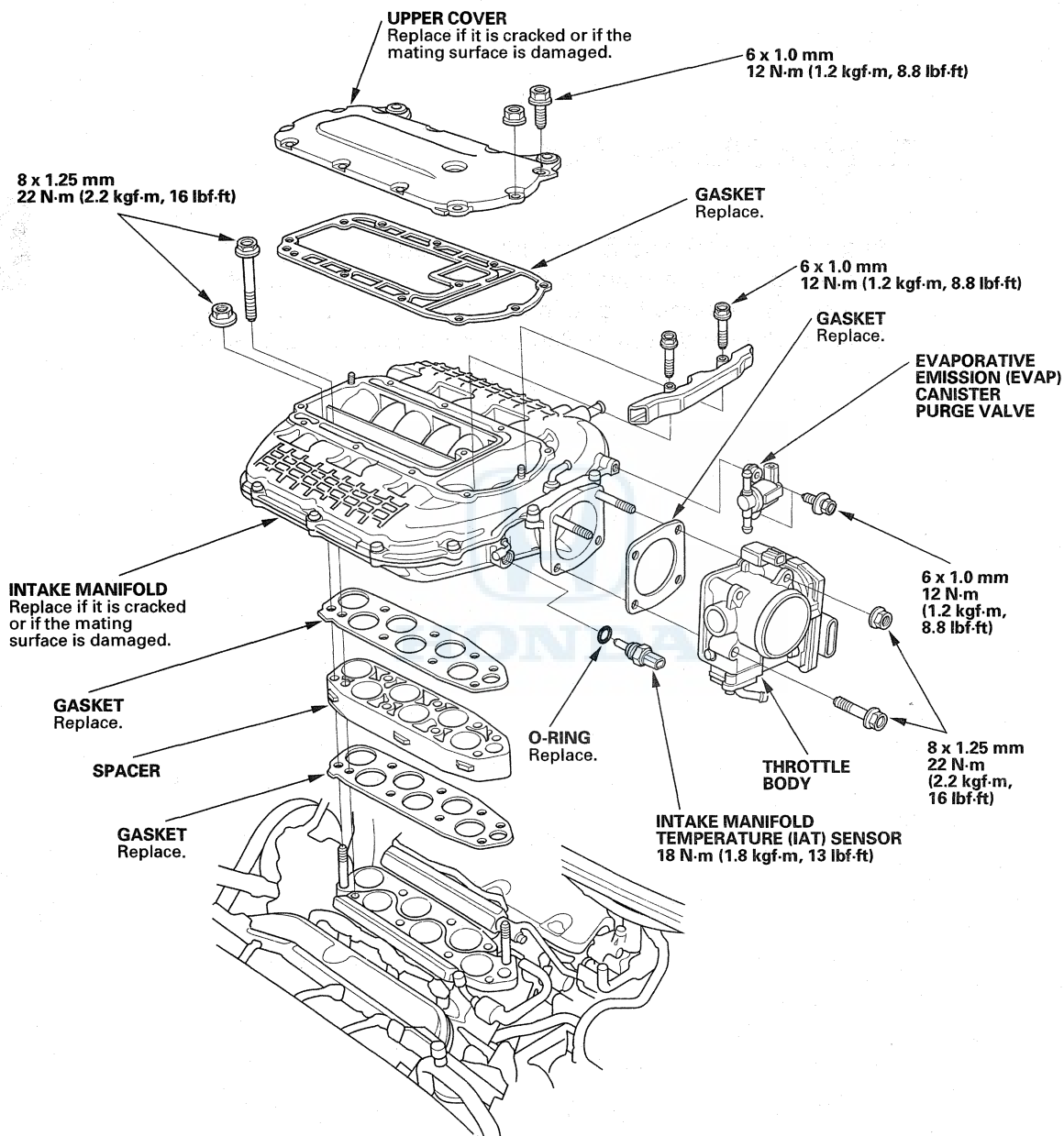


Intake Manifold and Exhaust System

Intake Manifold Removal and Installation

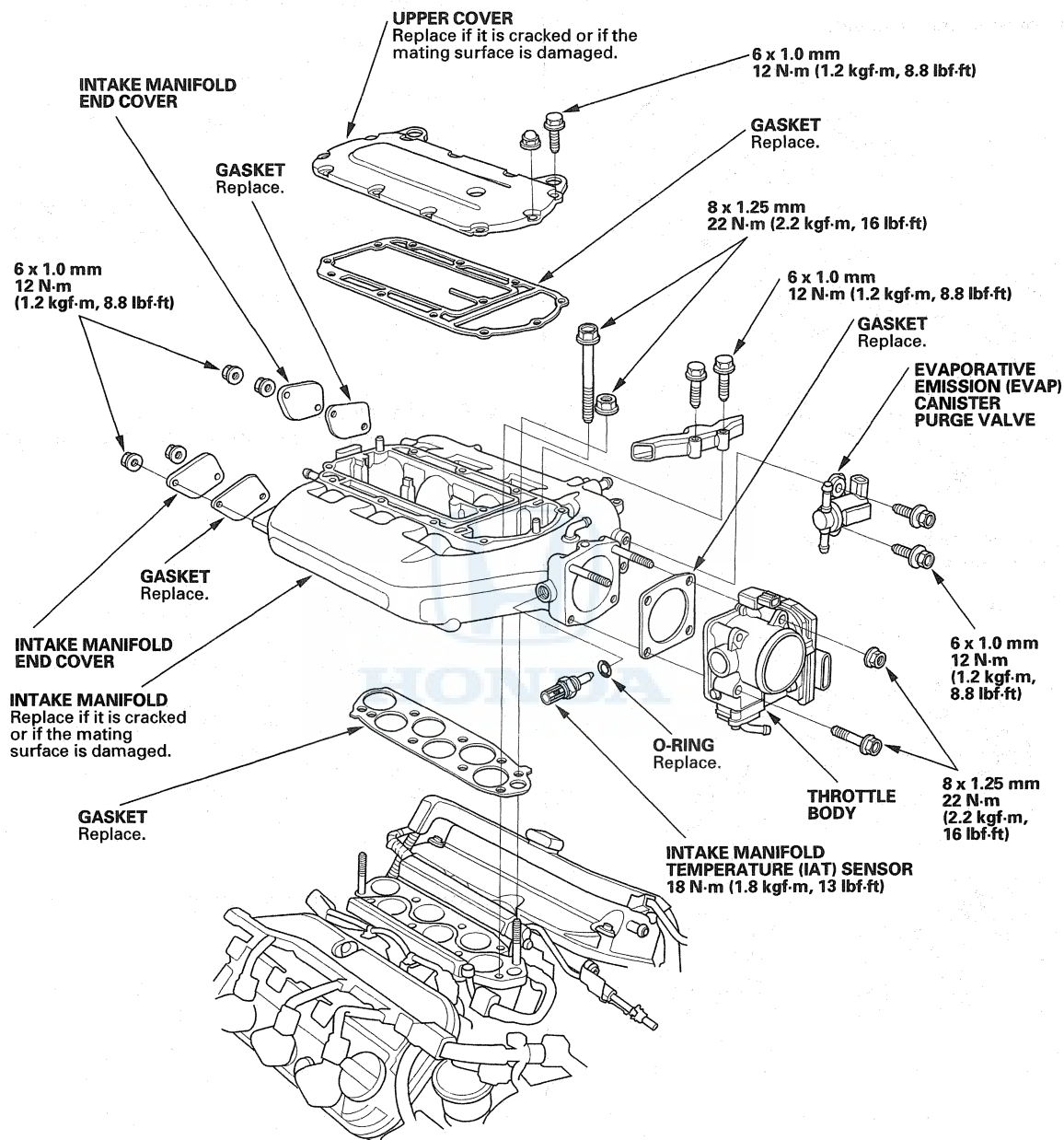
Exploded View

J35A9 engine:





J35Z1 engine:



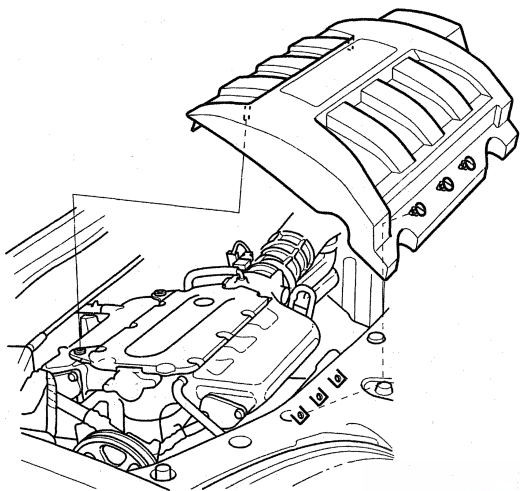
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Intake Manifold and Exhaust System

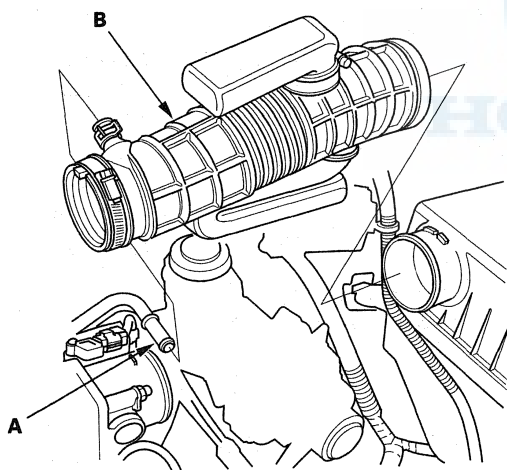
Intake Manifold Removal and Installation (cont'd)

Removal

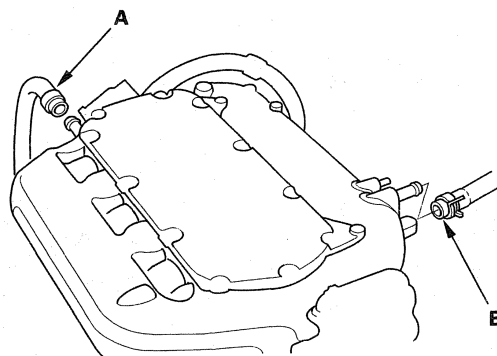
1. Remove the engine cover.



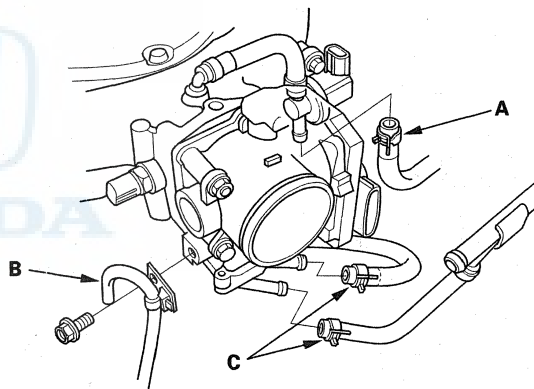
2. Disconnect the breather pipe (A), then remove the intake air duct (B).



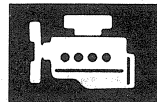
3. Remove the positive crankcase ventilation (PCV) hose (A), brake booster vacuum hose (B).



4. Remove the evaporative emission (EVAP) canister hose (A) and the transmission breather hose clamp bracket (B).



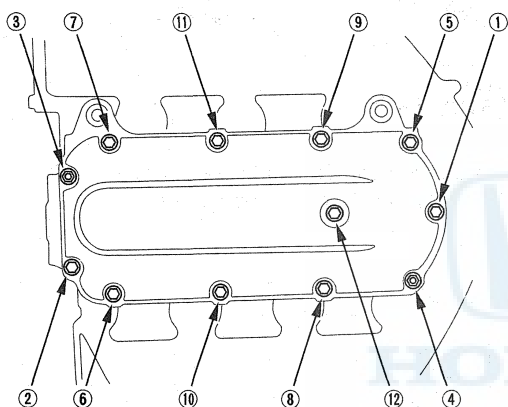
5. Remove and plug the water bypass hoses (C).



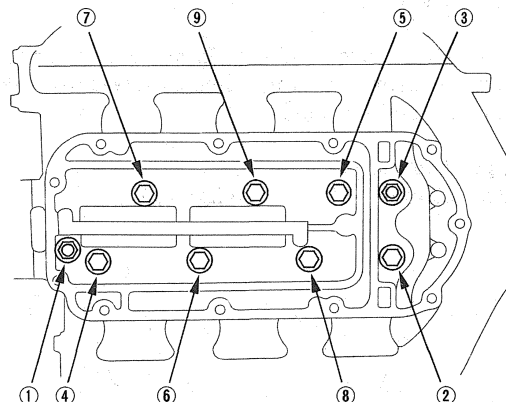
6. Remove the engine wire harness connectors and wire harness clamps from the intake manifold.

- Intake air temperature (IAT) sensor connector
- Throttle actuator connector
- Manifold absolute pressure (MAP) sensor connector
- Evaporative emission (EVAP) canister purge valve connector
- Intake manifold tuning (IMT) valve actuator connector (J35Z1 engine)

7. Remove the upper cover mounting bolts and nuts sequentially in three steps, then remove the upper cover.



8. Remove the intake manifold mounting bolts and nuts sequentially in three steps, then remove the intake manifold.



9. Remove the spacer (J35A9 engine).

(cont'd)

Intake Manifold and Exhaust System

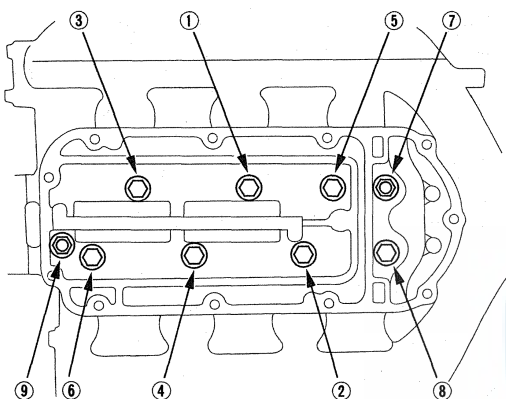
Intake Manifold Removal and Installation (cont'd)

Installation

1. Install the gaskets and spacer on the injector base (J35A9 engine).
2. Install the intake manifold. Torque the bolts and nuts sequentially in three steps. Always use a new intake manifold gasket.

Specified Torque

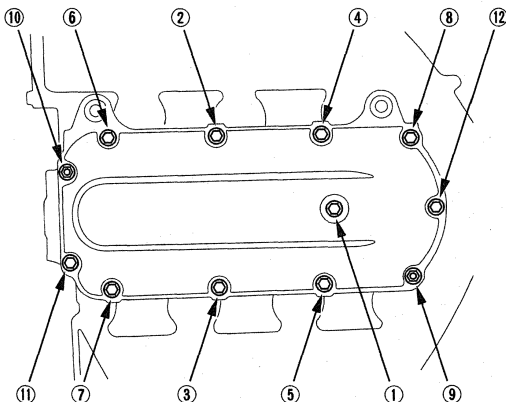
8 x 1.25 mm: 22 N·m (2.2 kgf·m, 16 lbf·ft)



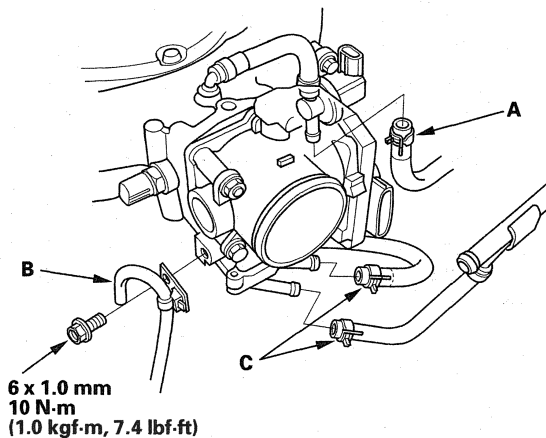
3. Install the upper cover. Torque the bolts and nuts sequentially in three steps. Always use a new gasket.

Specified Torque

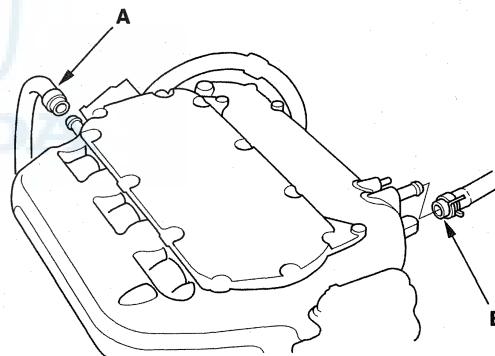
6 x 1.0 mm: 12 N·m (1.2 kgf·m, 8.8 lbf·ft)



4. Install the evaporative emission (EVAP) canister hose (A), transmission breather hose clamp bracket (B), and water bypass hoses (C).



5. Install the positive crankcase ventilation (PCV) hose (A) and brake booster vacuum hose (B).

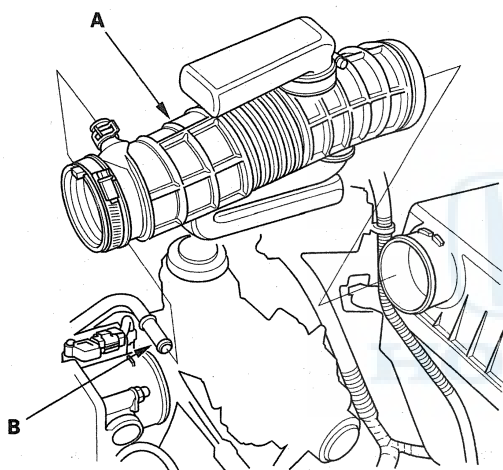




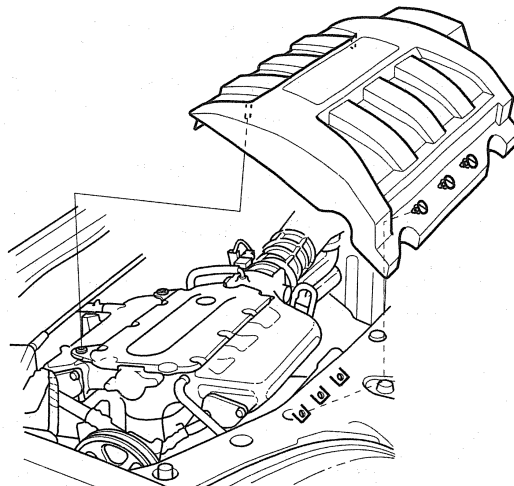
6. Connect the engine wire harness connectors, and install the wire harness clamps to the intake manifold.

- Intake air temperature (IAT) sensor connector
- Throttle actuator connector
- Manifold absolute pressure (MAP) sensor connector
- Evaporative emission (EVAP) canister purge valve connector
- Intake manifold tuning (IMT) valve actuator connector (J35Z1 engine)

7. Install the intake air duct (A), then install the breather pipe (B).



8. Install the engine cover.



9. Clean up any spilled engine coolant.

10. After installation, check that all tubes, hoses, and connectors are installed correctly.

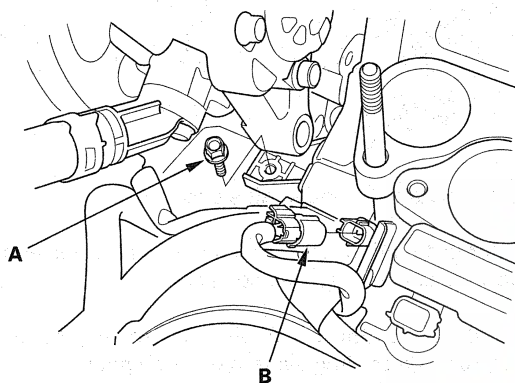
11. Refill the radiator with engine coolant, and bleed air from the cooling system with the heater valve open (see step 8 on page 10-7).

Intake Manifold and Exhaust System

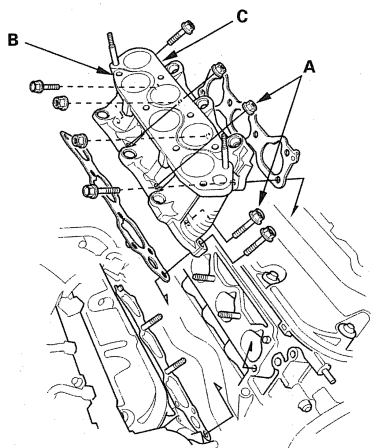
Injector Base Removal and Installation

Removal

1. Relieve the fuel pressure (see page 11-372).
2. Remove the power steering (P/S) pump and P/S hose bracket (see step 6 on page 6-28).
3. Remove the intake manifold (see page 9-4).
4. Remove the injectors (see page 11-222).
5. Remove the harness bracket mount bolt (A) and the knock sensor connector (B).



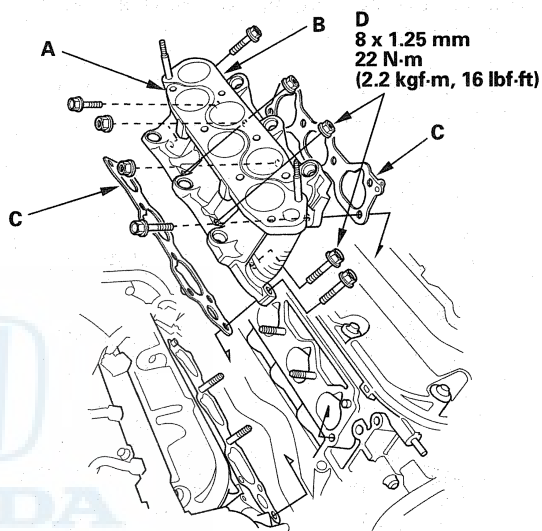
6. Remove the injector base mount bolts/nuts (A), then remove the front injector base (B) and rear injector base (C).



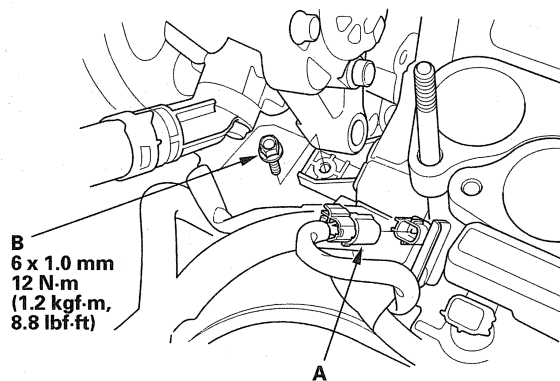
Installation

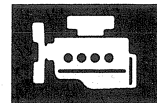
1. Install the front injector base (A) and rear injector base (B) with new gaskets (C), and torque the bolts/nuts (D) in a crisscross pattern in three steps, beginning with the inner nuts.

NOTE: The front injector base gasket is different from the rear one. Do not mix injector base gasket types.

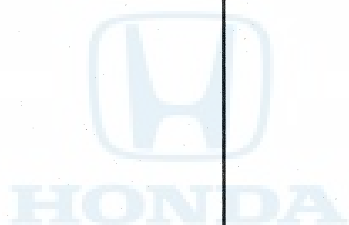


2. Install the knock sensor connector (A) and harness bracket mount bolt (B).





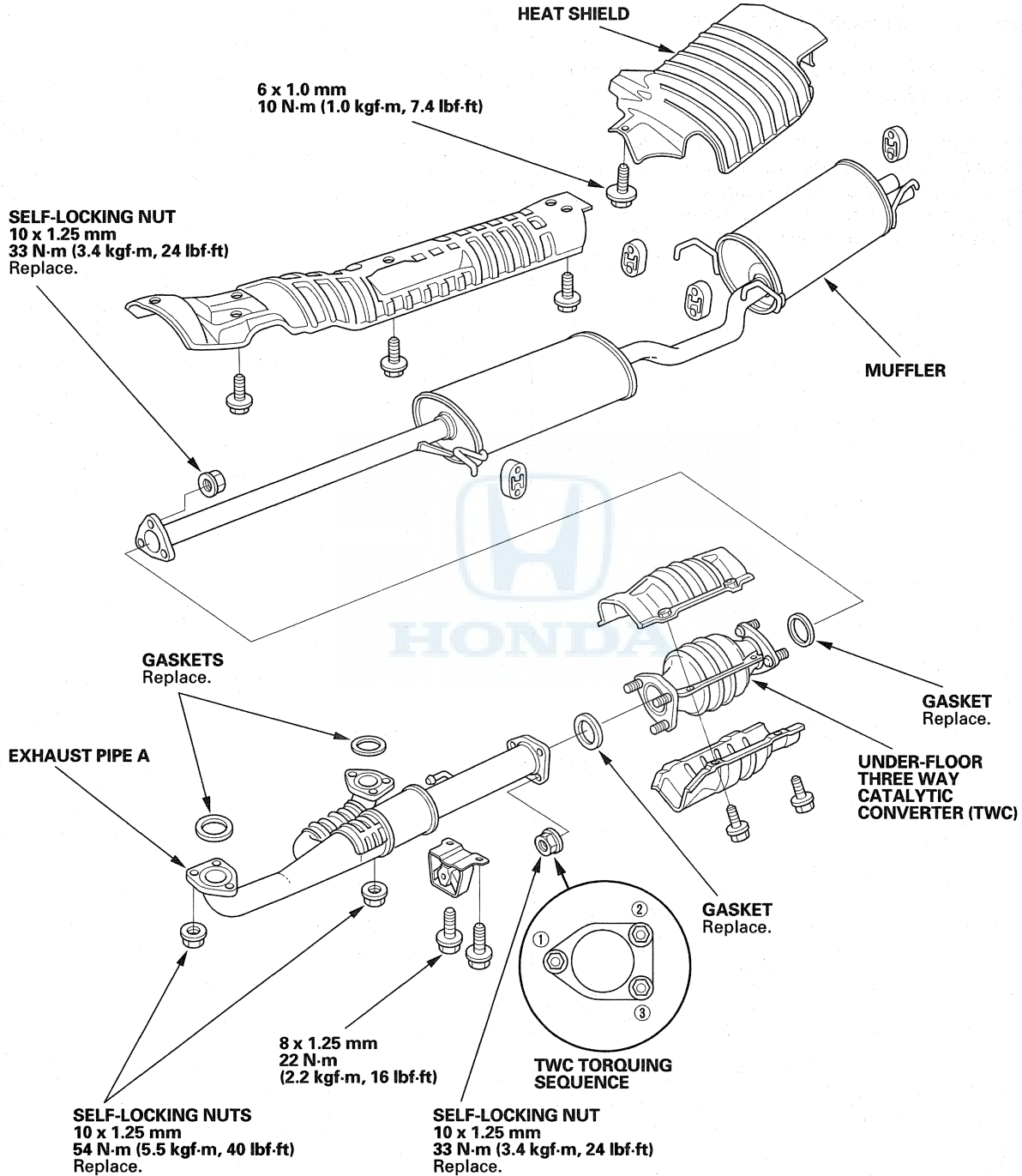
3. Install the injectors (see page 11-222).
4. Install the intake manifold (see page 9-6).
5. Install the P/S pump and P/S hose bracket (see step 27 on page 6-52).
6. Inspect for fuel leaks. Turn the ignition switch ON (II) (do not operate the starter) so the fuel pump runs about 2 seconds and pressurizes the fuel line. Repeat this operation three times, then check for fuel leakage at any point in the fuel line.



Intake Manifold and Exhaust System

Exhaust Pipe and Muffler Replacement

NOTE: Use new gaskets and self-locking nuts when reassembling.



Engine Cooling

Cooling System

Component Location Index	10-2
Radiator Cap Test	10-3
Radiator Test	10-3
Fan Motor Test	10-4
Thermostat Test	10-4
Water Pump Inspection	10-5
Water Pump Replacement	10-5
Coolant Check	10-6
Coolant Replacement	10-6
Thermostat Replacement	10-9
Water Passage Replacement	10-10
Radiator and Fan Replacement	10-13

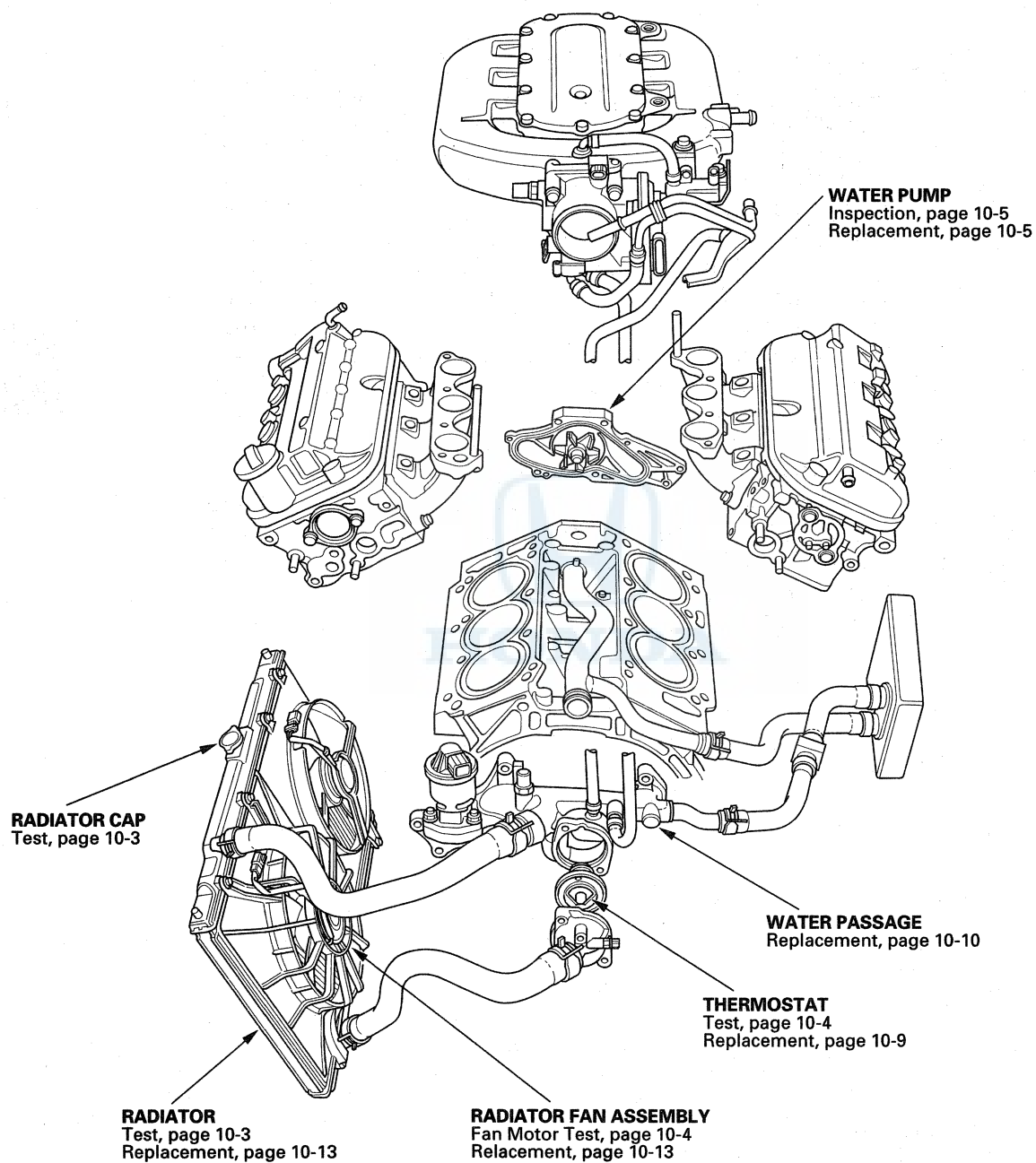
Fan Controls

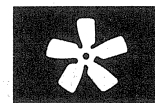
Component Location Index	10-16
Symptom Troubleshooting Index	10-17
Circuit Diagram	10-18
Radiator Fan High Speed Circuit Troubleshooting	10-19



Cooling System

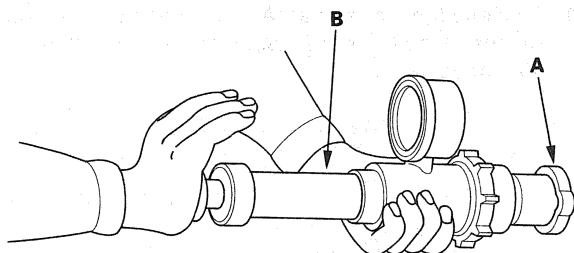
Component Location Index





Radiator Cap Test

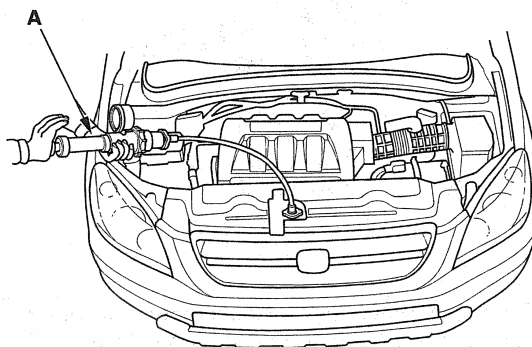
1. Remove the radiator cap (A), wet its seal with engine coolant, then install it on a commercially available pressure tester (B).



2. Apply a pressure of 93—123 kPa (0.95—1.25 kgf/cm², 14—18 psi).
3. Check for a drop in pressure.
4. If the pressure drops, replace the cap.

Radiator Test

1. Wait until the engine is cool, then carefully remove the radiator cap and fill the radiator with engine coolant to the top of the filler neck.
2. Attach a commercially available pressure tester (A) to the radiator, and apply a pressure of 93—123 kPa (0.95—1.25 kgf/cm², 14—18 psi).

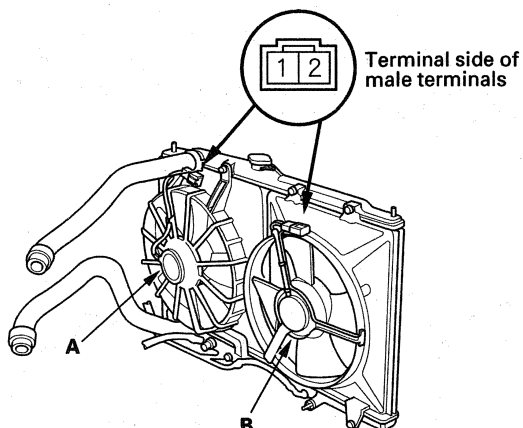


3. Inspect for engine coolant leaks and a drop in pressure.
4. Remove the tester, then reinstall the radiator cap.

Cooling System

Fan Motor Test

1. Disconnect the 2P connectors from the radiator fan motor (A) and condenser fan motor (B).



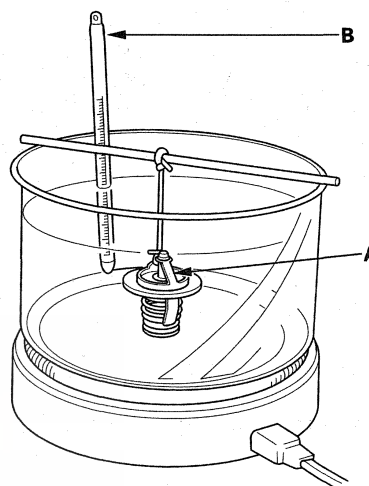
2. Test each motor by connecting battery power to terminal No. 2 and ground to terminal No. 1.
3. If either motor fails to run or does not run smoothly, replace it (see page 10-13).

Thermostat Test

Replace the thermostat if it is in the stuck open position at room temperature.

To test a closed thermostat:

1. Suspend the thermostat (A) in a container of water. Do not let the thermometer (B) touch the bottom of the hot container.



2. Heat the water and check the temperature with a thermometer. Check the temperature at which the thermostat first opens, and at which it is fully open.
3. Measure the lift height of the thermostat when it is fully open.

Standard Thermostat

Lift Height: Above 10.0 mm (0.39 in.)
Starts Opening: 169—176 °F (76—80 °C)
Fully Open: 194 °F (90 °C)



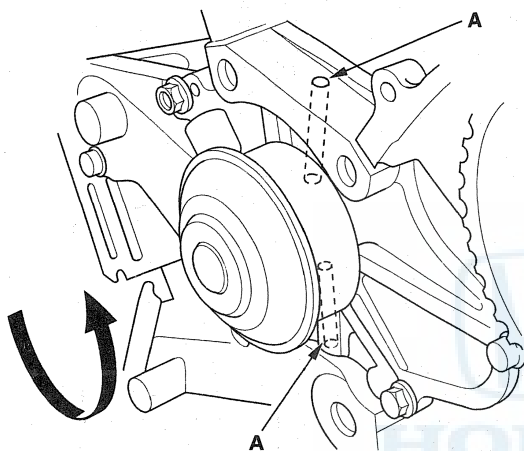
Water Pump Inspection

1. Remove the timing belt:

- J35A9 engine (see page 6-13)
- J35Z1 engine (see page 6-70)

2. Turn the water pump pulley counterclockwise. Check that it turns freely. If it doesn't turn smoothly, replace the water pump (see page 10-5).

NOTE: When you check the water pump pulley, you may see a small amount of "weeping" from the bleed holes (A). This is normal.



3. Install the timing belt:

- J35A9 engine (see page 6-16)
- J35Z1 engine (see page 6-72)

Water Pump Replacement

1. Drain the engine coolant (see page 10-6).

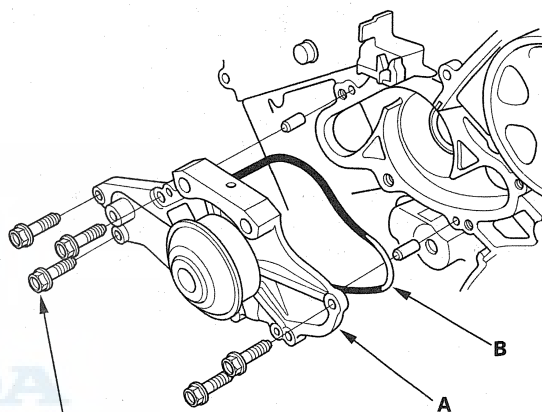
2. Remove the timing belt:

- J35A9 engine (see page 6-13)
- J35Z1 engine (see page 6-70)

3. Remove the timing belt adjuster:

- J35A9 engine (see page 6-24)
- J35Z1 engine (see page 6-82)

4. Remove the five bolts, then remove the water pump (A).



6 x 1.0 mm
12 N·m (1.2 kgf·m, 8.8 lbf·ft)

5. Inspect and clean the O-ring groove and the mating surface with the engine block.

6. Install the water pump with a new O-ring (B) in the reverse order of removal.

7. Clean up any spilled engine coolant.

8. Install the timing belt adjuster:

- J35A9 engine (see page 6-24)
- J35Z1 engine (see page 6-82)

9. Install the timing belt:

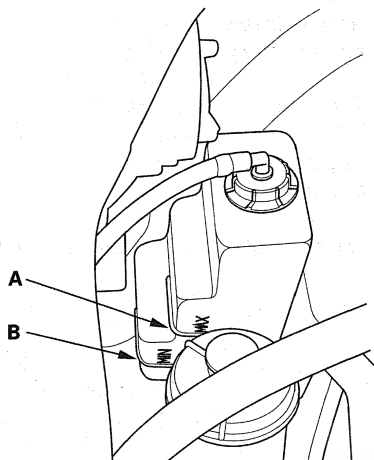
- J35A9 engine (see page 6-16)
- J35Z1 engine (see page 6-72)

10. Refill the radiator with engine coolant, then bleed air from the cooling system (see step 8 on page 10-7).

Cooling System

Coolant Check

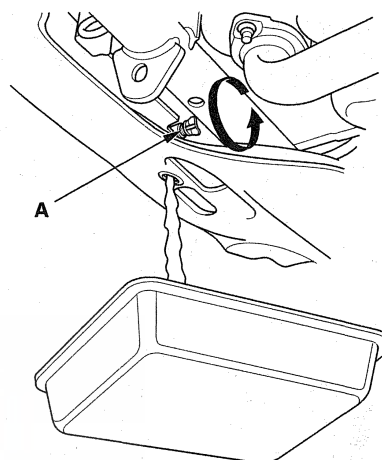
1. Look at the coolant level in the coolant reservoir. Make sure it is between the MAX mark (A) and MIN mark (B).



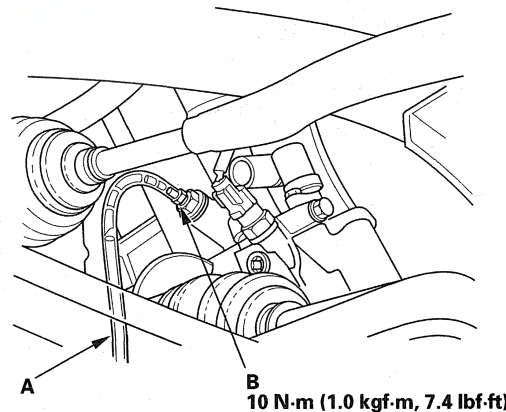
2. If the coolant level in the coolant reservoir is at or below the MIN mark, add coolant to bring it up to the MAX mark, inspect the cooling system for leaks.

Coolant Replacement

1. Start the engine. Set the heater temperature control dial to maximum heat, then turn off the ignition switch. Make sure the engine and radiator are cool to the touch.
2. Remove the radiator cap.
3. Loosen the drain plug (A), and drain the coolant.



4. Install a rubber hose (A) on the drain bolt (B) located at the rear of the engine block, then loosen the drain bolt.



5. When the coolant stops draining, torque the drain bolt. Remove the rubber hose.
6. Torque the radiator drain plug securely.



7. Remove, drain, and reinstall the coolant reservoir.
8. Pour Honda Long Life Antifreeze/Coolant Type 2 (P/N OL999-9001) into the radiator up to the base of the filler neck.

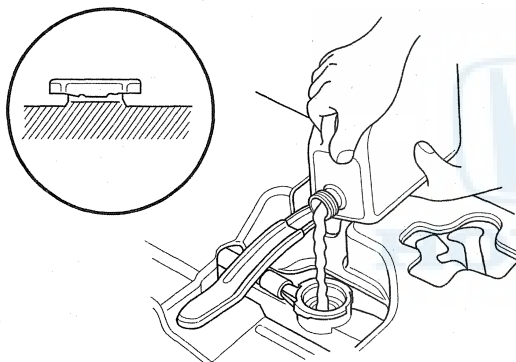
NOTE:

- Always use Honda Long Life Antifreeze/Coolant Type 2 (P/N OL999-9001). Using a non-Honda coolant can result in corrosion, causing the cooling system to malfunction or fail.
- Honda Long Life Antifreeze/Coolant Type 2 is a mixture of 50 % antifreeze and 50 % water. Do not add water.

Engine Coolant Refill Capacity (Including the coolant reservoir capacity of 0.73 L (0.19 US gal))

At Coolant Change: 7.3 L (1.93 US gal)

After Engine Overhaul: 9.2 L (2.43 US gal)



9. Start the engine. Hold the engine speed at 1,500 rpm until it warms up (the radiator fan comes on at least twice). Make sure the thermostat is open.
10. Turn off the engine. Check the level in the radiator, and add Honda Long Life Antifreeze/Coolant Type 2, if needed.
11. Set the climate control or heater control panel to maximum cool. Start the engine. Hold the engine speed at 1,500 rpm for 5 minutes, then turn off the engine.
12. Check the level in the radiator, and add Honda Long Life Antifreeze/Coolant Type 2, if needed.

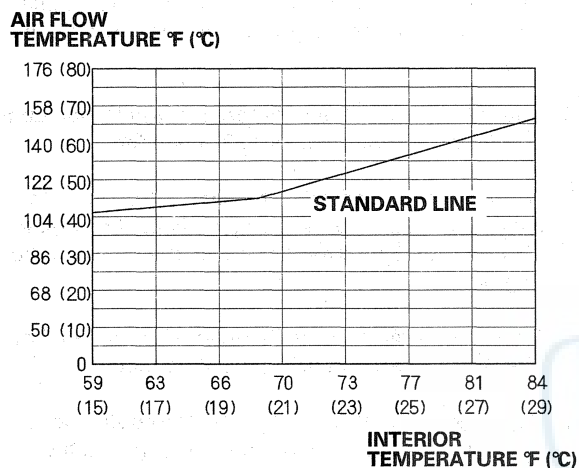
13. Set the climate control or heater control panel to maximum heat. Start the engine. Hold the engine speed at 1,500 rpm for 5 minutes, then turn off the engine.
14. Check the level in the radiator, and add Honda Long Life Antifreeze/Coolant Type 2, if needed.
15. Set the climate control or heater control panel to maximum cool. Start the engine. Hold the engine speed at 1,500 rpm for 3 minutes, then turn off the engine.
16. Check the level in the radiator, and add Honda Long Life Antifreeze/Coolant Type 2, if needed.
17. Set the climate control or heater control panel to maximum heat. Start the engine. Hold the engine speed at 1,500 rpm for 3 minutes, then turn off the engine.
18. Check the level in the radiator, and add Honda Long Life Antifreeze/Coolant Type 2, if needed.
19. Repeat steps 15 through 18 until the coolant level does not change in the radiator, then install the radiator cap loosely.
20. Set the climate control or heater control panel to maximum cool. Start the engine. Hold the engine speed at 2,500 rpm for 1 minute.

(cont'd)

Cooling System

Coolant Replacement (cont'd)

21. Set the climate control or heater control panel to maximum heat, and select high speed heat mode on the rear control panel. Measure the temperature of the air from the rear floor vent for 2 or 3 minutes. Make sure the temperature is above the standard line of the graph as shown. If the temperature is below the standard line, repeat steps 15 through 18 several more times. Then loosely install the radiator cap and recheck.

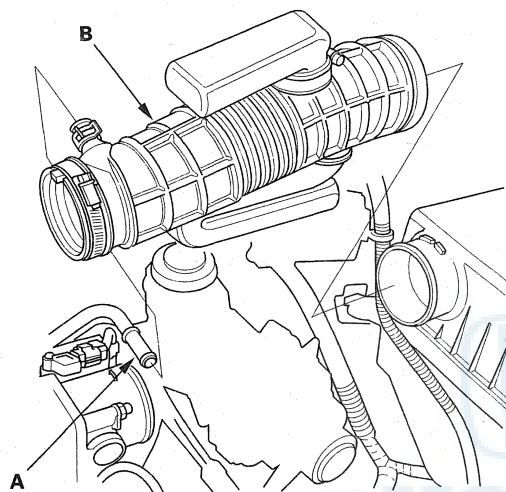


22. With the engine idling, make sure you do not hear the sound of water flowing near the rear heater unit. If you hear water flowing, repeat steps 15 through 18 several more times.
23. Install the radiator cap fully.
24. Fill the coolant reservoir with Honda Long Life Antifreeze/Coolant Type 2 up to the MAX mark on the coolant reservoir, then add an extra 0.4 L (0.11 US gal) coolant.
25. Clean up any spilled engine coolant.
26. If the maintenance minder required engine coolant replacement, reset the maintenance minder (see page 3-4), and this procedure is complete. If the maintenance minder did not require engine coolant replacement, go to step 27.
27. Connect the Honda Diagnostic System (HDS) to the data link connector (DLC) (see step 2 on page 11-3).
28. Turn the ignition switch ON (II).
29. Select BODY ELECTRICAL with the HDS.
30. Select ADJUSTMENT in the GAUGE MENU with the HDS.
31. Select RESET in the MAINTENANCE MINDER with the HDS.
32. Select MAINTENANCE SUB ITEM 5 RESET with the HDS.
33. Reset the maintenance information display (see page 3-6).

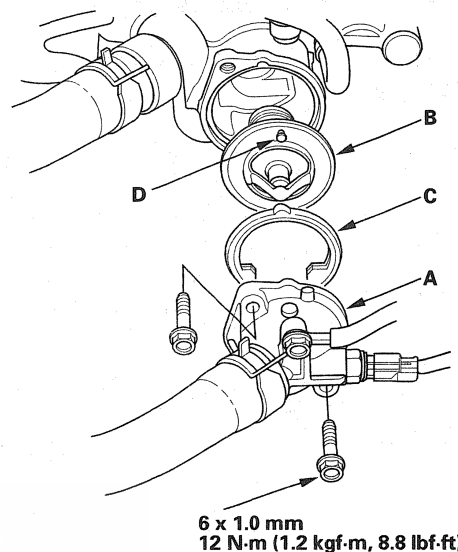


Thermostat Replacement

1. Make sure you have the anti-theft codes for the audio system and the navigation system (if equipped) then write down the audio presets.
2. Disconnect the negative cable from the battery.
3. Drain the engine coolant (see page 10-6).
4. Disconnect the breather pipe (A), then remove the intake air duct (B).



5. Remove the thermostat cover (A), then remove the thermostat (B).

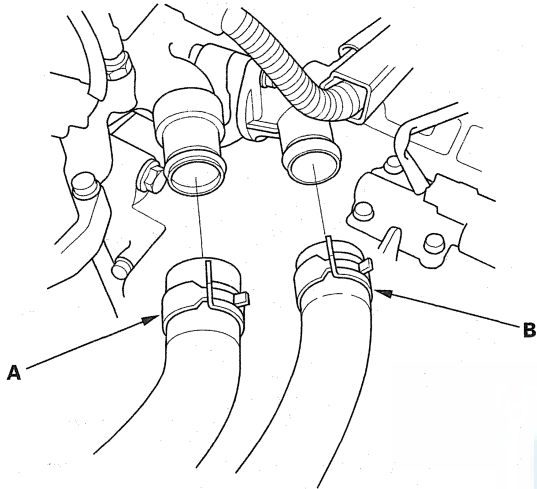


6. Install the new rubber seal (C) onto the thermostat, then install the thermostat with pin (D) up, and install the thermostat cover.
7. Install the intake air duct, then connect the breather pipe.
8. Connect the negative cable to the battery.
9. Refill the radiator with engine coolant, then bleed air from the cooling system (see step 8 on page 10-7).
10. Clean up any spilled engine coolant.
11. Do the power window reset procedure (see page 22-255).
12. Enter the anti-theft codes for the audio system and the navigation system (if equipped), then enter the audio presets.
13. Set the clock (on vehicles without navigation).

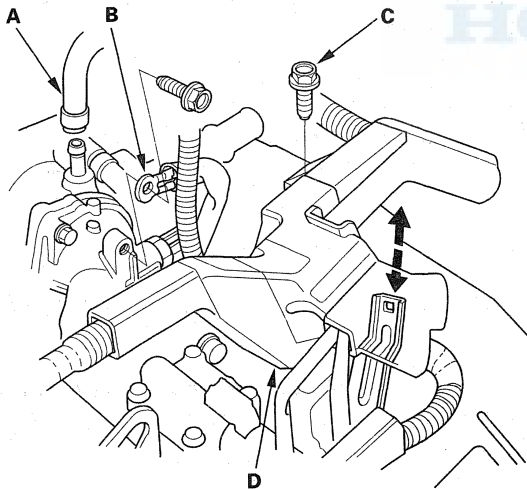
Cooling System

Water Passage Replacement

1. Drain the engine coolant (see page 10-6).
2. Remove the intake manifold (see page 9-4).
3. Remove the upper radiator hose (A) and the lower radiator hose (B).

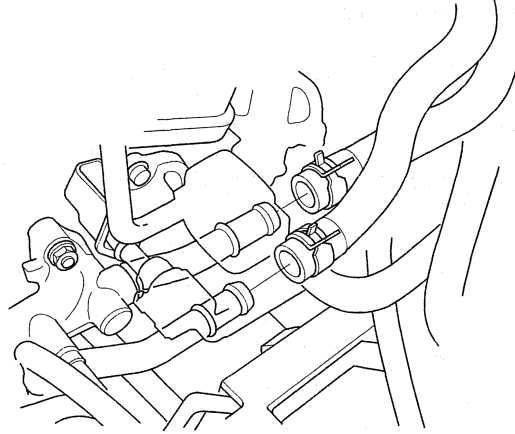


4. Remove the water bypass hose (A) and ground cable (B).



5. Remove the harness holder mounting bolt (C), then remove the harness holder (D) from the bracket.

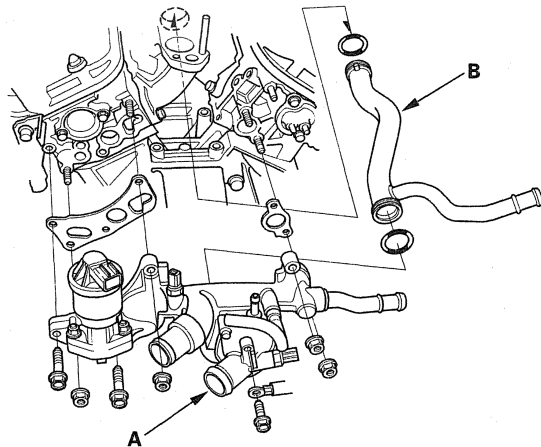
6. Remove the heater hoses.



7. Remove the engine wire harness connectors from the water passage.

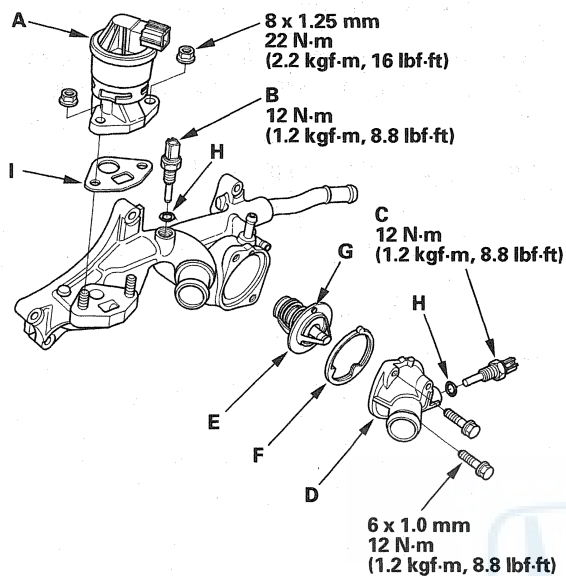
- Engine coolant temperature (ECT) sensor 1 connector
- Engine coolant temperature (ECT) sensor 2 connector
- Exhaust gas recirculation (EGR) valve connector

8. Remove the water passage (A) and connecting pipe (B).



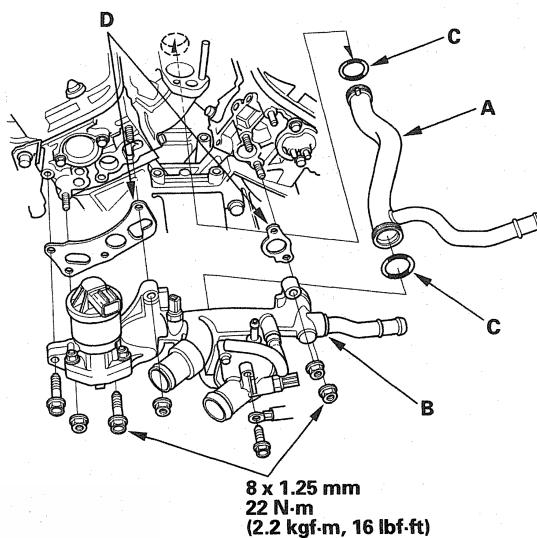


9. Remove the EGR valve (A), ECT sensor 1 (B), ECT sensor 2 (C), thermostat cover (D), and thermostat (E).

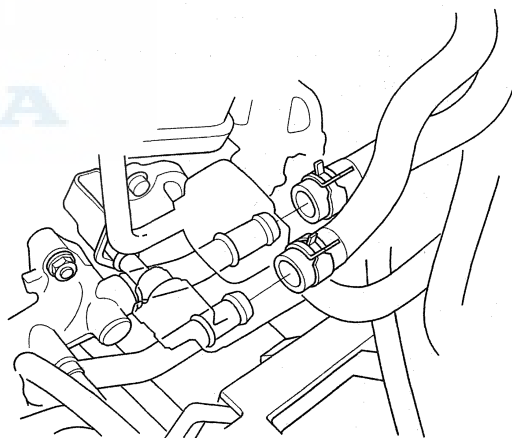


10. Install the new rubber seal (F) onto the thermostat, then install the thermostat with pin (G) up, and install the thermostat cover.
11. Install the ECT sensor 1 and ECT sensor 2, using the new O-rings (H).
12. Install the EGR valve, using a new gasket (I).

13. Install the connecting pipe (A) and water passage (B), using the new O-rings (C) and new gaskets (D).



14. Install the heater hoses.

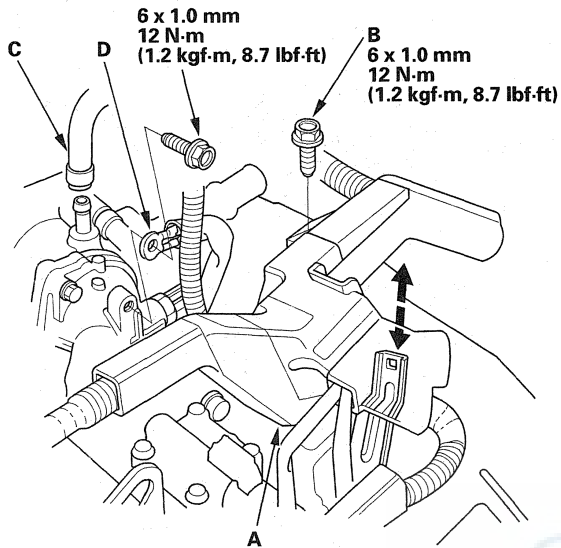


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Cooling System

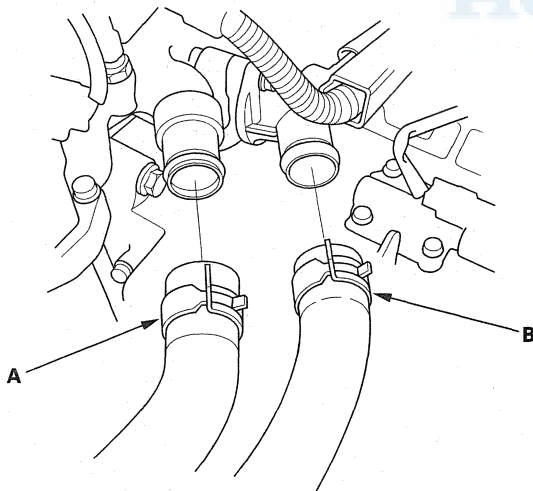
Water Passage Replacement (cont'd)

15. Install harness holder (A) to the bracket, then torque the mounting bolt (B).



16. Install the water bypass hose (C) and ground cable (D).

17. Install the upper radiator hose (A) and the lower radiator hose (B).



18. Install the intake manifold (see page 9-6).

19. After installation, check that all tubes, hoses and connectors are installed correctly.

20. Refill the radiator with engine coolant, then bleed air from the cooling system (see step 8 on page 10-7).

21. Clean up any spilled engine coolant.

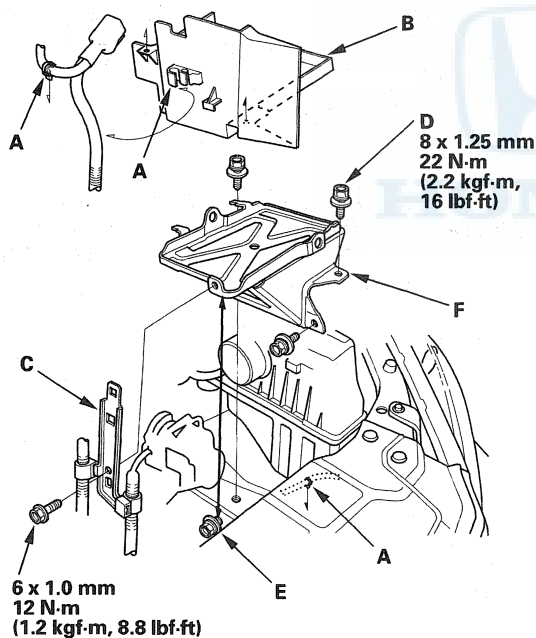


Radiator and Fan Replacement

NOTE:

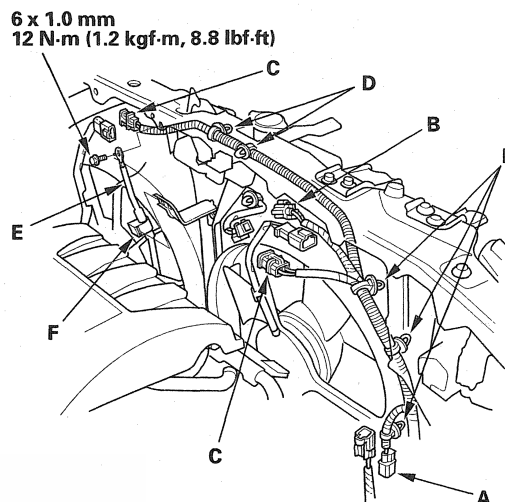
- Use fender covers to avoid damaging painted surfaces.
- To avoid damaging the wires and terminals, unplug the wiring connectors carefully while holding the connector portion.
- Mark all wiring and hoses to avoid misconnection. Also, be sure that they do not contact any other wiring or hoses, or interfere with any other parts.

1. Make sure you have the anti-theft codes for the audio system and the navigation system (if equipped), then write down the audio presets.
2. Disconnect the negative cable from the battery first, then disconnect the positive cable.
3. Remove the battery.
4. Remove the harness clamps (A), then remove the battery tray (B).

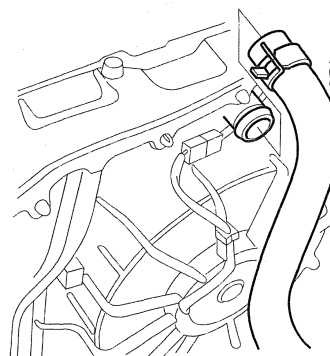


5. Remove the harness bracket (C).
6. Remove the three mounting bolts (D), and loosen the mounting bolt (E), then remove the battery base (F).
7. Remove the bulkhead cover.

8. Disconnect the A/C compressor clutch connector (A), hood switch connector (B), and fan motor connectors (C).



9. Remove the harness clips (D).
10. Remove the ground cable (E) and harness clamp (F).
11. Drain the engine coolant (see page 10-6).
12. Remove the upper radiator hose.

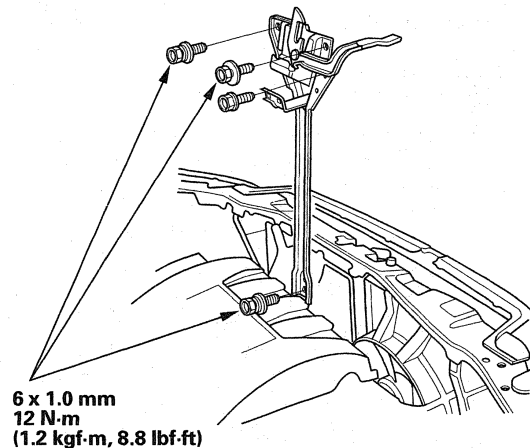


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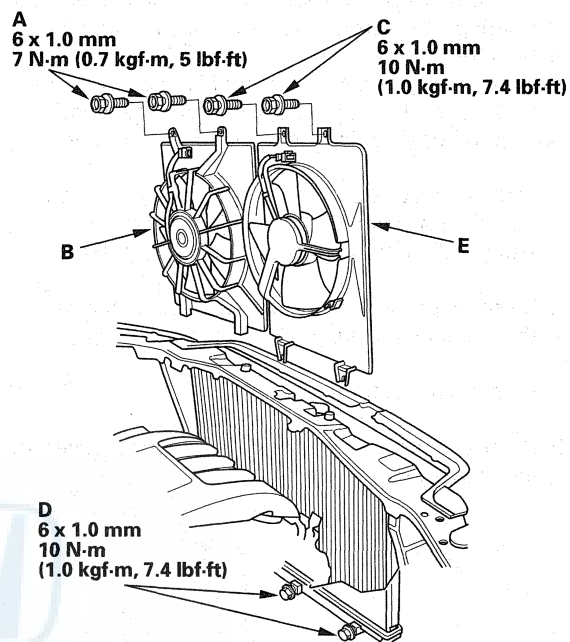
Cooling System

Radiator and Fan Replacement (cont'd)

- 13. Remove the bulkhead bracket.**



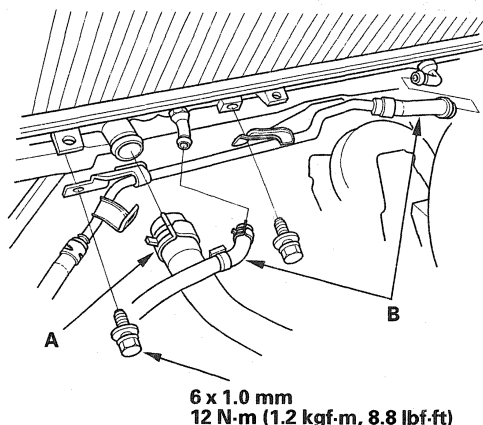
14. Remove the two bolts (A) securing the radiator fan shroud, then remove the radiator fan shroud assembly (B) from the battery side.



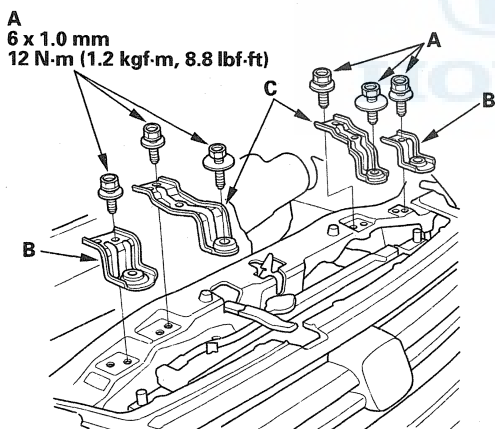
15. Remove the two bolts (C), and loosen the two bolts (D) securing the A/C condenser fan shroud, then remove the A/C condenser fan shroud assembly (E) from the battery side.



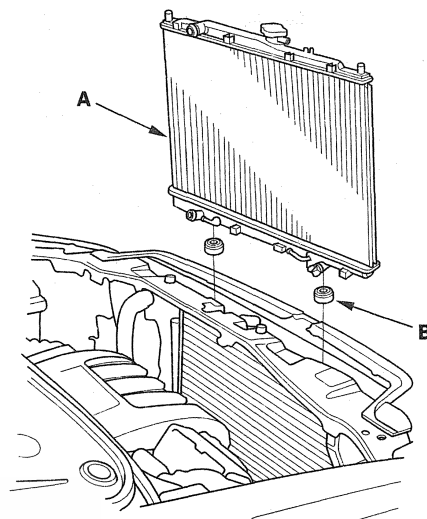
16. Remove the lower radiator hose (A) and automatic transmission fluid (ATF) cooler hoses (B). Plug the ATF cooler hoses and lines.



17. Remove the six bulkhead bracket mounting bolts (A) that secure the radiator upper brackets/cushions (B) and A/C condenser brackets (C), then remove the radiator upper brackets/cushions and A/C condenser brackets.



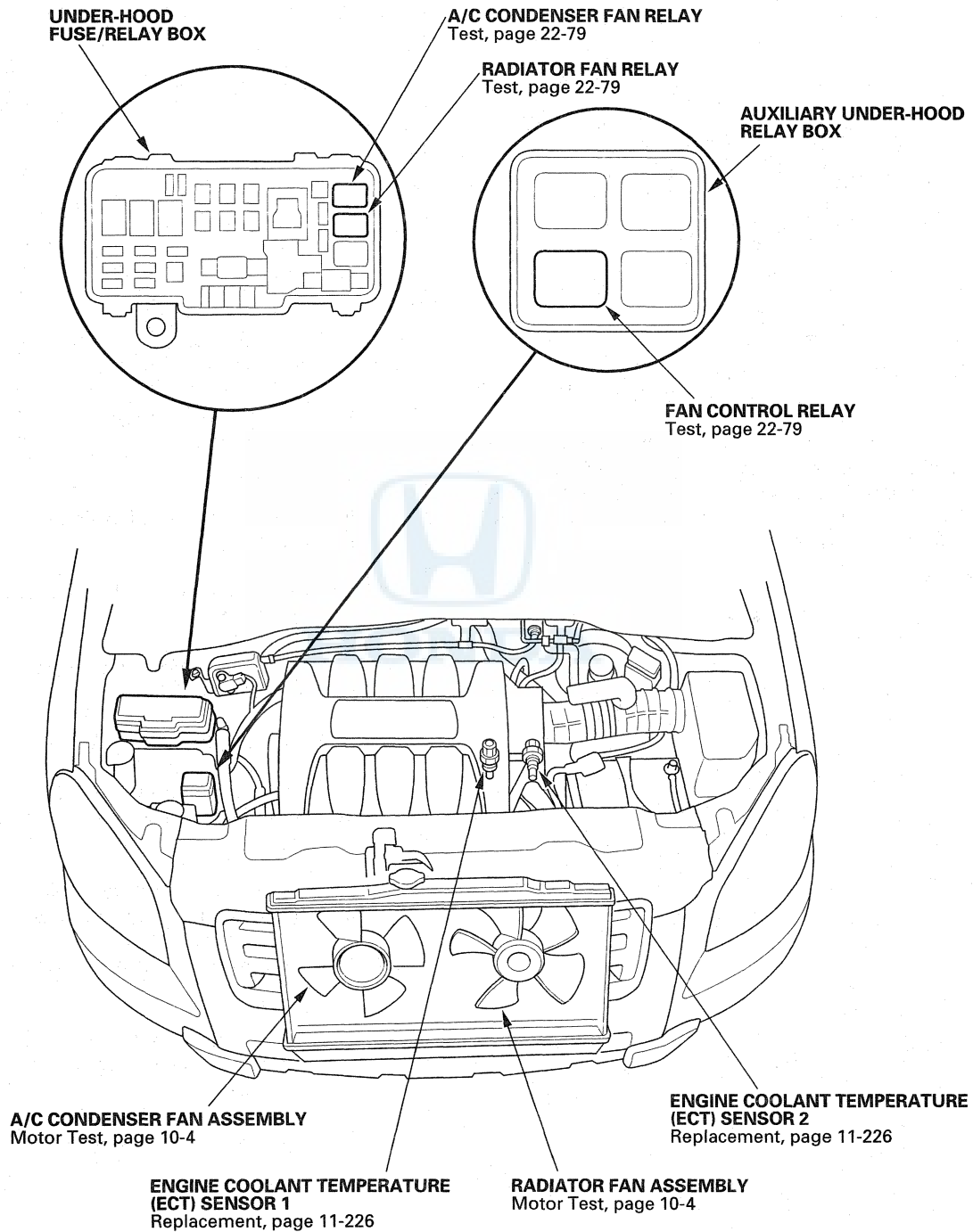
18. Pull up the radiator assembly (A), then remove the lower cushions (B).



19. Install the radiator and fans in the reverse order of removal.
20. Apply touch-up paint to the bulkhead bracket mounting bolts.
21. Check the upper and lower cushions are being installed securely.
22. Adjust the engine hood latch (see page 20-140).
23. Install the battery. Clean the battery posts and cable terminals, then assemble them and apply grease to prevent corrosion.
24. Fill the radiator with engine coolant, then bleed air from the cooling system (see step 8 on page 10-7).
25. Do the power window reset procedure (see page 22-255).
26. Enter the anti-theft codes for the audio system and the navigation system (if equipped), then enter the audio presets.
27. Set the clock (an vehicles without navigation).

Fan Controls

Component Location Index



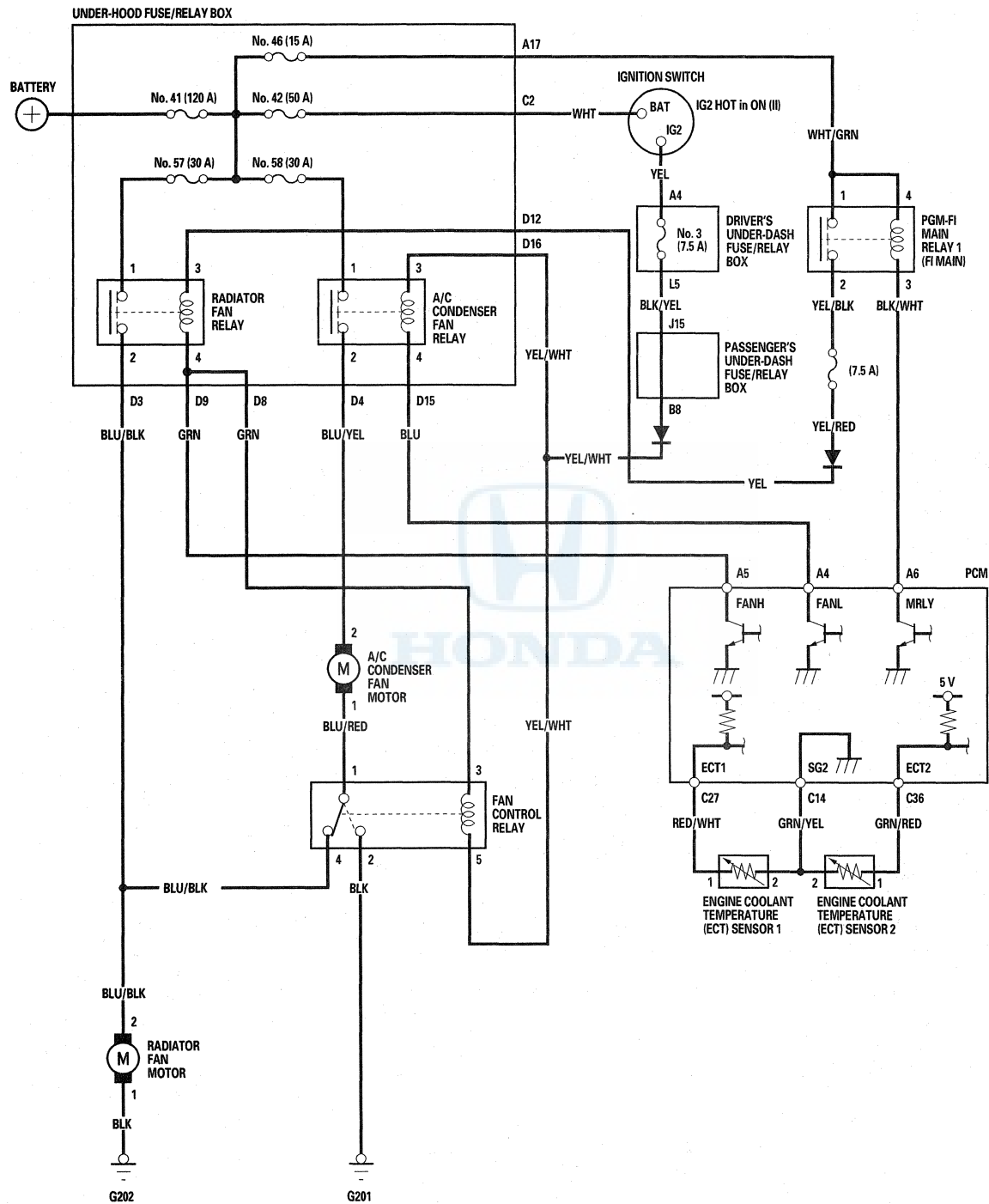


Symptom Troubleshooting Index

Symptom	Diagnostic Procedure	Also check for
Engine overheats	<ol style="list-style-type: none"> 1. Check the coolant level. 2. Check for any engine coolant leakage (from gaskets, hoses, O-rings, etc.). 3. Check for dirt, leaves, or insects on radiator and A/C condenser. 4. Check for deteriorated coolant. 5. Check for a damaged or deformed fan shroud. 6. Inspect the fan motors (see page 10-4) or fan control relays (see page 22-82). 7. Check the radiator cap (see page 10-3). 8. Check the thermostat (see page 10-4). 9. Inspect the water pump (see page 10-5). 10. Check for plugged or deteriorated radiator hoses. 11. Check for plugged heater core or hoses. 12. Check for a damaged cylinder head gasket. 	
The radiator fan runs at low speed, but it does not run at high speed when the engine coolant temperature is above 206 °F (97 °C)	Radiator fan high speed circuit troubleshooting (see page 10-19).	
With the A/C off and the engine coolant temperature at 206 °F (97 °C) or below, the A/C condenser fan runs at high speed and the radiator fan does not run. When the engine coolant temperature is above 206 °F (97 °C), both fans run at high speed	Remove the fan control relay, and test it. <ul style="list-style-type: none"> • If the relay is faulty, replace it. • If the relay is OK, check for short in the wire between fan control relay 5P socket terminal No. 1 and A/C condenser fan motor 2P connector terminal No. 1. 	
Both the radiator fan and the A/C condenser fan run at high speed with the ignition switch ON (II), the A/C off, and the engine coolant temperature below 204 °F (95 °C)	Check for short in the wire between radiator fan relay 4P socket terminal No. 4 and PCM connector terminal A5.	
Both the radiator fan and the A/C condenser fan run at low speed with the ignition switch ON (II) and the A/C off	Check for short in the wire between A/C condenser fan relay 4P socket terminal No. 4 and PCM connector terminal A4.	
Both the radiator fan and the A/C condenser fan do not run at low speed with the A/C on	Radiator and A/C condenser fans low speed circuit troubleshooting (see page 21-29).	
The A/C condenser fan does not run at all. The radiator fan does not run at low speed, but it runs at high speed	A/C condenser fans low speed circuit troubleshooting (see page 21-29).	
Both the radiator fan and the A/C condenser fan do not run at high speed when the engine coolant temperature is above 206 °F (97 °C)	Check for open in the wire between radiator fan relay 4P socket terminal No. 4 and PCM connector terminal A5.	

Fan Controls

Circuit Diagram





Radiator Fan High Speed Circuit Troubleshooting

1. Check the No. 57 (30 A) fuse and the No. 46 (15 A) fuse in the under-hood fuse/relay box.

Are the fuses OK?

YES—Reinstall the fuse, then go to step 2.

NO—Replace the fuse(s) and recheck. ■

2. Remove the radiator fan relay from the under-hood fuse/relay box and test it (see page 22-82).

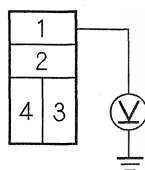
Is the relay OK?

YES—Go to step 3.

NO—Replace the radiator fan relay. ■

3. Measure the voltage between radiator fan relay 4P socket terminal No.1 and body ground.

RADIATOR FAN RELAY 4P SOCKET



Terminal side of female terminals

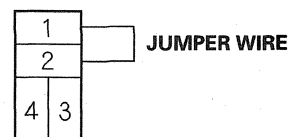
Is there battery voltage?

YES—Go to step 4.

NO—Replace the under-hood fuse/relay box. ■

4. Connect radiator fan relay 4P socket terminals No. 1 and No. 2 with a jumper wire.

RADIATOR FAN RELAY 4P SOCKET



Terminal side of female terminals

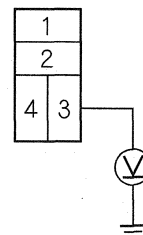
Does the radiator fan run at high speed?

YES—Go to step 5.

NO—Repair open in the wire between radiator fan relay 4P socket terminal No. 2 and radiator fan motor 2P connector terminal No. 2. ■

5. Turn the ignition switch ON (II).
6. Measure the voltage between radiator fan relay 4P socket terminal No. 3 and body ground.

RADIATOR FAN RELAY 4P SOCKET



Terminal side of female terminals

Is there battery voltage?

YES—Repair open in the wire between radiator fan relay 4P socket terminal No. 4 and the powertrain control module (PCM). ■

NO—Repair open in the wire between radiator fan relay 4P socket terminal No. 3 and the PGM-FI main relay 1 4P socket terminal No. 2. ■

Fuel and Emissions

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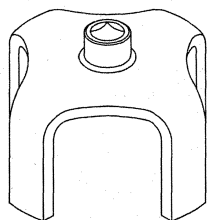
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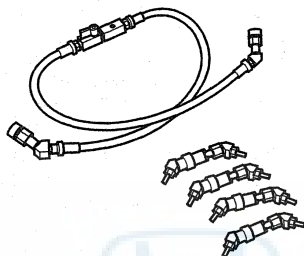
Fuel and Emissions Systems

Special Tools

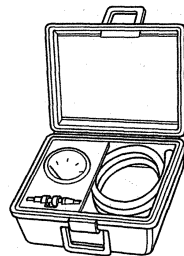
Ref. No.	Tool Number	Description	Qty
①	07AAA-S0XA100	Fuel Sender Wrench	1
②	07AAJ-S6MA150	Fuel Pressure Gauge Attachment Set	1
③	07JAZ-001000B	Vacuum/Pressure Gauge, 0—4 in.Hg	1
④	07NAJ-P07010A	Pressure Gauge Adapter	1
⑤	07ZAJ-S5AA200	Oil Pressure Hose	1
⑥-1	07406-0020201	A/T Pressure Hose	1
⑥-2	07406-0070301	A/T Low Pressure Gauge W/Panel	1
⑥-3	07MAJ-PY4011A	A/T Pressure Hose, 2,210 mm	1
⑥-4	07MAJ-PY40120	A/T Pressure Hose, Adapter	1
⑦	07406-004000B	Fuel Pressure Gauge	1



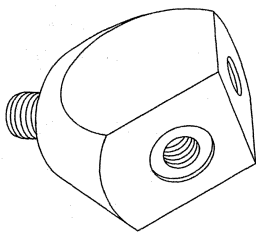
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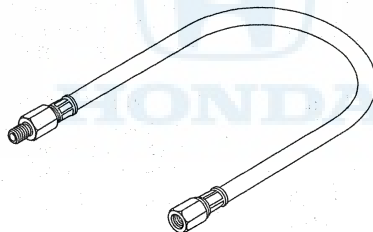
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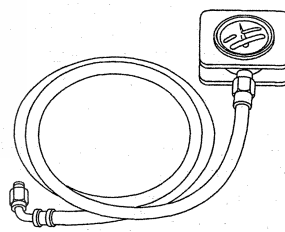
③



④



⑤



⑥-1, ⑥-2, ⑥-3, ⑥-4



⑦



General Troubleshooting Information

Intermittent Failures

The term "intermittent failure" means a system may have had a failure, but it checks OK now. If the malfunction indicator lamp (MIL) on the dash does not come on, check for poor connections or loose terminals at all connectors related to the circuit that you are troubleshooting. If the MIL was on but then went out, the original problem may have been intermittent.

Opens and Shorts

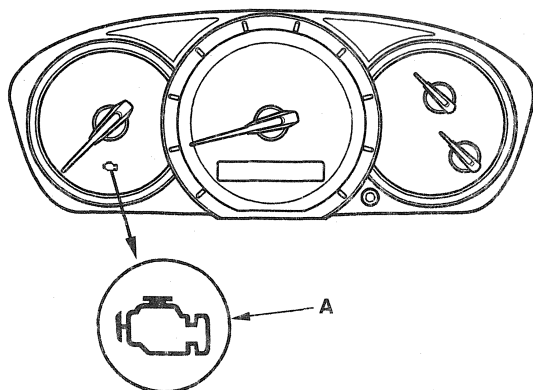
"Open" and "short" are common electrical terms. An open is a break in a wire or at a connection. A short is an accidental connection of a wire to ground or to another wire. In simple electronics, this usually means something won't work at all. With complex electronics (such as PCMs) this can sometimes mean something works, but not the way it's supposed to.

How to Use the HDS (Honda Diagnostic System)

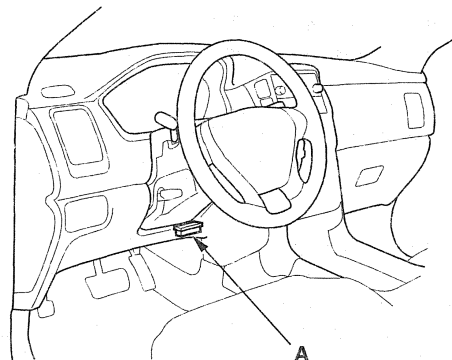
If the MIL (malfunction indicator lamp) has come on

1. Start the engine, and check the MIL (A).

NOTE: If the ignition switch is turned ON (II), and the engine is not started, the MIL stays on for 15—20 seconds (see page 11-67).



2. If the MIL stays on, connect the HDS to the data link connector (DLC) (A) located under the driver's side of the dashboard.



3. Turn the ignition switch ON (II).
4. Make sure the HDS communicates with the PCM. If it doesn't, go to the DLC circuit troubleshooting (see page 11-218).
5. Check the diagnostic trouble code (DTC) and note it. Also check the freeze data and/or on-board snapshot data, and download any data found. Then refer to the indicated DTC's troubleshooting, and begin the appropriate troubleshooting procedure.

NOTE:

- Freeze data indicates the engine conditions when the first malfunction, misfire, or fuel trim malfunction was detected.
- The HDS can read the DTC, freeze data, current data, and other powertrain control module (PCM) data.
- For specific operations, refer to the user's manual that came with the HDS.

6. If no DTCs are found, go to MIL troubleshooting (see page 11-208).

(cont'd)

Fuel and Emissions Systems

General Troubleshooting Information (cont'd)

If the MIL did not stay on

If the MIL did not stay on but there is a driveability problem, do the symptom troubleshooting.

If you can't duplicate the DTC

Some of the troubleshooting requires you to reset the PCM and try to duplicate the DTC. If the problem is intermittent and you can't duplicate the code, do not continue through the procedure. To do so will only result in confusion and possibly, a needlessly replaced PCM.

HDS Clear Command

The PCM stores various specific data to correct the system even if there is no electrical power such as when the battery negative terminal or No. 46 ACGS (15 A) fuse are disconnected. Stored data based on failed parts should be cleared by using the "CLEAR COMMAND" of the HDS, if parts are replaced.

The HDS has three kinds of clear commands to meet this purpose. They are DTC clear, PCM reset, and crank (CKP) pattern clear. DTC clear command erases all stored DTC codes, freeze data, on-board snapshot, and readiness codes. This must be done with the HDS after reproducing the DTC during troubleshooting.

The PCM reset command erases all stored DTC codes, freeze data, on-board snapshot, readiness codes, and all specific data to correct the system except crank (CKP) pattern. If the crank (CKP) pattern data in the PCM was cleared, you must do the crank (CKP) pattern learn procedure. The crank (CKP) pattern clear command erases only crank (CKP) pattern data. This command is for repair of a misfire or the CKP sensor.

Scan Tool Clear Command

If you are using a generic scan tool to clear commands, be aware that there is only one setting for clearing the PCM, and it clears all commands at the same time (crank (CKP) pattern learn, idle learn, readiness codes, freeze data, on-board snapshot, and DTCs). After you clear all commands, you then need to do these procedures, in this order: PCM idle learn procedure (see page 11-359); crank (CKP) pattern learn procedure; Test-drive to set readiness codes to complete (see page 11-67).

DTC Clear

1. Clear the DTC with the HDS while the engine is stopped.
2. Turn the ignition switch OFF.
3. Turn the ignition switch ON (II), and wait 30 seconds.
4. Turn the ignition switch OFF, and disconnect the HDS from the DLC.

PCM Reset

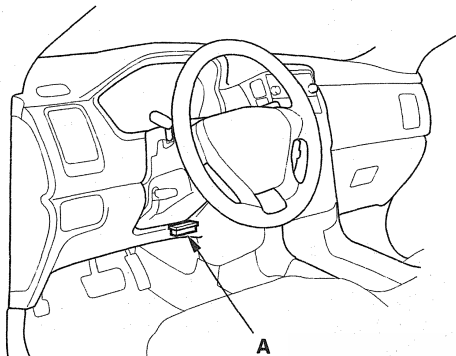
1. Reset the PCM with the HDS while the engine is stopped.
2. Turn the ignition switch OFF.
3. Turn the ignition switch ON (II), and wait 30 seconds.
4. Turn the ignition switch OFF, and disconnect the HDS from the DLC.
5. Do the PCM idle learn procedure (see page 11-359).



Crank (CKP) Pattern Clear/Crank (CKP) Pattern Learn

Clear/Learn Procedure (with the HDS)

1. Connect the HDS to the data link connector (DLC) (A) located under the driver's side of the dashboard.



2. Turn the ignition switch ON (II).
3. Make sure the HDS communicates with the PCM. If it doesn't, go to the DLC circuit troubleshooting (see page 11-218).
4. Select CRANK PATTERN in the ADJUSTMENT MENU with the HDS.
5. Select CRANK PATTERN LEARNING with the HDS, and follow the screen prompts.

Learn Procedure (without the HDS)

1. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on.
2. Test-drive the vehicle on a level road: Decelerate (with the throttle fully closed) from an engine speed of 2,500 rpm down to 1,000 rpm with the transmission in 2 position.
3. Test-drive the vehicle on a level road: Decelerate (with the throttle fully closed) from an engine speed of 5,000 rpm down to 3,000 rpm with the transmission in 2 position.
4. Repeat step 2 and 3 several times.
5. Turn the ignition switch OFF.
6. Turn the ignition switch ON (II), and wait 30 seconds.

How to End a Troubleshooting Session (required after any troubleshooting)

1. Reset the PCM with the HDS.
2. Do the PCM idle learn procedure (see page 11-359).
3. Turn the ignition switch OFF.
4. Disconnect the HDS from the DLC.

NOTE: The PCM is part of the immobilizer system. If you replace the PCM, it will have a different immobilizer code. In order for the engine to start, you must rewrite the immobilizer code with the HDS.

(cont'd)

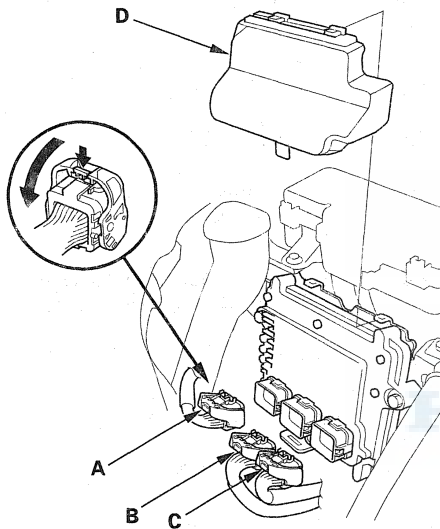
Fuel and Emissions Systems

General Troubleshooting Information (cont'd)

How to Troubleshoot Circuits at the PCM Connectors

NOTE: The PCM overwrites data and monitors the EVAP system for up to 15 minutes after the ignition switch is turned OFF. Jumping the SCS line after turning the ignition switch OFF cancels this function. Disconnecting the PCM during this function, without jumping the SCS line first, can damage the PCM.

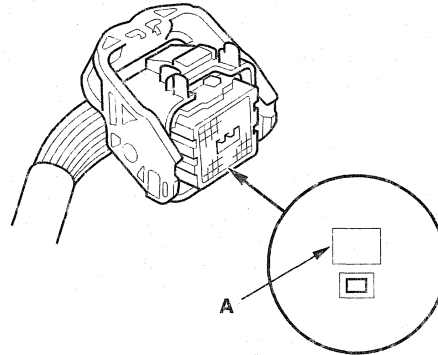
1. Jump the SCS line with the HDS.
2. Remove the cover (D) from the PCM.



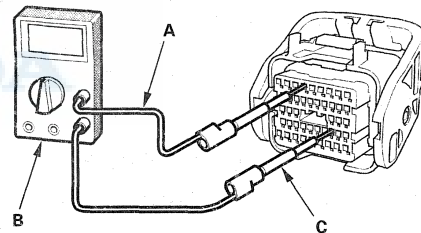
3. Disconnect PCM connectors A, B, and C.

NOTE: PCM connectors A, B, and C have a symbols (A=□, B=△, C=○) embossed on them for identification.

4. When diagnosis/troubleshooting is done at a PCM connector, use the measurement test port (A) above the terminal you need to check.



5. Connect one side of the patch cord (A) terminals to a commercially available digital multimeter (B), and connect the other side of the patch cord terminals to a commercially available banana jack (Pomona Electronics Tool No. 3563 or equivalent) (C).



6. Gently slide the pin probe (male) at the terminal test port from the terminal side. Do not force the tips into the terminals.

NOTICE

- For accurate results, always use the pin probe (male).
- To prevent damage to the connector terminals, do not insert test equipment probes, paper clips, or other substitutes as they can damage the terminals. Damaged terminals cause a poor connection and an incorrect measurement.
- Do not puncture the insulation on a wire. Punctures can cause poor or intermittent electrical connections.



Updating the PCM

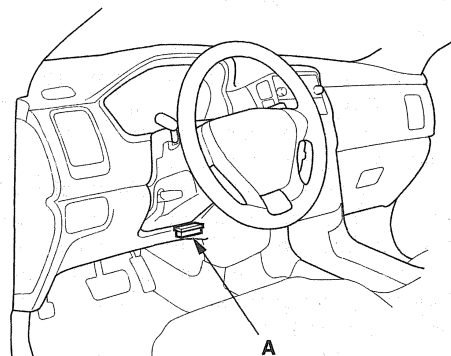
Special Tools Required

- Honda diagnostic system (HDS) tablet tester
- Honda interface module (HIM) and an iN workstation with HDS and CM update software
- HDS pocket tester
- GNA-600 and an iN workstation with HDS and CM update software

NOTE:

- Use this procedure when you need to update the PCM during troubleshooting procedures.
- Make sure the HDS/HIM has the latest software version downloaded from the iN (interactive network).
- Before you update the PCM, make sure the battery in the vehicle is fully charged, and connect a jumper battery (not a battery charger) to maintain system voltage.
- Never turn the ignition switch OFF during the update. If there is a problem with the update, leave the ignition switch ON.
- To prevent PCM damage, do not operate anything electrical (headlights, audio system, brakes, A/C, power windows, moonroof (if equipped), door locks, etc.) during the update.
- To ensure the latest program is installed, do an PCM update whenever the PCM is substituted or replaced.
- You cannot update an PCM with a program it already has. It will only accept a new program.
- High temperature in the engine compartment might cause the PCM to become too hot to run the update. If the engine has been running before this procedure, open the hood and cool the engine compartment.
- If you need to diagnose the Honda interface module (HIM) because the HIM's red (#3) light came on or was flashed during the update, leave the ignition switch in the ON (II) position when you disconnect the HIM from the data link connector (DLC). This will prevent PCM damage.

1. Turn the ignition switch ON (II), but do not start the engine.
2. Connect the HDS to the data link connector (DLC) (A) located under the driver's side of the dashboard.



3. Make sure the HDS communicates with the PCM. If it doesn't, go to the DLC circuit troubleshooting (see page 11-218). If you are returning from the DLC circuit troubleshooting, skip steps 4 and 5, and clean the throttle body after updating the PCM (see page 11-407).
 4. Select the INSPECTION MENU with the HDS.
 5. Select the ETCS TEST, then select the TP POSITION CHECK, and follow the HDS screen prompts.
- NOTE: If the TP POSITION CHECK indicates FAILED, continue this procedure.
6. Exit the HDS, then select the update mode, and follow the screen prompts to update the PCM.

(cont'd)

Fuel and Emissions Systems

General Troubleshooting Information (cont'd)

7. If the software in the PCM is the latest, disconnect the HDS/HIM from the DLC, and go back to the procedure that you were doing. If the software in the PCM is not the latest, follow the instructions on the screen. If prompted to choose the PGM-FI system or the A/T system, make sure you update both.

NOTE: If the PCM update system requires you to cool the PCM, follow the instructions on screen. If you run into a problem during the update procedure (programming takes over 15 minutes, status bar goes over 100 %, D or immobilizer light flashes, HDS tablet freezes, etc.), follow these steps to minimize the chance of damaging the PCM.

- Leave the ignition switch in the ON (II) position.
- Connect a jumper battery (do not connect a battery charger).
- Shut down the HDS.
- Disconnect the HDS from the DLC.
- Reboot the HDS.
- Reconnect the HDS to the DLC, and try the update procedure again.

8. If the TP POSITION CHECK failed in step 6, clean the throttle body (see page 11-407).

9. Do the PCM idle learn procedure (see page 11-359).

10. Do the crank (CKP) pattern learn procedure.

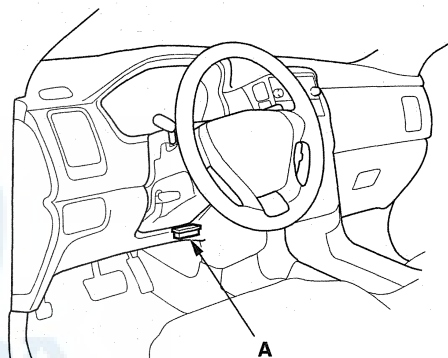
Substituting the PCM

Special Tools Required

- Honda diagnostic system (HDS) tablet tester
- Honda interface module (HIM) and an iN workstation with HDS and CM update software
- HDS pocket tester
- GNA-600 and an iN workstation with HDS and CM update software

NOTE: Use this procedure when you need to substitute a known-good PCM during troubleshooting procedures.

1. Connect the HDS to the data link connector (DLC) (A) located under the driver's side of the dashboard.



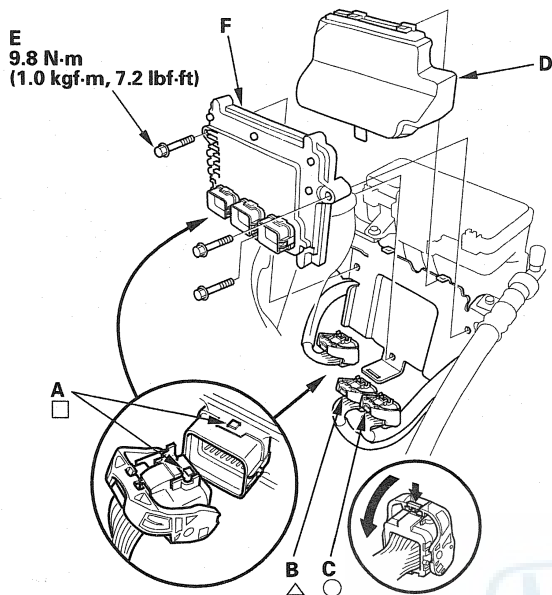
2. Turn the ignition switch ON (II).
3. Make sure the HDS communicates with the PCM. If it doesn't, go to the DLC circuit troubleshooting (see page 11-218). If you are returning from DLC circuit troubleshooting, skip step 4 to 9, and clean the throttle body after substituting the PCM (see page 11-407).
4. Select the INSPECTION MENU with the HDS.
5. Select the ETCS TEST, then select the TP POSITION CHECK, and follow the screen prompts.

NOTE: If the TP POSITION CHECK indicates FAILED, continue this procedure.

6. Turn the ignition switch OFF.
7. Jump the SCS line with the HDS.



8. Remove the cover (D).



9. Disconnect PCM connectors A, B, and C.

NOTE: PCM connectors A, B, and C have symbols (A=□, B=△, C=○) embossed on them for identification.

10. Remove the bolts (E), then remove the PCM (F).
11. Install a known-good PCM in the reverse order of removal.
12. Open the SCS with the HDS.

13. Turn the ignition switch ON (II).

NOTE: DTC P0630 "VIN Not Programmed or Mismatch" may be stored because the VIN has not been programmed into the PCM; ignore it, and continue this procedure.

14. Manually input the VIN to the PCM with the HDS.
15. Update the PCM if it does not have the latest software.
16. Select the IMMOBI SYSTEM with the HDS.
17. Enter the immobilizer code using the PCM replacement procedure in the HDS; this allows you to start the engine.
18. Reset the PCM with the HDS.
19. If the TP POSITION CHECK failed in step 5, clean the throttle body (see page 11-407).
20. Do the PCM idle learn procedure (see page 11-359).
21. Do the crank (CKP) pattern learn procedure.

OBD Status

The OBD status shows the current system status of each DTC and all of the parameters. This function is used to see if the repair was successfully completed. The results of diagnostic tests for the DTC are displayed as:

- **PASSED:** The on board diagnosis is successfully finished.
- **FAILED:** The on board diagnosis has finished but failed.
- **EXECUTING:** The vehicle is in enable criteria conditions for the DTC and the on board diagnosis is running.
- **NOT COMPLETED:** The on board diagnosis was running but is out of the enable conditions of the DTC.
- **OUT OF CONDITION:** The vehicle has stayed out of the enable conditions for the DTC.

Fuel and Emissions Systems

DTC Troubleshooting Index

DTC (MIL indication *)	Two Drive Cycle Detection	Detection Item	MIL	Note
P0107 (3)	—	Manifold Absolute Pressure (MAP) Sensor Circuit Low Voltage	ON	(see page 11-72)
P0108 (3)	—	Manifold Absolute Pressure (MAP) Sensor Circuit High Voltage	ON	(see page 11-74)
P0111 (10)	○	Intake Air Temperature (IAT) Sensor Circuit Range/Performance Problem	ON	(see page 11-77)
P0112 (10)	—	Intake Air Temperature (IAT) Sensor Circuit Low Voltage	ON	(see page 11-78)
P0113 (10)	—	Intake Air Temperature (IAT) Sensor Circuit High Voltage	ON	(see page 11-80)
P0116 (86)	○	Engine Coolant Temperature (ECT) Sensor 1 Circuit Range/Performance Problem	ON	(see page 11-83)
P0117 (6)	—	Engine Coolant Temperature (ECT) Sensor 1 Circuit Low Voltage	ON	(see page 11-84)
P0118 (6)	—	Engine Coolant Temperature (ECT) Sensor 1 Circuit High Voltage	ON	(see page 11-86)
P0122 (7)	—	Throttle Position (TP) Sensor A Circuit Low Voltage	ON	(see page 11-233)
P0123 (7)	—	Throttle Position (TP) Sensor A Circuit High Voltage	ON	(see page 11-235)
P0125 (86)	○	Engine Coolant Temperature (ECT) Sensor 1 Malfunction/Slow Response	ON	(see page 11-89)
P0128 (87)	○	Cooling System Malfunction	ON	(see page 11-90)
P0133 (157)	○	Rear Air Fuel Ratio (A/F) Sensor (Bank 1, Sensor 1) Malfunction/Slow Response	ON	(see page 11-92)
P0134 (151)	○	Rear Air Fuel Ratio (A/F) Sensor (Bank 1, Sensor 1) Heater System Malfunction	ON	(see page 11-93)
P0135 (151)	—	Rear Air Fuel Ratio (A/F) Sensor (Bank 1, Sensor 1) Heater Circuit Malfunction	ON	(see page 11-96)
P0137 (161)	—	Rear Secondary Heated Oxygen Sensor (Secondary HO2S (Bank 1, Sensor 2)) Circuit Low Voltage	ON	(see page 11-101)
P0138 (161)	—	Rear Secondary Heated Oxygen Sensor (Secondary HO2S (Bank 1, Sensor 2)) Circuit High Voltage	ON	(see page 11-103)
P0139 (161)	○	Rear Secondary Heated Oxygen Sensor (Secondary HO2S (Bank 1, Sensor 2)) Slow Response	ON	(see page 11-106)
P0141 (163)	—	Rear Secondary Heated Oxygen Sensor (Secondary HO2S (Bank 1, Sensor 2)) Heater Circuit Malfunction	ON	(see page 11-107)
P0153 (158)	○	Front Air Fuel Ratio (A/F) Sensor (Bank 2, Sensor 1) Malfunction/Slow Response	ON	(see page 11-92)
P0154 (152)	○	Front Air Fuel Ratio (A/F) Sensor (Bank 2, Sensor 1) Heater System Malfunction	ON	(see page 11-93)
P0155 (152)	—	Front Air Fuel Ratio (A/F) Sensor (Bank 2, Sensor 1) Heater Circuit Malfunction	ON	(see page 11-96)
P0157 (162)	—	Front Secondary Heated Oxygen Sensor (Secondary HO2S (Bank 2, Sensor 2)) Circuit Low Voltage	ON	(see page 11-101)
P0158 (162)	—	Front Secondary Heated Oxygen Sensor (Secondary HO2S (Bank 2, Sensor 2)) Circuit High Voltage	ON	(see page 11-103)
P0159 (162)	○	Front Secondary Heated Oxygen Sensor (Secondary HO2S (Bank 2, Sensor 2)) Slow Response	ON	(see page 11-106)
P0161 (164)	—	Front Secondary Heated Oxygen Sensor (Secondary HO2S (Bank 2, Sensor 2)) Heater Circuit Malfunction	ON	(see page 11-107)
P0171 (153)	○	Rear Bank (Bank 1) Fuel System Too Lean	ON	(see page 11-112)
P0172 (153)	○	Rear Bank (Bank 1) Fuel System Too Rich	ON	(see page 11-112)
P0174 (154)	○	Front Bank (Bank 2) Fuel System Too Lean	ON	(see page 11-112)
P0175 (154)	○	Front Bank (Bank 2) Fuel System Too Rich	ON	(see page 11-112)
P0222 (7)	—	Throttle Position (TP) Sensor B Circuit Low Voltage	ON	(see page 11-238)
P0223 (7)	—	Throttle Position (TP) Sensor B Circuit High Voltage	ON	(see page 11-241)

NOTE: The above DTCs are indicated when the PGM-FI system is selected in the HDS.

Some automatic transmission DTCs cause the MIL to come on. If the MIL is on and no DTCs are indicated in the PGM-FI system, select the A/T system, and check for automatic transmission DTCs.

* 1: These DTCs are indicated by a blinking MIL when the SCS line is jumped with the HDS.



DTC (MIL indication *)	Two Drive Cycle Detection	Detection Item	MIL	Note
P0300 (77) and any combination of the following P0301 (71) P0302 (72) P0303 (73) P0304 (74) P0305 (75) P0306 (76)	○	Random Misfire Detected	ON	(see page 11-113)
P0301 (71)	○	No. 1 Cylinder Misfire Detected	ON	(see page 11-116)
P0302 (72)	○	No. 2 Cylinder Misfire Detected	ON	(see page 11-116)
P0303 (73)	○	No. 3 Cylinder Misfire Detected	ON	(see page 11-116)
P0304 (74)	○	No. 4 Cylinder Misfire Detected	ON	(see page 11-116)
P0305 (75)	○	No. 5 Cylinder Misfire Detected	ON	(see page 11-116)
P0306 (76)	○	No. 6 Cylinder Misfire Detected	ON	(see page 11-116)
P0325 (23)	—	Knock Sensor Circuit Malfunction	ON	(see page 11-125)
P0335 (4)	—	Crankshaft Position (CKP) Sensor A No Signal	ON	(see page 11-128)
P0339 (4)	—	Crankshaft Position (CKP) Sensor A Circuit Intermittent Interruption	ON	(see page 11-131)
P0340 (9)	—	Camshaft Position (CMP) Sensor No Signal	ON	(see page 11-132)
P0344 (9)	—	Camshaft Position (CMP) Sensor Circuit Intermittent Interruption	ON	(see page 11-135)
P0385 (54)	—	Crankshaft Position (CKP) Sensor B No Signal	ON	(see page 11-128)
P0389 (54)	—	Crankshaft Position (CKP) Sensor B Circuit Intermittent Interruption	ON	(see page 11-131)
P0401 (80)	○	Exhaust Gas Recirculation (EGR) Insufficient Flow	ON	(see page 11-415)
P0404 (12)	○	Exhaust Gas Recirculation (EGR) Valve Circuit Range/Performance Problem	ON	(see page 11-417)
P0406 (12)	—	Exhaust Gas Recirculation (EGR) Valve Position Sensor Circuit High Voltage	ON	(see page 11-420)
P0420 (165)	○	Rear Bank Catalyst System Efficiency Below Threshold (Bank 1)	ON	(see page 11-410)
P0430 (166)	○	Front Bank Catalyst System Efficiency Below Threshold (Bank 2)	ON	(see page 11-410)
P0443 (92)	—	Evaporative Emission (EVAP) Canister Purge Valve Circuit Malfunction	ON	(see page 11-434)
P0451 (91)	○	Fuel Tank Pressure (FTP) Sensor Circuit Range/Performance Problem	ON	(see page 11-438)
P0452 (91)	—	Fuel Tank Pressure (FTP) Sensor Circuit Low Voltage	ON	(see page 11-439)
P0453 (91)	—	Fuel Tank Pressure (FTP) Sensor Circuit High Voltage	ON	(see page 11-442)
P0455 (90)	○	Evaporative Emission (EVAP) System Large Leak Detected	ON	(see page 11-445)
P0456 (90)	○	Evaporative Emission (EVAP) System Very Small Leak Detected	ON	(see page 11-445)
P0457 (90)	○	Evaporative Emission (EVAP) System Leak Detected/Fuel Fill Cap Loose or Missing	ON	(see page 11-448)
P0461 (121)	—	Fuel Level Sensor (Fuel Gauge Sending Unit) Circuit Range/Performance Problem	OFF	(see page 11-362)
P0462 (121)	—	Fuel Level Sensor (Fuel Gauge Sending Unit) Circuit Low Voltage	OFF	(see page 11-363)
P0463 (121)	—	Fuel Level Sensor (Fuel Gauge Sending Unit) Circuit High Voltage	OFF	(see page 11-365)
P0496 (92)	○	Evaporative Emission (EVAP) System High Purge Flow Detected	ON	(see page 11-450)
P0497 (90)	○	Evaporative Emission (EVAP) System Low Purge Flow Detected	ON	(see page 11-451)
P0498 (117)	—	Evaporative Emission (EVAP) Canister Vent Shut Valve Circuit Low Voltage	ON	(see page 11-454)
P0499 (117)	—	Evaporative Emission (EVAP) Canister Vent Shut Valve Circuit High Voltage	ON	(see page 11-457)

NOTE: The above DTCs are indicated when the PGM-FI system is selected in the HDS.

Some automatic transmission DTCs cause the MIL to come on. If the MIL is on and no DTCs are indicated in the PGM-FI system, select the A/T system, and check for automatic transmission DTCs.

* 1: These DTCs are indicated by a blinking MIL when the SCS line is jumped with the HDS.

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Fuel and Emissions Systems

DTC Troubleshooting Index (cont'd)

DTC (MIL indication ¹⁾)	Two Drive Cycle Detection	Detection Item	MIL	Note
P0506 (14)	○	Idle Control System RPM Lower than Expected	ON	(see page 11-349)
P0507 (14)	○	Idle Control System RPM Higher than Expected	ON	(see page 11-351)
P0522 (22) ³	—	Engine Oil Pressure (EOP) Sensor Circuit Low Voltage	ON	(see page 11-290)
P0523 (22) ³	—	Engine Oil Pressure (EOP) Sensor Circuit High Voltage	ON	(see page 11-293)
P0562 (34)	—	Charging System Low Voltage	OFF	(see page 11-136)
P0563 (34)	—	Powertrain Control Module (PCM) Power Source Circuit Unexpected Voltage	OFF	(see page 11-137)
P0602 (196)	—	Powertrain Control Module (PCM) Programming Error	ON	(see page 11-140)
P0603 (131)	—	Powertrain Control Module (PCM) Internal Control Module Keep Alive Memory (KAM) Error	ON	(see page 11-140)
P0607 (131)	—	Lost Communication with Electronic Throttle Control System (ETCS)	ON	(see page 11-244)
P061F (132)	—	Electronic Throttle Control System (ETCS) Malfunction	ON	(see page 11-244)
P0630 (139)	—	VIN Not Programmed or Mismatch	ON	(see page 11-141)
P0641 (133)	—	Sensor Reference Voltage A Malfunction	ON	(see page 11-142)
P0685 (135)	○	Powertrain Control Module (PCM) Power Control Circuit/Internal Circuit Malfunction	ON	(see page 11-146)
P0700 (70) ²	—	Automatic Transaxle Control System Malfunction	ON	(see page 11-147)
P0700 (70)	—	Automatic Transaxle Control System Malfunction	OFF	(see page 11-147)
P0A14 (195) ³	—	Front Engine Mount Actuator Circuit Malfunction	OFF	(see page 11-307)
P0A15 (195) ³	—	Front Engine Mount Actuator Control Circuit Low Current	OFF	(see page 11-310)
P0A16 (195) ³	—	Front Engine Mount Actuator Control Circuit High Current	OFF	(see page 11-314)
P0AB6 (195) ³	—	Rear Engine Mount Actuator Circuit Malfunction	OFF	(see page 11-307)
P0AB7 (195) ³	—	Rear Engine Mount Actuator Control Circuit Low Current	OFF	(see page 11-310)
P0AB8 (195) ³	—	Rear Engine Mount Actuator Control Circuit High Current	OFF	(see page 11-314)
P1077 (106) ³	○	Intake Manifold Tuning (IMT) Valve Stuck in High RPM Position	ON	(see page 11-393)
P1078 (106) ³	○	Intake Manifold Tuning (IMT) Valve Stuck in Low RPM Position	ON	(see page 11-397)
P1109 (13)	—	Barometric Pressure (BARO) Sensor Circuit Out of Range High	ON	(see page 11-147)
P1116 (86)	○	Engine Coolant Temperature (ECT) Sensor 1 Circuit Range/Performance Problem	ON	(see page 11-148)
P1128 (5)	○	Manifold Absolute Pressure (MAP) Sensor Signal Lower Than Expected	ON	(see page 11-150)
P1129 (5)	○	Manifold Absolute Pressure (MAP) Sensor Signal Higher Than Expected	ON	(see page 11-151)
P1172 (157)	—	Rear Air Fuel Ratio (A/F) Sensor (Bank 1, Sensor 1) Circuit Out of Range High	ON	(see page 11-153)
P1174 (158)	—	Front Air Fuel Ratio (A/F) Sensor (Bank 2, Sensor 1) Circuit Out of Range High	ON	(see page 11-153)
P1297 (20)	—	Electrical Load Detector (ELD) Circuit Low Voltage	OFF	(see page 11-154)
P1298 (20)	—	Electrical Load Detector (ELD) Circuit High Voltage	OFF	(see page 11-156)
P1454 (91)	○	Fuel Tank Pressure (FTP) Sensor Range/Performance Problem	ON	(see page 11-458)

NOTE: The above DTCs are indicated when the PGM-FI system is selected in the HDS.

Some automatic transmission DTCs cause the MIL to come on. If the MIL is on and no DTCs are indicated in the PGM-FI system, select the A/T system, and check for automatic transmission DTCs.

* 1: These DTCs are indicated by a blinking MIL when the SCS line is jumped with the HDS.

* 2: The D indicator and MIL may come on simultaneously.

* 3: J35Z1 engine



DTC (MIL indication *)	Two Drive Cycle Detection	Detection Item	MIL	Note
P1549 (34)	—	Charging System High Voltage	OFF	(see page 11-158)
P15AB (195) *3	—	Engine Mount Control Unit Power Source Circuit Low Voltage	OFF	(see page 11-317)
P15AC (195) *3	—	Engine Mount Control Unit Internal Circuit Malfunction	OFF	(see page 11-320)
P15AD (195) *3	—	Engine Mount Control Unit Internal Circuit Malfunction	OFF	(see page 11-321)
P15AE (195) *3	—	Cylinder Pause Signal Malfunction	OFF	(see page 11-322)
P15AF (195) *3	—	Camshaft Position (CMP) Sensor Signal Malfunction	OFF	(see page 11-324)
P15B0 (195) *3	—	Crankshaft Position (CKP) Sensor Signal Malfunction	OFF	(see page 11-328)
P15B1 (195) *3	—	Camshaft Position (CMP) Sensor/Crankshaft Position (CKP) Sensor Signal Incorrect Correlation	OFF	(see page 11-332)
P1658 (40)	—	Electronic Throttle Control System (ETCS) Control Relay ON Malfunction	ON	(see page 11-245)
P1659 (40)	—	Electronic Throttle Control System (ETCS) Control Relay OFF Malfunction	ON	(see page 11-247)
P1683 (40)	—	Throttle Valve Default Position Spring Performance Problem	ON	(see page 11-252)
P1684 (40)	—	Throttle Valve Return Spring Performance Problem	ON	(see page 11-253)
P16BB (116)	—	Alternator B Terminal Circuit Low Voltage	OFF	(see page 11-159)
P16BC (116)	—	Alternator FR Terminal Circuit/IGP Circuit Low Voltage	OFF	(see page 11-160)
P16C4 (195) *3	—	Engine Mount Actuator Control Power Circuit Stuck OFF	OFF	(see page 11-335)
P16C5 (195) *3	—	Engine Mount Actuator Control Power Circuit Stuck ON	OFF	(see page 11-340)
P16C6 (195) *3	—	Engine Mount Actuator High Voltage During Function Test	OFF	(see page 11-342)
P16C7 (195) *3	—	Rear Engine Mount Actuator Control Circuit High Current	OFF	(see page 11-344)
P16C8 (195) *3	—	Front Engine Mount Actuator Control Circuit High Current	OFF	(see page 11-344)
P16C9 (195) *3	—	Engine Mount Control Unit Internal Circuit Malfunction	OFF	(see page 11-345)
P2101 (40)	—	Electronic Throttle Control System (ETCS) Malfunction	ON	(see page 11-254)
P2118 (40)	—	Throttle Actuator Current Range/Performance Problem	ON	(see page 11-256)
P2122 (37)	—	Accelerator Pedal Position (APP) Sensor A (Throttle Position (TP) Sensor D) Circuit Low Voltage	ON	(see page 11-258)
P2123 (37)	—	Accelerator Pedal Position (APP) Sensor A (Throttle Position (TP) Sensor D) Circuit High Voltage	ON	(see page 11-261)
P2127 (37)	—	Accelerator Pedal Position (APP) Sensor B (Throttle Position (TP) Sensor E) Circuit Low Voltage	ON	(see page 11-263)
P2128 (37)	—	Accelerator Pedal Position (APP) Sensor B (Throttle Position (TP) Sensor E) Circuit High Voltage	ON	(see page 11-266)
P2135 (7)	—	Throttle Position (TP) Sensor A/B Incorrect Voltage Correlation	ON	(see page 11-268)
P2138 (37)	—	Accelerator Pedal Position (APP) Sensor A/B (Throttle Position (TP) Sensor D/E) Incorrect Voltage Correlation	ON	(see page 11-270)
P2176 (40)	—	Throttle Actuator Control System Idle Position Not Learned	ON	(see page 11-272)

NOTE: The above DTCs are indicated when the PGM-FI system is selected in the HDS.

Some automatic transmission DTCs cause the MIL to come on. If the MIL is on and no DTCs are indicated in the PGM-FI system, select the A/T system, and check for automatic transmission DTCs.

* 1: These DTCs are indicated by a blinking MIL when the SCS line is jumped with the HDS.

* 3: J35Z1 engine

(cont'd)

Fuel and Emissions Systems

DTC Troubleshooting Index (cont'd)

DTC (MIL indication *)	Two Drive Cycle Detection	Detection Item	MIL	Note
P2183 (192)	○	Engine Coolant Temperature (ECT) Sensor 2 Circuit Range/Performance Problem	ON	(see page 11-163)
P2184 (192)	—	Engine Coolant Temperature (ECT) Sensor 2 Circuit Low Voltage	ON	(see page 11-165)
P2185 (192)	—	Engine Coolant Temperature (ECT) Sensor 2 Circuit High Voltage	ON	(see page 11-167)
P2195 (155)	—	Rear Air Fuel Ratio (A/F) Sensor (Bank 1, Sensor 1) Signal Stuck Lean	ON	(see page 11-170)
P2197 (156)	—	Front Air Fuel Ratio (A/F) Sensor (Bank 2, Sensor 1) Signal Stuck Lean	ON	(see page 11-170)
P2227 (13)	○	Barometric Pressure (BARO) Sensor Circuit Range/Performance Problem	ON	(see page 11-172)
P2228 (13)	—	Barometric Pressure (BARO) Sensor Circuit Low Voltage	ON	(see page 11-173)
P2229 (13)	—	Barometric Pressure (BARO) Sensor Circuit High Voltage	ON	(see page 11-173)
P2237 (155)	—	Rear Air Fuel Ratio (A/F) Sensor (Bank 1, Sensor 1) IP Circuit High Voltage	ON	(see page 11-174)
P2238 (155)	—	Rear Air Fuel Ratio (A/F) Sensor (Bank 1, Sensor 1) IP Circuit Low Voltage	ON	(see page 11-177)
P2240 (156)	—	Front Air Fuel Ratio (A/F) Sensor (Bank 2, Sensor 1) IP Circuit High Voltage	ON	(see page 11-174)
P2241 (156)	—	Front Air Fuel Ratio (A/F) Sensor (Bank 2, Sensor 1) IP Circuit Low Voltage	ON	(see page 11-177)
P2243 (155)	—	Rear Air Fuel Ratio (A/F) Sensor (Bank 1, Sensor 1) VCENT Circuit High Voltage	ON	(see page 11-180)
P2245 (155)	—	Rear Air Fuel Ratio (A/F) Sensor (Bank 1, Sensor 1) VCENT Circuit Low Voltage	ON	(see page 11-183)
P2247 (156)	—	Front Air Fuel Ratio (A/F) Sensor (Bank 2, Sensor 1) VCENT Circuit High Voltage	ON	(see page 11-180)
P2249 (156)	—	Front Air Fuel Ratio (A/F) Sensor (Bank 2, Sensor 1) VCENT Circuit Low Voltage	ON	(see page 11-183)
P2251 (155)	—	Rear Air Fuel Ratio (A/F) Sensor (Bank 1, Sensor 1) VS Circuit High Voltage	ON	(see page 11-186)
P2252 (155)	—	Rear Air Fuel Ratio (A/F) Sensor (Bank 1, Sensor 1) VS Circuit Low Voltage	ON	(see page 11-189)
P2254 (156)	—	Front Air Fuel Ratio (A/F) Sensor (Bank 2, Sensor 1) VS Circuit High Voltage	ON	(see page 11-186)
P2255 (156)	—	Front Air Fuel Ratio (A/F) Sensor (Bank 2, Sensor 1) VS Circuit Low Voltage	ON	(see page 11-189)
P2270 (161)	○	Rear Secondary Heated Oxygen Sensor (Secondary HO2S) (Bank 1, Sensor 2) Circuit Signal Stuck Lean	ON	(see page 11-192)
P2271 (161)	○	Rear Secondary Heated Oxygen Sensor (Secondary HO2S) (Bank 1, Sensor 2) Circuit Signal Stuck Rich	ON	(see page 11-192)
P2272 (162)	○	Front Secondary Heated Oxygen Sensor (Secondary HO2S) (Bank 2, Sensor 2) Circuit Signal Stuck Lean	ON	(see page 11-192)
P2273 (162)	○	Front Secondary Heated Oxygen Sensor (Secondary HO2S) (Bank 2, Sensor 2) Circuit Signal Stuck Rich	ON	(see page 11-192)
P2279 (109)	○	Intake Air System Leak	ON	(see page 11-431)
P2413 (12)	○	Exhaust Gas Recirculation (EGR) System Malfunction	ON	(see page 11-422)
P2422 (117)	○	Evaporative Emission (EVAP) Canister Vent Shut Valve Stuck Closed Malfunction	ON	(see page 11-458)
P2610 (132)	—	Powertrain Control Module (PCM) Ignition OFF Internal Timer Malfunction	ON	(see page 11-193)
P2627 (155)	—	Rear Air Fuel Ratio (A/F) Sensor (Bank 1, Sensor 1) LABEL Circuit Low Voltage	ON	(see page 11-194)
P2628 (155)	—	Rear Air Fuel Ratio (A/F) Sensor (Bank 1, Sensor 1) LABEL Circuit High Voltage	ON	(see page 11-196)
P2630 (156)	—	Front Air Fuel Ratio (A/F) Sensor (Bank 2, Sensor 1) LABEL Circuit Low Voltage	ON	(see page 11-194)
P2631 (156)	—	Front Air Fuel Ratio (A/F) Sensor (Bank 2, Sensor 1) LABEL Circuit High Voltage	ON	(see page 11-196)

NOTE: The above DTCs are indicated when the PGM-FI system is selected in the HDS.

Some automatic transmission DTCs cause the MIL to come on. If the MIL is on and no DTCs are indicated in the PGM-FI system, select the A/T system, and check for automatic transmission DTCs.

* 1: These DTCs are indicated by a blinking MIL when the SCS line is jumped with the HDS.



DTC (MIL indication *)	Two Drive Cycle Detection	Detection Item	MIL	Note
P2646 (114) *3	—	VTEC System Stuck OFF	ON	(see page 11-296)
P2646 (22) *4	—	Rocker Arm Oil Pressure Switch (VTEC Oil Pressure Switch) Circuit Low Voltage	ON	(see page 11-277)
P2647 (114) *3	—	VTEC System Stuck ON	ON	(see page 11-298)
P2647 (22) *4	—	Rocker Arm Oil Pressure Switch (VTEC Oil Pressure Switch) Circuit High Voltage	ON	(see page 11-280)
P2648 (21) *3	—	Rocker Arm Oil Control Solenoid (VTEC Solenoid Valve) Circuit Low Voltage	ON	(see page 11-300)
P2648 (21) *4	—	Rocker Arm Oil Control Solenoid (VTEC Solenoid Valve) Circuit Low Voltage	ON	(see page 11-283)
P2649 (21) *3	—	Rocker Arm Oil Control Solenoid (VTEC Solenoid Valve) Circuit High Voltage	ON	(see page 11-302)
P2649 (21) *4	—	Rocker Arm Oil Control Solenoid (VTEC Solenoid Valve) Circuit High Voltage	ON	(see page 11-285)
P2A00 (157)	○	Rear Air Fuel Ratio (A/F) Sensor (Bank 1, Sensor 1) Circuit Range/Performance Problem	ON	(see page 11-198)
P2A03 (158)	○	Front Air Fuel Ratio (A/F) Sensor (Bank 2, Sensor 1) Circuit Range/Performance Problem	ON	(see page 11-198)
U0073 (126)	—	F-CAN Malfunction (BUS-OFF)	ON	(see page 11-199)
U0114 (126) *4	—	F-CAN Malfunction (Powertrain Control Module (PCM)-Variable Torque Management 4WD (VTM-4) Control Unit)	OFF	(see page 11-202)
U0122 (126)	—	F-CAN Malfunction (Powertrain Control Module (PCM)-Vehicle Stability Assist (VSA) Modulator-Control Unit)	OFF	(see page 11-204)
U0155 (126)	—	F-CAN Malfunction (Powertrain Control Module (PCM)-Gauge Control Module)	ON	(see page 11-199)
U1101 (126) *3	—	F-CAN Malfunction (Powertrain Control Module (PCM)-Active Control Engine Mount (ACM) Unit)	OFF	(see page 11-206)

NOTE: The above DTCs are indicated when the PGM-FI system is selected in the HDS.

Some automatic transmission DTCs cause the MIL to come on. If the MIL is on and no DTCs are indicated in the PGM-FI system, select the A/T system, and check for automatic transmission DTCs.

* 1: These DTCs are indicated by a blinking MIL when the SCS line is jumped with the HDS.

* 3: J35Z1 engine

* 4: J35A9 engine

Fuel and Emissions Systems

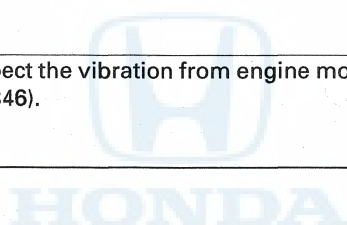
Symptom Troubleshooting Index

When the vehicle has one of these symptoms, check for a diagnostic trouble code (DTC) with the HDS. If there is no DTC, do the diagnostic procedure for the symptom, in the sequence listed, until you find the cause.

Symptom	Diagnostic procedure	Also check for
Engine will not start (MIL works OK, no DTCs set)	<ol style="list-style-type: none"> 1. Test the battery (see page 22-81). 2. Test the starter (see page 4-8). 3. Check the fuel pressure (see page 11-375). 4. Troubleshoot the fuel pump circuit (see page 11-368). 	<ul style="list-style-type: none"> • Low compression • No ignition spark • Intake air leaks • Locked up engine • Broken timing belt • Contaminated fuel
Engine will not start (MIL comes on and stays on, or never comes on at all, no DTCs set)	Troubleshoot the MIL circuit (see page 11-208).	
Engine will not start (immobilizer indicator stays on or flashes)	Check the immobilizer system.	
Engine starts but stalls immediately (MIL works OK, no DTCs set, immobilizer indicator stays on or flashes)	Check the immobilizer system.	
Engine is hard to start (MIL works OK, no DTCs set)	<ol style="list-style-type: none"> 1. Test the battery (see page 22-81). 2. Check the fuel pressure (see page 11-375). 3. Clean the throttle body (see page 11-407). 	<ul style="list-style-type: none"> • Low compression • Intake air leaks • Contaminated fuel • Weak spark
Cold fast idle too low (MIL works OK, no DTCs set)	<ol style="list-style-type: none"> 1. Do the PCM idle learn procedure (see page 11-359). 2. Check the idle speed (see page 11-358). 3. Clean the throttle body (see page 11-407). 	
Cold fast idle too high (MIL works OK, no DTCs set)	<ol style="list-style-type: none"> 1. Do the PCM idle learn procedure (see page 11-359). 2. Check the idle speed (see page 11-358). 3. Adjust the throttle cable (see page 11-403). 4. Do the throttle position learning check (see page 11-406). 	
Idle speed fluctuates (MIL works OK, no DTCs set)	<ol style="list-style-type: none"> 1. Do the PCM idle learn procedure (see page 11-359). 2. Check the idle speed (see page 11-358). 3. Adjust the throttle cable (see page 11-403). 4. Do the carbon accumulation check (see page 11-406). 5. Troubleshoot the A/C signal circuit (see page 11-352). 	Intake vacuum leaks
After warming up, idle speed is below specification without load (MIL works OK, no DTCs set)	<ol style="list-style-type: none"> 1. Troubleshoot the alternator FR signal circuit (see page 11-353). 2. Do the carbon accumulation check (see page 11-406). 	
After warming up, idle speed is above specification without load (MIL works OK, no DTCs set)	<ol style="list-style-type: none"> 1. Adjust the throttle cable (see page 11-403). 2. Troubleshoot the alternator FR signal circuit (see page 11-353). 3. Inspect the APP sensor (see page 11-274). 4. Troubleshoot the PSP switch signal circuit (see page 11-354). 	



Symptom	Diagnostic procedure	Also check for
After warming up, idle speed drops when steering wheel is turning (MIL works OK, no DTCs set)	1. Do the PCM idle learn procedure (see page 11-359). 2. Troubleshoot the PSP switch signal circuit (see page 11-354). 3. Do the carbon accumulation check (see page 11-406).	Power steering system problems
Low power (MIL works OK, no DTCs set)	1. Check the fuel pressure (see page 11-375). 2. Adjust the throttle cable (see page 11-403).	<ul style="list-style-type: none">• Low compression• Incorrect camshaft timing• Incorrect engine oil level
Engine stalls (MIL works OK, no DTCs set)	1. Do the PCM idle learn procedure (see page 11-359). 2. Check the fuel pressure (see page 11-375). 3. Check the idle speed (see page 11-358). 4. Troubleshoot the brake pedal position switch signal circuit (see page 11-356).	<ul style="list-style-type: none">• Intake air leaks• Faulty harness and sensor connections
Difficult to refuel (MIL works OK, no DTCs set)	1. Check the fuel vent tube between the EVAP canister and the fuel tank. 2. Check the fuel tank vapor recirculation tube between the fuel pipe and the fuel tank. 3. Replace the fuel tank (see page 11-388).	Malfunctioning gas station filling nozzle.
Fuel overflows during refueling (No DTCs set)	Replace the fuel tank (see page 11-388).	Malfunctioning gas station filling nozzle.
Abnormal vibration from engine to body (MIL works OK) (J35Z1 engine)	Inspect the vibration from engine mount (see page 11-346).	



Fuel and Emissions Systems

System Description

Electronic Control System

The functions of the fuel and emission control systems are managed by the powertrain control module (PCM).

Self-diagnosis

The PCM detects a failure of a signal from a sensor or from another control unit and stores a Temporary DTC or a DTC. Depending on the failure, a DTC is stored in either the first or the second drive cycle. When a DTC is stored, the PCM turns on the malfunction indicator lamp (MIL) by a signal sent to the gauge via F-CAN.

- **One Drive Cycle Detection Method**

When an abnormality occurs in the signal from a sensor or from another control unit, the PCM stores a DTC for the failure and turns on the MIL immediately.

- **Two Drive Cycle Detection Method**

When an abnormality occurs in the signal from a sensor or from another control unit in first drive cycle, the PCM stores a temporary DTC. The MIL does not come on at this time. If the failure continues in the second drive cycle, the PCM stores a DTC and turns on the MIL.

Fail-safe Function

When an abnormality occurs in the signal from a sensor or from another control unit, the PCM ignores that signal and substitutes a pre-programmed value for them that allows the engine to continue running. This causes a DTC to be stored and the MIL to come on.

MIL Bulb Check and Readiness Code Condition

When the ignition switch is turned ON (II), the PCM turns on the MIL via the F-CAN circuit for about 15 to 20 seconds to check the bulb condition. If any readiness codes are not set to complete, the MIL flashes five times. If all readiness codes are set to complete, the MIL goes off.

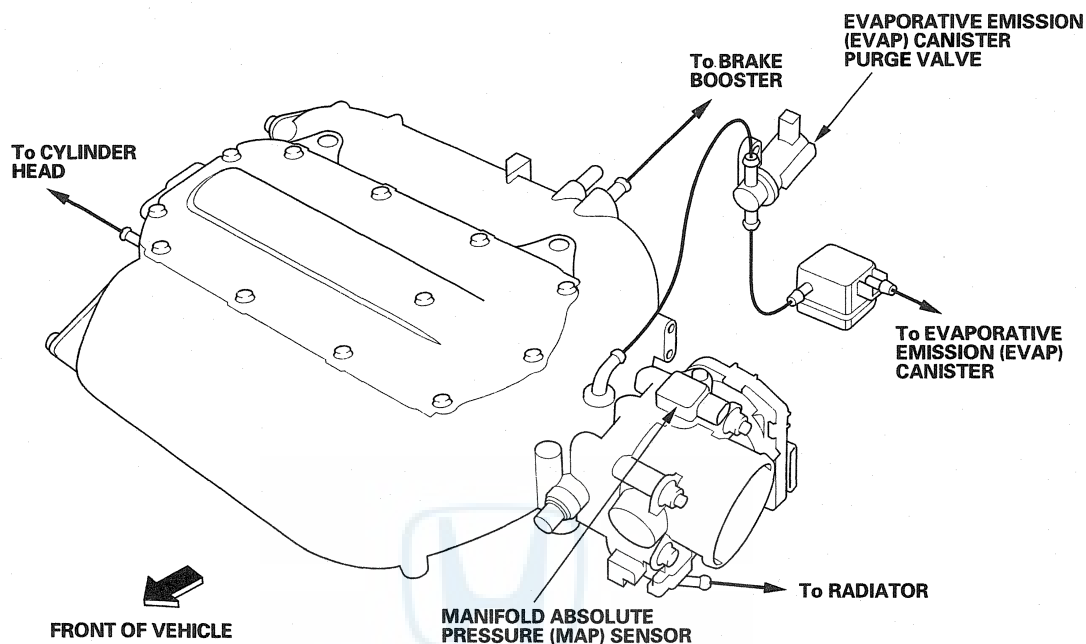
Self Shut Down (SSD) Mode

After the ignition switch is turned OFF, the PCM stays on (up to 15 minutes). If the PCM connector is disconnected during this time, the PCM may be damaged. To cancel this mode, disconnect the negative cable from the battery or jump the SCS line with the HDS after the ignition switch is turned OFF.

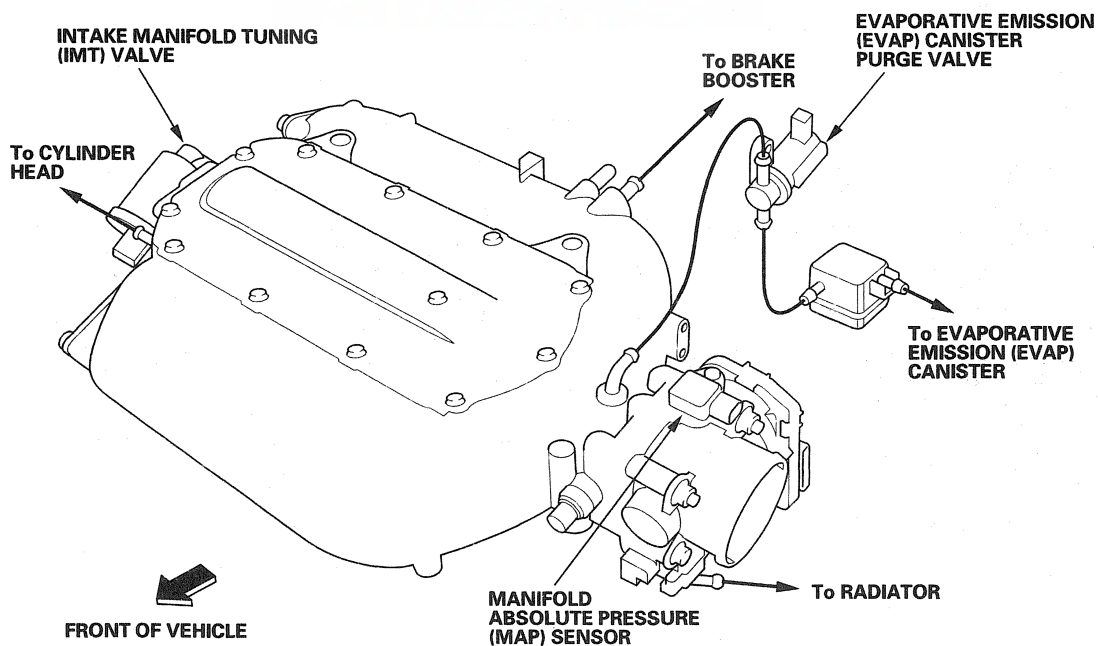


Vacuum Hose Routing

J35A9 engine



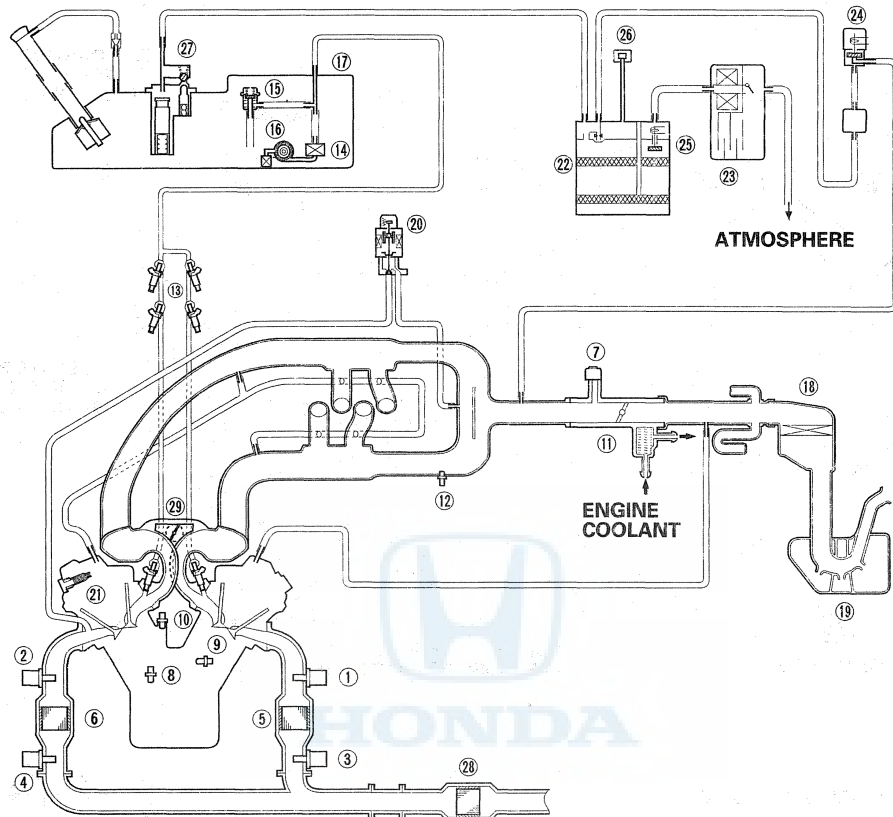
J35Z1 engine



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System Description (cont'd)

Vacuum Distribution

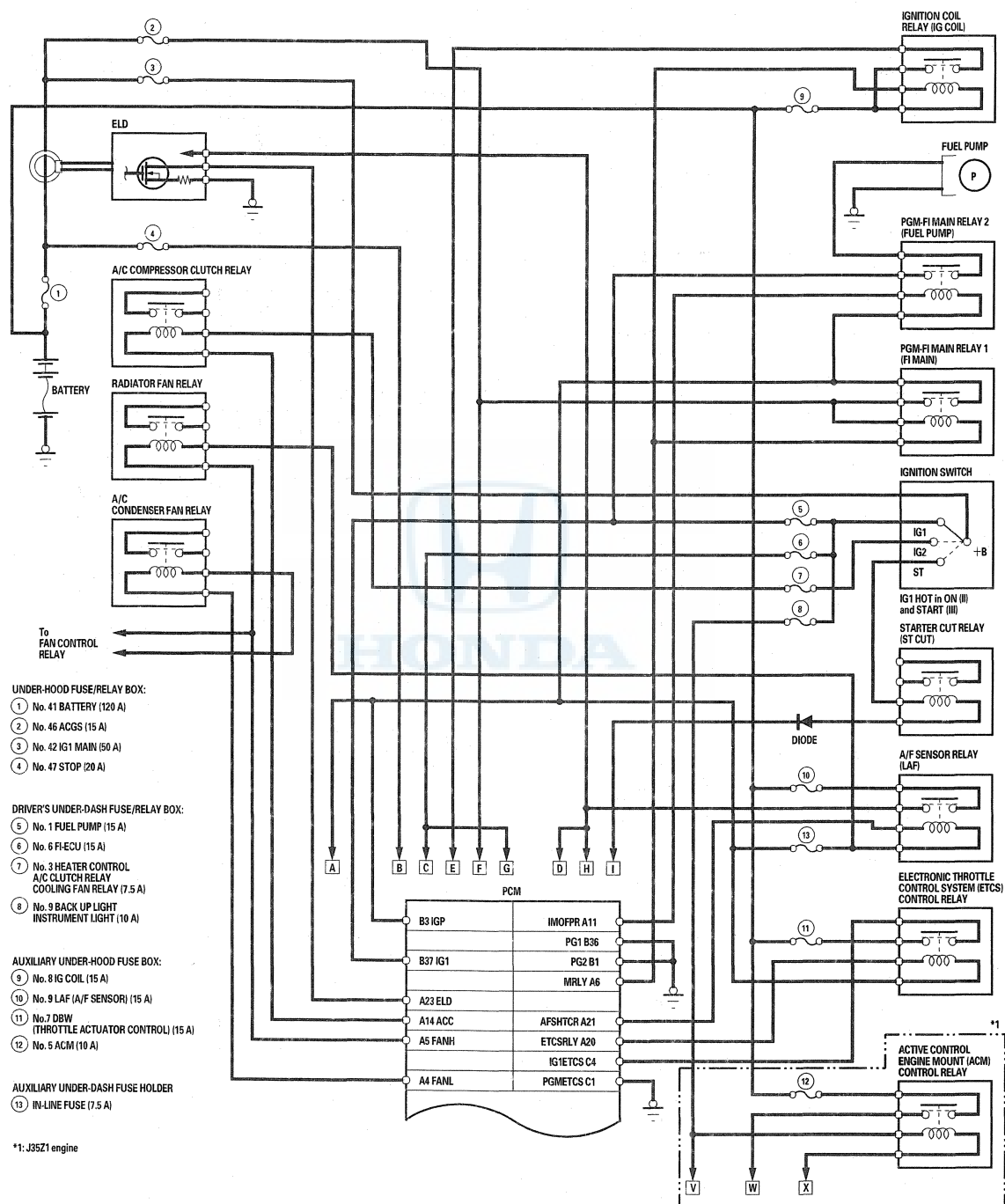


- | | |
|---|--|
| ① REAR AIR FUEL RATIO (A/F) SENSOR 1 (BANK 1, SENSOR 1) | ⑩ FUEL PUMP |
| ② FRONT AIR FUEL RATIO (A/F) SENSOR 2 (BANK 2, SENSOR 1) | ⑪ FUEL TANK |
| ③ REAR SECONDARY HEATED OXYGEN SENSOR 2
(SECONDARY HO2S) (BANK 1, SENSOR 2) | ⑫ AIR CLEANER |
| ④ FRONT SECONDARY HEATED OXYGEN SENSOR 2
(SECONDARY HO2S) (BANK 2, SENSOR 2) | ⑬ RESONATOR |
| ⑤ REAR WARM UP THREE WAY CATALYTIC CONVERTER
(WU-TWC) (BANK 1) | ⑭ EXHAUST GAS RECIRCULATION (EGR) VALVE and
POSITION SENSOR |
| ⑥ FRONT WARM UP THREE WAY CATALYTIC CONVERTER
(WU-TWC) (BANK 2) | ⑮ POSITIVE CRANKCASE VENTILATION (PCV) VALVE |
| ⑦ MANIFOLD ABSOLUTE PRESSURE (MAP) SENSOR | ⑯ EVAPORATIVE EMISSION (EVAP) CANISTER |
| ⑧ ENGINE COOLANT TEMPERATURE (ECT) SENSOR 1 | ⑰ EVAPORATIVE EMISSION (EVAP) CANISTER FILTER |
| ⑨ ENGINE COOLANT TEMPERATURE (ECT) SENSOR 2 | ⑱ EVAPORATIVE EMISSION (EVAP) CANISTER PURGE VALVE |
| ⑩ KNOCK SENSOR | ⑳ EVAPORATIVE EMISSION (EVAP) CANISTER VENT
SHUT VALVE |
| ⑪ THROTTLE BODY | ㉑ FUEL TANK PRESSURE (FTP) SENSOR |
| ⑫ INTAKE AIR TEMPERATURE (IAT) SENSOR | ㉒ FUEL TANK VAPOR CONTROL VALVE |
| ⑬ INJECTOR | ㉓ UNDER-FLOOR THREE WAY CATALYTIC CONVERTER (TWC) |
| ⑭ FUEL FILTER | ㉔ INTAKE MANIFOLD TUNING (IMT) VALVE*1 |
| ⑮ FUEL PRESSURE REGULATOR | |

***1: J35Z1 engine**



PCM Electrical Connections

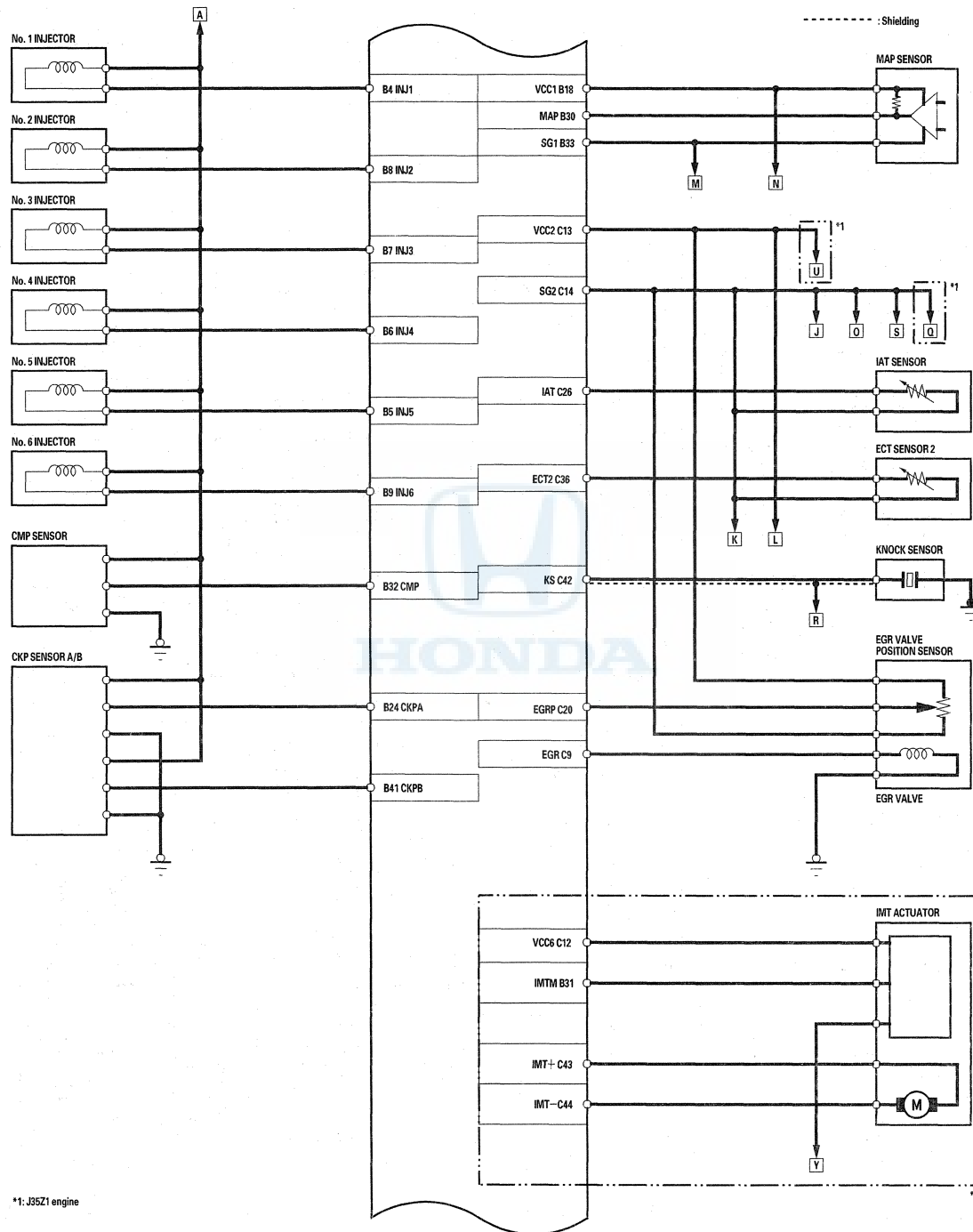


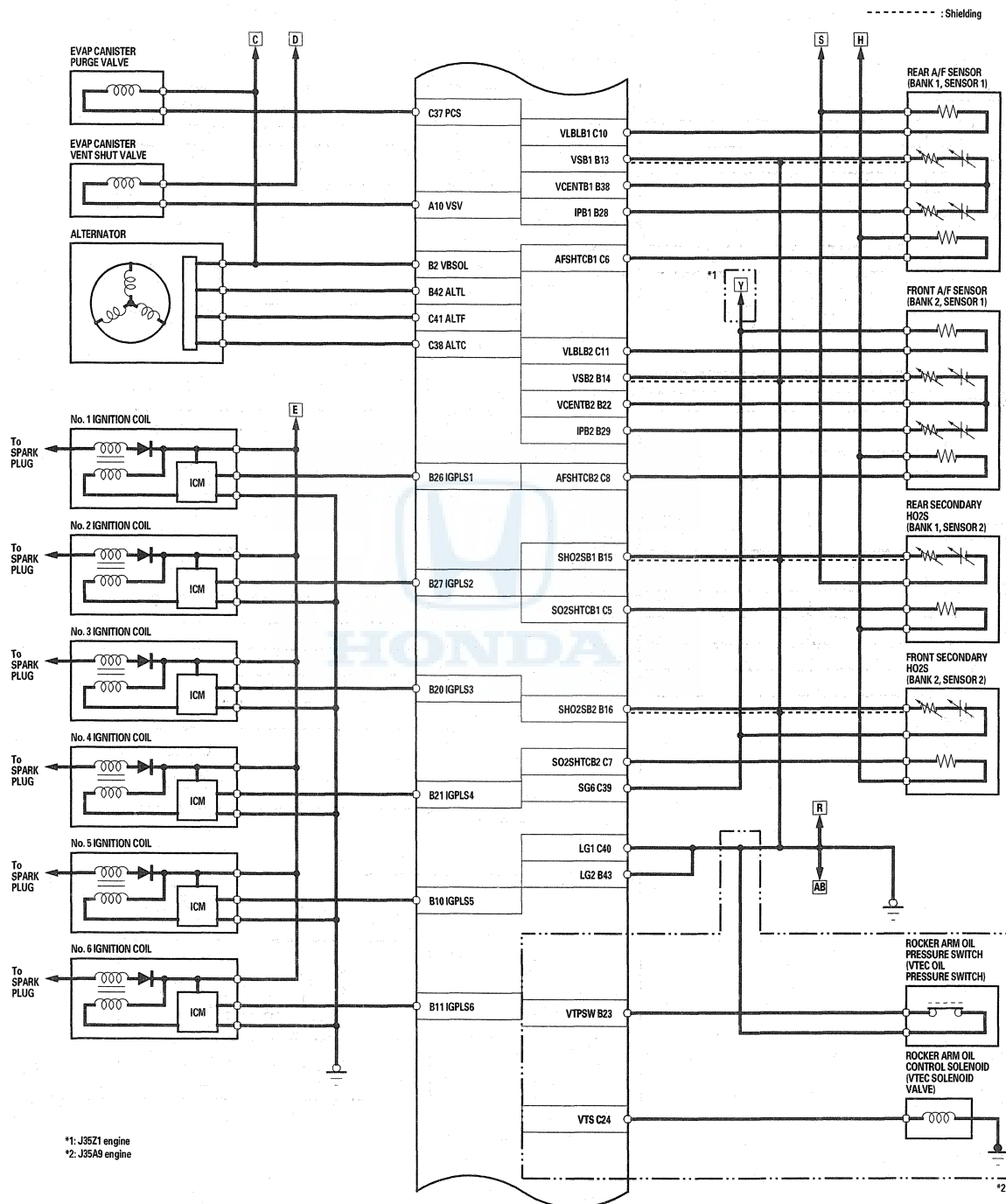
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Fuel and Emissions Systems

System Description (cont'd)

PCM Electrical Connections (cont'd)



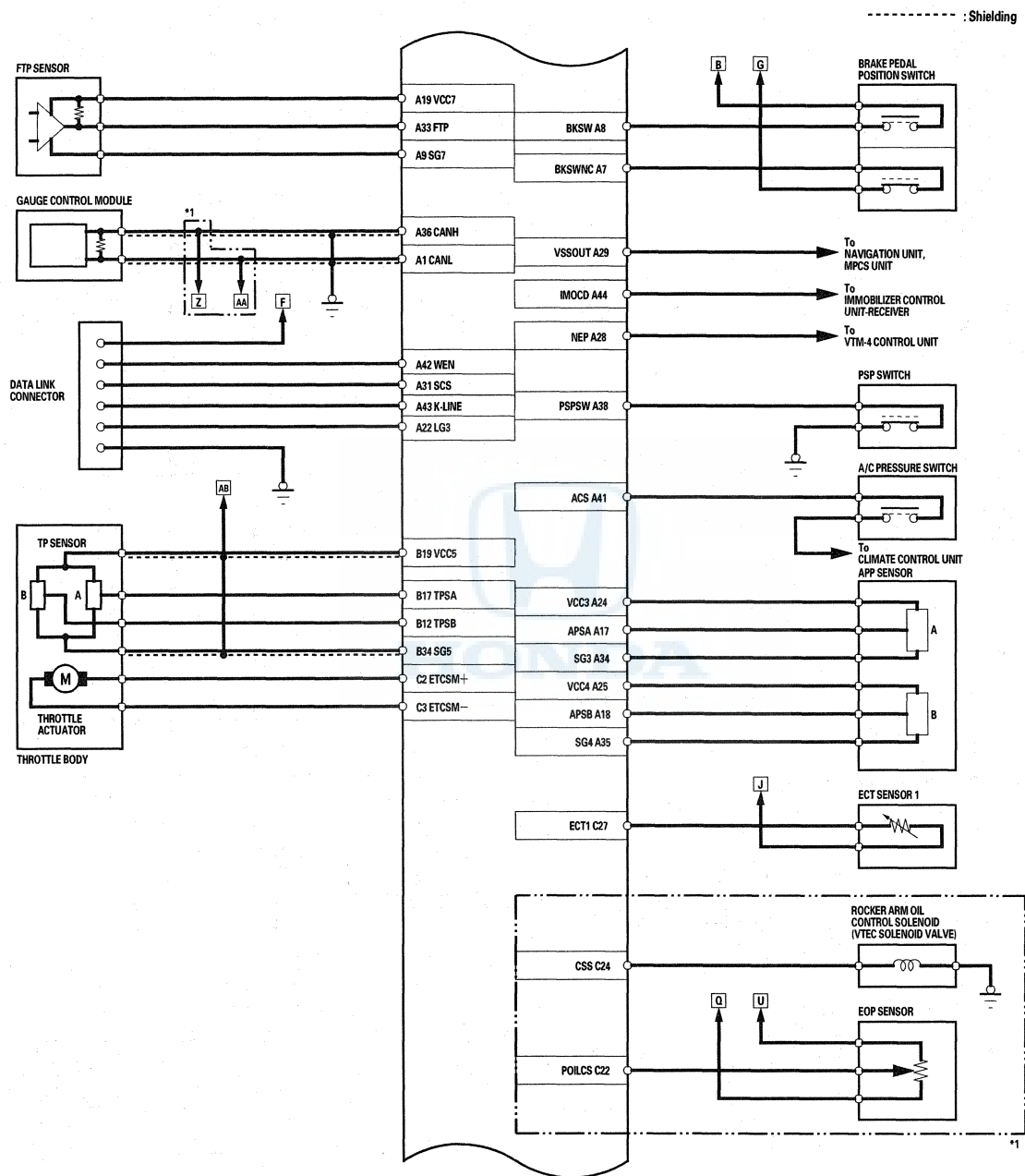


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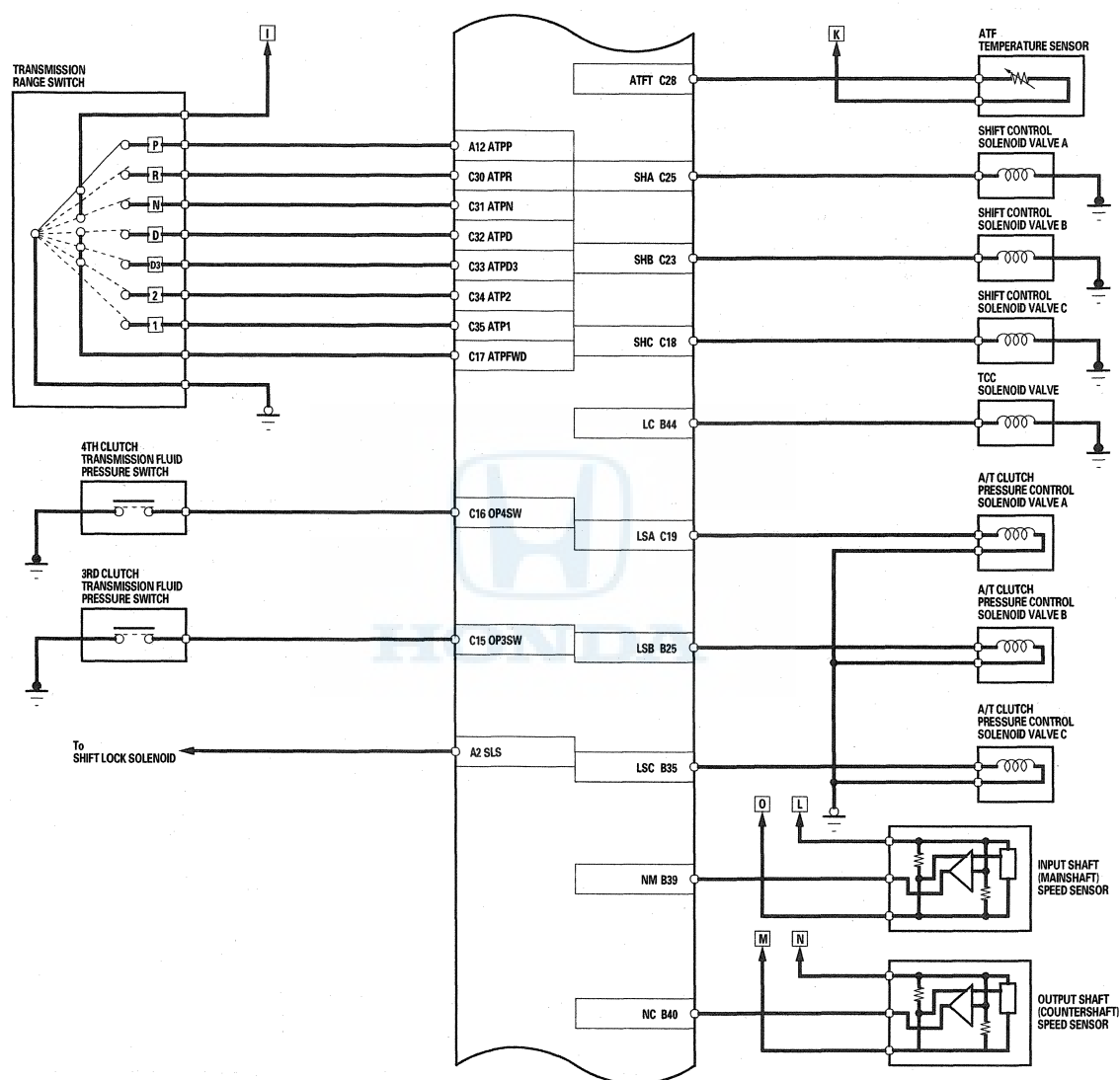
Fuel and Emissions Systems

System Description (cont'd)

PCM Electrical Connections (cont'd)



*1: J35Z1 engine

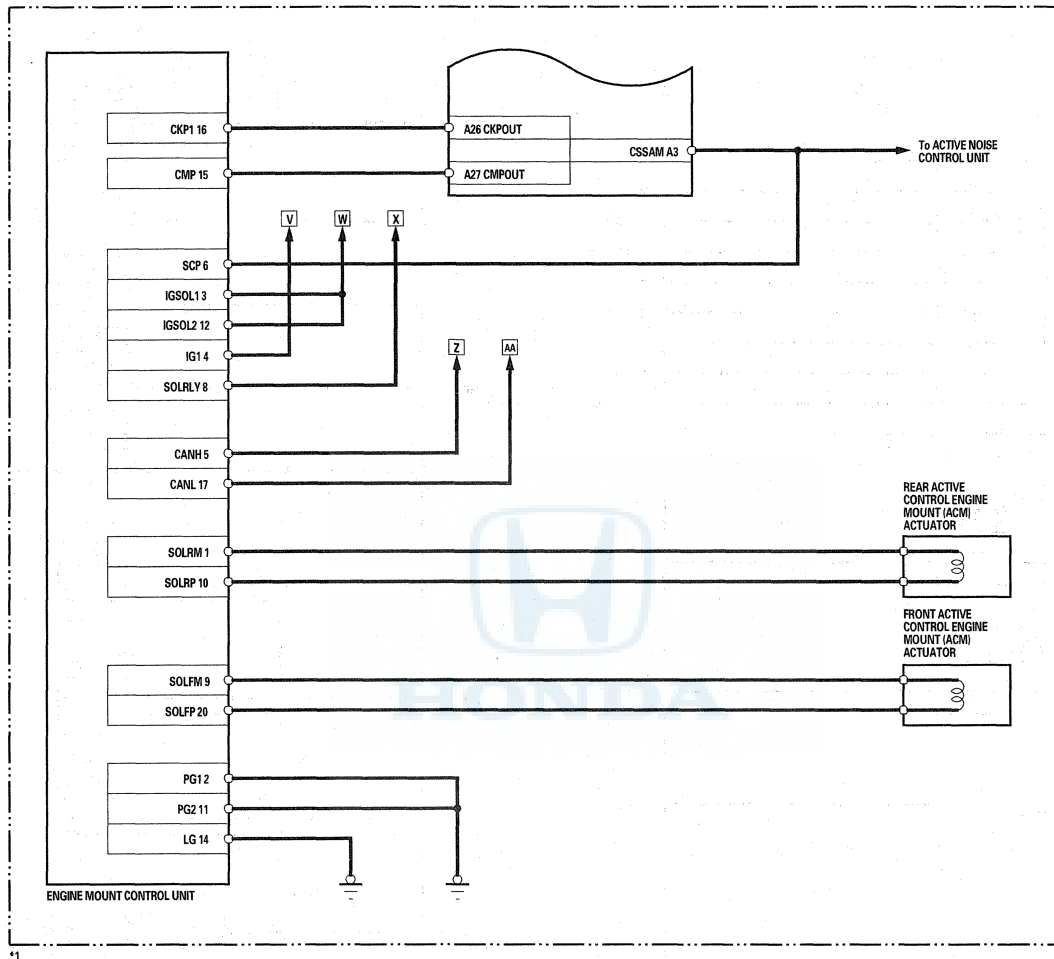


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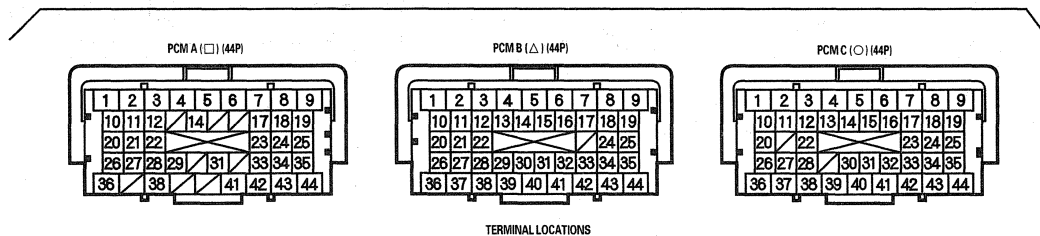
Fuel and Emissions Systems

System Description (cont'd)

PCM Electrical Connections (cont'd)

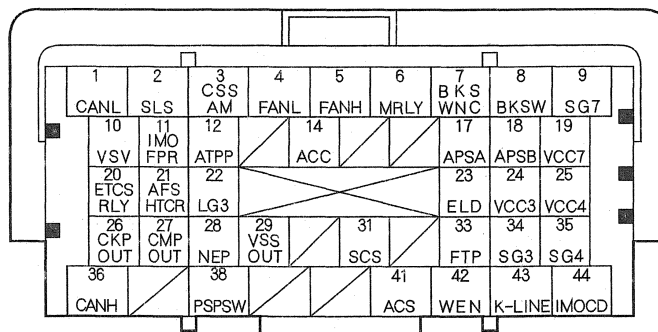


*1: J35Z1 engine





PCM Inputs and Outputs at Connector A () (44P)



Terminal side of female terminals

NOTE: Standard battery voltage is about 12 V.

Terminal number	Wire color	Terminal name	Description	Signal
1	RED	CANL (CAN COMMUNICATION SIGNAL LOW)	Sends communication signal	With ignition switch ON (II): about 2.5 V (pulses)
2	WHT/RED	SLS (SHIFT LOCK SOLENOID)	Drives shift lock solenoid	With ignition switch ON (II), in the P position, brake pedal pressed, and accelerator released: about 0 V
3	PNK	CSSAM (ROCKER ARM OIL CONTROL SOLENOID) (VTEC SOLENOID VALVE)	Outputs rocker arm oil control solenoid (VTEC solenoid valve) drive signal	Rocker arm oil control solenoid (VTEC solenoid valve) ON: battery voltage Rocker arm oil control solenoid (VTEC solenoid valve) OFF: about 0 V
4	BLU	FANL (RADIATOR FAN CONTROL)	Drives condenser fan relay	With condenser fan running: about 0 V With condenser fan stopped: battery voltage
5	GRN	FANH (RADIATOR FAN CONTROL)	Drives radiator fan relay	With radiator fan running: about 0 V With radiator fan stopped: battery voltage
6	BLK/WHT	MRLY (PGM-FI MAIN RELAY 1)	Drives PGM-FI main relay 1 (FI MAIN) (power source for DTC memory)	With ignition switch ON (II): about 0 V With ignition switch OFF: battery voltage
7	GRY	BKSWNC (BRAKE PEDAL POSITION SWITCH)	Detects brake pedal position switch signal	With ignition switch ON (II) and brake pedal released: battery voltage With ignition switch ON (II) and brake pedal pressed: about 0 V
8	WHT/BLK	BKSW (BRAKE PEDAL POSITION SWITCH)	Detects brake pedal position switch signal	With brake pedal released: about 0 V With brake pedal pressed: battery voltage
9	GRN/YEL	SG7 (SENSOR GROUND)	Sensor ground	Less than 1.0 V at all times
10	LT GRN/WHT	VSV (EVAPORATIVE EMISSION (EVAP) CANISTER VENT SHUT VALVE)	Drives EVAP canister vent shut valve	With ignition switch ON (II): battery voltage

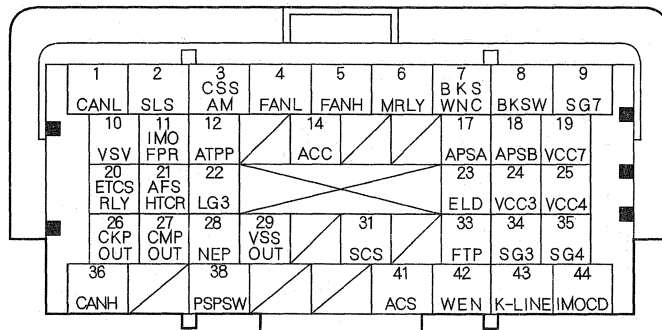
* 1: J35Z1 engine

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Fuel and Emissions Systems

System Description (cont'd)

PCM Inputs and Outputs at Connector A () (44P)



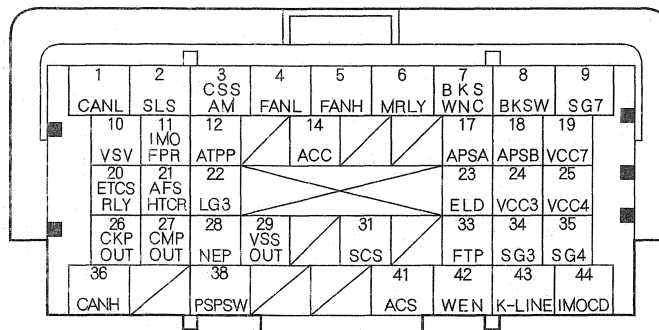
Terminal side of female terminals

NOTE: Standard battery voltage is about 12 V.

Terminal number	Wire color	Terminal name	Description	Signal
11	GRN/YEL	IMOFPR (IMMOBILIZER FUEL PUMP RELAY)	Drives PGM-FI main relay 2 (FUEL PUMP)	0 V for 2 seconds after turning ignition switch ON (II), then battery voltage
12	BLU/BLK	ATPP (TRANSMISSION RANGE SWITCH PARK)	Detects transmission range switch P position signal	In P position: about 0 V In any position other than P position: battery voltage
14	RED	ACC (A/C COMPRESSOR CLUTCH RELAY)	Drives A/C compressor clutch relay	With compressor ON: about 0 V With compressor OFF: battery voltage
17	ORN/BLK	APSA (ACCELERATOR PEDAL POSITION (APP) SENSOR A)	Detects APP sensor A signal	With ignition switch ON (II) and accelerator pedal pressed: about 4.7 V With ignition switch ON (II) and accelerator pedal released: about 0.5 V
18	YEL	APSB (ACCELERATOR PEDAL POSITION (APP) SENSOR B)	Detects APP sensor B signal	With ignition switch ON (II) and accelerator pedal pressed: about 2.3 V With ignition switch ON (II) and accelerator pedal released: about 0.25 V
19	YEL/BLU	VCC7 (SENSOR REFERENCE VOLTAGE)	Provides sensor reference voltage	With ignition switch ON (II): about 5.0 V



PCM Inputs and Outputs at Connector A () (44P)



Terminal side of female terminals

NOTE: Standard battery voltage is about 12 V.

Terminal number	Wire color	Terminal name	Description	Signal
20	BRN/RED	ETCSRLY (ELECTRONIC THROTTLE CONTROL SYSTEM (ETCS) CONTROL RELAY)	Drives electronic throttle control system (ETCS) control relay	With ignition switch ON (II): about 0 V
21	ORN	AFSHTCR (AIR FUEL RATIO (A/F) SENSOR HEATER CONTROL RELAY)	Drives A/F sensor relay (LAF)	With ignition switch ON (II): about 0 V
22	BRN/YEL	LG3 (LOGIC GROUND)	Ground circuit for the PCM	Less than 1.0 V at all times
23	GRN/RED	ELD (ELECTRICAL LOAD DETECTOR (ELD))	Detects ELD signal	With ignition switch ON (II): about 0.1–4.8 V (depending on electrical load)
24	GRN	VCC3 (SENSOR REFERENCE VOLTAGE)	Provides sensor reference voltage	With ignition switch ON (II): about 5.0 V
25	WHT	VCC4 (SENSOR REFERENCE VOLTAGE)	Provides sensor reference voltage	With ignition switch ON (II): about 5.0 V
26 ^{*1}	YEL/BLK	CKPOUT (CRANKSHAFT POSITION (CKP) OUTPUT SIGNAL)	Sends CKP sensor A/B signal	With engine running: pulses
27 ^{*1}	PUR	CMPOUT (CAMSHAFT POSITION (CMP) OUTPUT SIGNAL)	Sends CMP sensor signal	With engine running: pulses
28	BLU	NEP (ENGINE SPEED PULSE)	Outputs engine speed pulse	With engine running: pulses
29	BLU/WHT	VSSOUT (VEHICLE SPEED SIGNAL OUTPUT)	Sends vehicle speed signal	Depending on vehicle speed: pulses
31	BRN	SCS (SERVICE CHECK SIGNAL)	Detects service check signal	With service check signal shorted with the HDS: about 0 V With service check signal opened: about 5.0 V

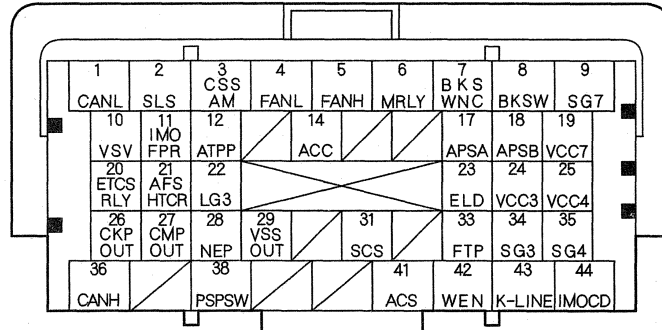
* 1: J35Z1 engine

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Fuel and Emissions Systems

System Description (cont'd)

PCM Inputs and Outputs at Connector A () (44P)



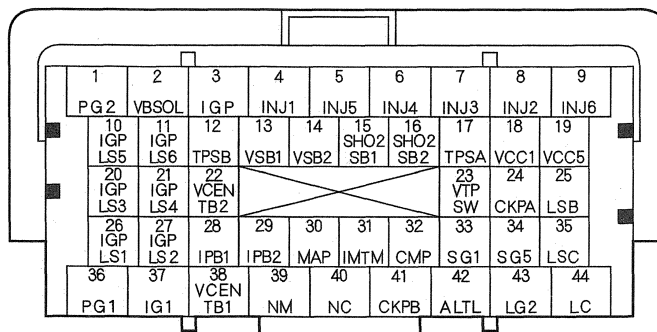
Terminal side of female terminals

NOTE: Standard battery voltage is about 12 V.

Terminal number	Wire color	Terminal name	Description	Signal
33	LT GRN	FTP (FUEL TANK PRESSURE (FTP) SENSOR)	Detects FTP sensor signal	With ignition switch ON (II) and fuel fill cap removed: about 2.5 V
34	BLK	SG3 (SENSOR GROUND)	Sensor ground	Less than 1.0 V at all times
35	RED/YEL	SG4 (SENSOR GROUND)	Sensor ground	Less than 1.0 V at all times
36	WHT	CANH (CAN COMMUNICATION SIGNAL HIGH)	Sends communication signal	With ignition switch ON (II): about 2.6 V (pulses)
38	GRN/WHT	PSPSW (POWER STEERING PRESSURE (PSP) SWITCH SIGNAL)	Detects PSP switch signal	At idle with steering wheel in straight ahead position: about 0 V At idle with steering wheel at full lock: battery voltage
41	BLU/RED	ACS (A/C PRESSURE SWITCH)	Detects A/C pressure switch signal	A/C pressure switch ON: about 0 V A/C pressure switch OFF: about 5.0 V
42	RED/WHT	WEN (WRITE ENABLE SIGNAL)	Detects write enable signal	With ignition switch ON (II): about 0 V
43	GRY	K-LINE	Sends and receives HDS signal	With ignition switch ON (II) and HDS disconnected: about 9.0 V
44	RED/GRN	IMOCOD (IMMOBILIZER CODE)	Detects immobilizer signal	



PCM Inputs and Outputs at Connector B (△) (44P)



Terminal side of female terminals

NOTE: Standard battery voltage is about 12 V.

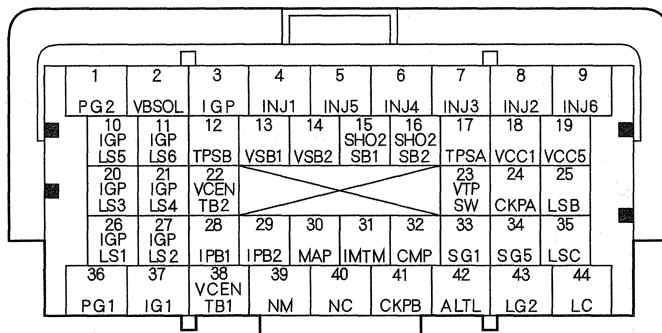
Terminal number	Wire color	Terminal name	Description	Signal
1	BLK	PG2 (POWER GROUND)	Ground circuit for PCM circuit	Less than 1.0 V at all times
2	BLK/YEL	VBSOL (POWER SOURCE FOR SOLENOID VALVES)	Power source for solenoid valve	With ignition switch ON (II): battery voltage With ignition switch OFF: about 0 V
3	YEL/BLK	IGP (POWER SOURCE)	Power source for PCM circuit	With ignition switch ON (II): battery voltage
4	BRN	INJ1 (No. 1 INJECTOR)	Drives No. 1 injector	At idle: duty controlled With ignition switch ON (II): battery voltage
5	BLK/RED	INJ5 (No. 5 INJECTOR)	Drives No. 5 injector	
6	YEL	INJ4 (No. 4 INJECTOR)	Drives No. 4 injector	
7	BLU	INJ3 (No. 3 INJECTOR)	Drives No. 3 injector	
8	RED	INJ2 (No. 2 INJECTOR)	Drives No. 2 injector	
9	WHT/BLU	INJ6 (No. 6 INJECTOR)	Drives No. 6 injector	
10	BLK/RED	IGPLS5 (No. 5 IGNITION COIL PULSE)	Drives No. 5 ignition coil	With ignition switch ON (II): about 0 V With engine running: pulses
11	BRN/WHT	IGPLS6 (No. 6 IGNITION COIL PULSE)	Drives No. 6 ignition coil	
12	RED/BLU	TPSB (THROTTLE POSITION (TP) SENSOR B)	Detects TP sensor B signal	With throttle fully open: about 4.1 V With throttle fully closed: about 1.7 V

(cont'd)

Fuel and Emissions Systems

System Description (cont'd)

PCM Inputs and Outputs at Connector B (△) (44P)



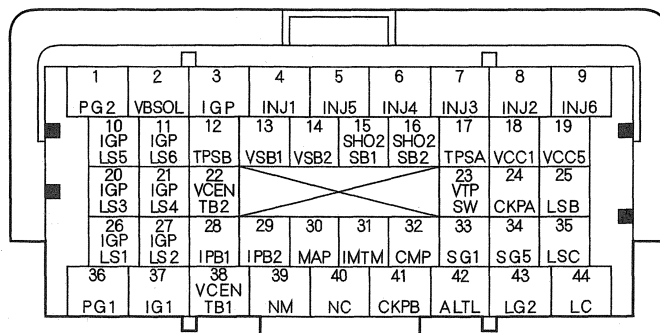
Terminal side of female terminals

NOTE: Standard battery voltage is about 12 V.

Terminal number	Wire color	Terminal name	Description	Signal
13	BLU	VSB1 (VS CELL+ BANK 1)	Detects the rear A/F sensor (Bank 1, sensor 1) VS CELL signal	With fully warmed up engine running: about 3.4—4.8 V
14	RED/BLU	VSB2 (VS CELL+ BANK 2)	Detects front A/F sensor (Bank 2, sensor 1) VS CELL signal	With fully warmed up engine running: about 3.4—4.8 V
15	GRN	SHO2SB1 (REAR SECONDARY HEATED OXYGEN SENSOR (REAR SECONDARY HO2S) BANK 1, SENSOR 2)	Detects rear secondary HO2S (Bank 1, sensor 2) signal	With throttle fully opened from idle and fully warmed up engine: about 0.6 V With throttle quickly closed: below 0.4 V
16	WHT	SHO2SB2 (FRONT SECONDARY HEATED OXYGEN SENSOR (FRONT SECONDARY HO2S) BANK 2, SENSOR 2)	Detects front secondary HO2S (Bank 2, sensor 2) signal	With throttle fully opened from idle and fully warmed up engine: about 0.6 V With throttle quickly closed: below 0.4 V
17	RED/BLK	TPSA (THROTTLE POSITION (TP) SENSOR A)	Detects TP sensor A signal	With throttle fully open: about 3.9 V With throttle fully closed: about 0.9 V
18	YEL/RED	VCC1 (SENSOR REFERENCE VOLTAGE)	Provides sensor reference voltage	With ignition switch ON (II): about 5.0 V



PCM Inputs and Outputs at Connector B (△) (44P)



Terminal side of female terminals

NOTE: Standard battery voltage is about 12 V.

Terminal number	Wire color	Terminal name	Description	Signal
19	BLU	VCC5 (SENSOR REFERENCE VOLTAGE)	Provides sensor reference voltage	With ignition switch ON (II): about 5.0 V
20	WHT/BLU	IGPLS3 (No. 3 IGNITION COIL PULSE)	Drives No. 3 ignition coil	With ignition switch ON (II): about 0 V With engine running: pulses
21	BRN	IGPLS4 (No. 4 IGNITION COIL PULSE)	Drives No. 4 ignition coil	
22	RED/WHT	VCENTB2 (VIRTUAL GROUND BANK 2)	Reference voltage supply for front A/F sensor (Bank 2, sensor 1)	With fully warmed up engine at idle: about 3.4—4.8 V
23 ^{*2}	BLU/WHT	VTPSW (ROCKER ARM OIL PRESSURE SWITCH) (VTEC PRESSURE SWITCH)	Detects rocker arm oil pressure switch (VTEC oil pressure switch) signal	With engine at low speed: about 0 V With engine at high speed: battery voltage
24	BLU	CKPA (CRANKSHAFT POSITION (CKP) SENSOR A)	Detects CKP sensor A signal	With engine running: pulses
25	BRN/WHT	LSB (A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE B)	Drives A/T clutch pressure control solenoid valve B	With ignition switch ON (II): current control
26	YEL/GRN	IGPLS1 (No. 1 IGNITION COIL PULSE)	Drives No. 1 ignition coil	With ignition switch ON (II): about 0 V With engine running: pulses
27	BLU/RED	IGPLS2 (No. 2 IGNITION COIL PULSE)	Drives No. 2 ignition coil	With ignition switch ON (II): about 0 V With engine running: pulses
28	GRN	IPB1 (IP CELL + BANK 1)	Detects rear A/F sensor (Bank 1, sensor 1) pump cell	With engine running: about 2.0—5.6 V
29	GRN/RED	IPB2 (IP CELL + BANK 2)	Detects front A/F sensor (Bank 2, sensor 1) pump cell	With engine running: about 2.0—5.6 V

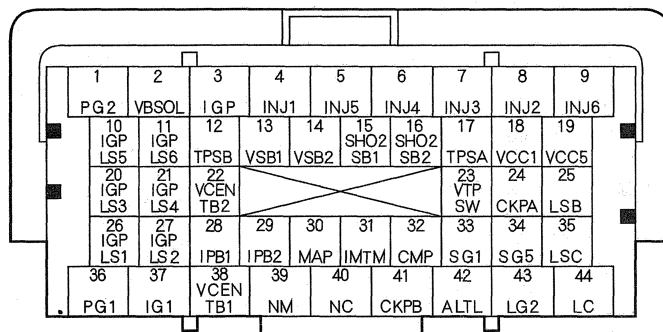
* 2: J35A9 engine

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Fuel and Emissions Systems

System Description (cont'd)

PCM Inputs and Outputs at Connector B (△) (44P)



Terminal side of female terminals

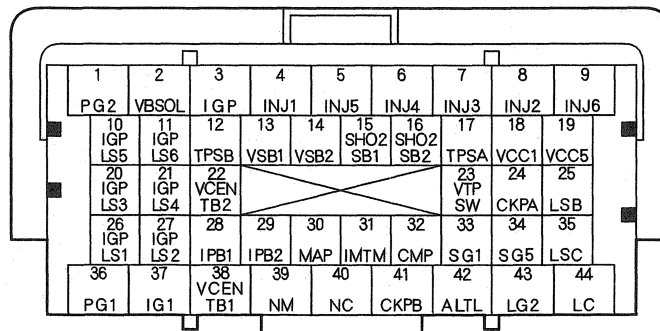
NOTE: Standard battery voltage is about 12 V.

Terminal number	Wire color	Terminal name	Description	Signal
30	GRN/RED	MAP (MANIFOLD ABSOLUTE PRESSURE (MAP) SENSOR)	Detects MAP sensor signal	With ignition switch ON (II): about 3.0 V At idle: about 1.0 V (depending on engine speed)
31 ¹	WHT/BLK	IMTM (INTAKE MANIFOLD TUNING (IMT) VALVE MONITOR)	Detects IMT valve position	At idling: about 5.0 V With engine speed above 4,200 rpm: about 0 V
32	YEL	CMP (CAMSHAFT POSITION (CMP) SENSOR)	Detects CMP sensor signal	With engine running: pulses
33	GRN/WHT	SG1 (SENSOR GROUND)	Sensor ground	Less than 1.0 V at all times
34	GRN	SG5 (SENSOR GROUND)	Sensor ground	Less than 1.0 V at all times
35	GRN/RED	LSC (A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE C)	Drives A/T clutch pressure control solenoid valve C	With ignition switch ON (II): current control
36	BLK	PG1 (POWER GROUND)	Ground circuit for PCM circuit	Less than 1.0 V at all times
37	RED/WHT	IG1 (IGNITION SIGNAL)	Detects ignition signal	With ignition switch ON (II): battery voltage
38	RED	VCEN TB1 (VIRTUAL GROUND BANK 1)	Reference voltage supply for rear A/F sensor (Bank 1, sensor 1)	With fully warmed up engine at idle: about 3.4—3.8 V
39	RED	NM (INPUT SHAFT (MAINSHAFT) SPEED SENSOR)	Detects input shaft (mainshaft) speed sensor signals	With ignition switch ON (II): about 0 V or about 5.0 V At idling in N position: about 2.5 V (pulses)

* 1: J35Z1 engine



PCM Inputs and Outputs at Connector B (△) (44P)



Terminal side of female terminals

NOTE: Standard battery voltage is about 12 V.

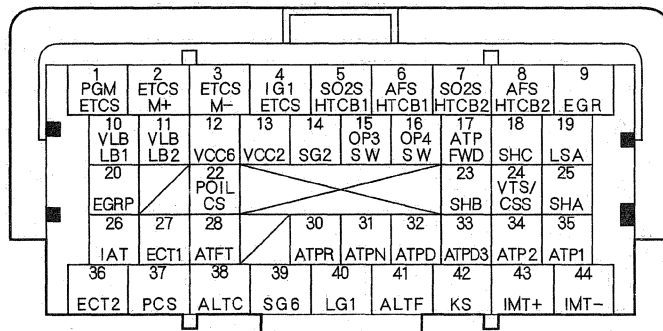
Terminal number	Wire color	Terminal name	Description	Signal
40	BLU	NC (OUTPUT SHAFT (COUNTERSHAFT) SPEED SENSOR)	Detects output shaft (countershaft) speed sensor signals	With ignition switch ON (II) and front wheels rotated by hand: pulses
41	BLU/RED	CKPB (CRANKSHAFT POSITION (CKP) SENSOR B)	Detects CKP sensor B signal	With engine running: pulses
42	WHT/BLU	ALT (ALTERNATOR L SIGNAL)	Detects alternator L signal	With ignition switch ON (II): about 0 V With engine running: battery voltage
43	BRN/YEL	LG2 (LOGIC GROUND)	Ground circuit for PCM circuit	Less than 1.0 V at all times
44	YEL	LC (TORQUE CONVERTER CLUTCH (TCC) SOLENOID)	Drives TCC solenoid valve	With lock-up ON: battery voltage With lock-up OFF: about 0 V

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Fuel and Emissions Systems

System Description (cont'd)

PCM Inputs and Outputs at Connector C (○) (44P)



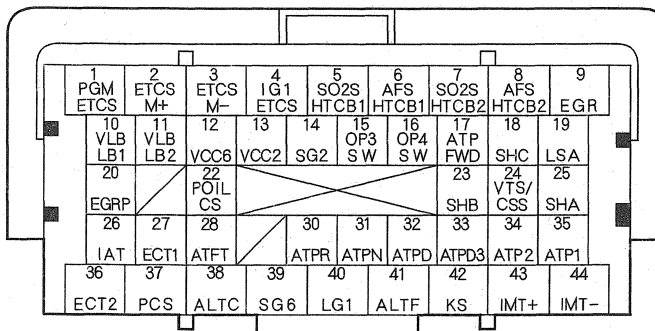
Terminal side of female terminals

NOTE: Standard battery voltage is about 12 V.

Terminal number	Wire color	Terminal name	Description	Signal
1	BLK	PGMETCS (POWER GROUND ETCS)	Ground circuit for PCM circuit	Less than 1.0 V at all times
2	BLU	ETCSM+ (THROTTLE ACTUATOR +SIDE)	Drives throttle actuator	With ignition switch ON (II): about 0 V
3	GRN	ETCSM- (THROTTLE ACTUATOR -SIDE)	Ground for throttle actuator	With ignition switch ON (II): about 0 V
4	YEL/GRN	IG1ETCS (IGNITION SIGNAL ETCS)	Detects ignition signal	With ignition switch ON (II): battery voltage
5	BLK/WHT	SO2SHTCB1 (REAR SECONDARY HEATED OXYGEN SENSOR (REAR SECONDARY HO2S) HEATER)	Drives rear secondary HO2S heater (Bank 1, sensor 2)	With ignition switch ON (II): battery voltage With fully warmed up engine running: duty controlled
6	BLK/WHT	AFSHTCB1 (REAR AIR FUEL RATIO (REAR A/F) SENSOR HEATER CONTROL BANK 1, SENSOR 1)	Drives rear A/F sensor heater (Bank 1, sensor 1)	With ignition switch ON (II): battery voltage With fully warmed up engine running: about 0 V or pulses
7	GRN/RED	SO2SHTCB2 (FRONT SECONDARY HEATED OXYGEN SENSOR (SECONDARY HO2S) HEATER)	Drives front secondary HO2S heater (Bank 2, sensor 2)	With ignition switch ON (II): battery voltage With fully warmed up engine running: duty controlled
8	GRN/WHT	AFSHTCB2 (FRONT AIR FUEL RATIO (FRONT A/F) SENSOR HEATER CONTROL BANK 2, SENSOR 1)	Drives front A/F sensor heater (Bank 2, sensor 1)	With ignition switch ON (II): battery voltage With fully warmed up engine running: about 0 V or pulses
9	BLU/RED	EGR (EXHAUST GAS RECIRCULATION (EGR) VALVE)	Drives EGR valve	With EGR operating: duty controlled With EGR not operating: about 0 V



PCM Inputs and Outputs at Connector C (○) (44P)



Terminal side of female terminals

NOTE: Standard battery voltage is about 12 V.

Terminal number	Wire color	Terminal name	Description	Signal
10	WHT	VLBLB1 (LABEL RESISTER BANK 1)	Detects rear A/F sensor (Bank 1, sensor 1) LABEL signal	With engine running: about 0.4—4.6 V
11	WHT/RED	VLBLB2 (LABEL RESISTER BANK 2)	Detects front A/F sensor (Bank 2, sensor 1) LABEL signal	With engine running: about 0.4—4.6 V
12 ^{*1}	YEL/BLU	VCC6 (SENSOR REFERENCE VOLTAGE)	Provides sensor reference voltage	With ignition switch ON (II): about 5.0 V
13	YEL/BLU	VCC2 (SENSOR REFERENCE VOLTAGE)	Provides sensor reference voltage	With ignition switch ON (II): about 5.0 V
14	GRN/YEL	SG2 (SENSOR GROUND)	Sensor ground	Less than 1.0 V at all times
15	BLU/WHT	OP3SW (3RD CLUTCH TRANSMISSION FLUID PRESSURE SWITCH)	Detects 3rd clutch transmission fluid pressure switch input	With ignition switch ON (II): • Without 3rd clutch pressure: about 5.0 V • With 3rd clutch pressure: about 0 V
16	BLU/YEL	OP4SW (4TH CLUTCH TRANSMISSION FLUID PRESSURE SWITCH)	Detects 4th clutch transmission fluid pressure switch input	With ignition switch ON (II): • Without 4th clutch pressure: about 5.0 V • With 4th clutch pressure: about 0 V
17	BLU/YEL	ATPFWD (TRANSMISSION RANGE SWITCH D/D3/2 POSITION)	Detects transmission range switch D, D3, 2 position signal	In D, D3 and 2 position: about 0 V In any other position: battery voltage
18	GRN	SHC (SHIFT SOLENOID VALVE C)	Drives shift solenoid valve C	With engine running in D (in 1st, 3rd and 5th gears), D3 (in 1st and 3rd gears), and 1 positions: battery voltage With engine running in P, N, D (in 2nd and 4th gears), D3 (in 2nd gears) positions: about 0 V With ignition switch ON (II): current control
19	RED	LSA (A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE A)	Drives A/T clutch pressure control solenoid valve A	
20	WHT/BLK	EGRP (EXHAUST GAS RECIRCULATION (EGR) VALVE POSITION SENSOR)	Detects EGR valve position sensor signal	With engine running: 1.2—3.0 V (depending on EGR valve lift)
22 ^{*1}	BLU/YEL	POILCS (ENGINE OIL PRESSURE SENSOR)	Detects engine oil pressure sensor signal	With ignition switch ON (II): about 0.5 V With engine running: 1.5 V (depending on engine oil pressure)

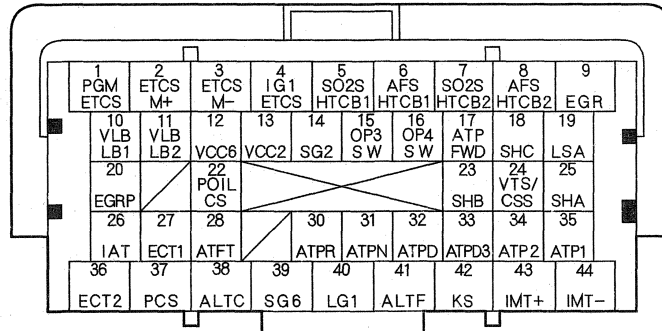
* 1: J35Z1 engine

(cont'd)

Fuel and Emissions Systems

System Description (cont'd)

PCM Inputs and Outputs at Connector C (○) (44P)



Terminal side of female terminals

NOTE: Standard battery voltage is about 12 V.

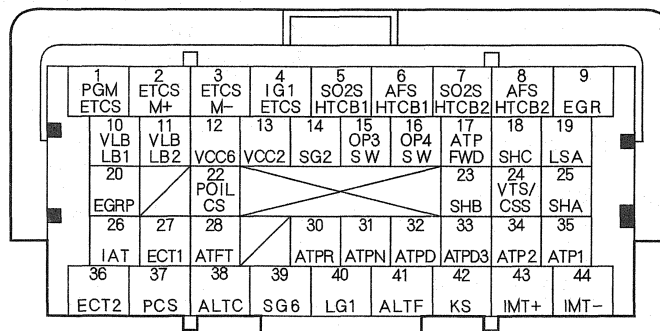
Terminal number	Wire color	Terminal name	Description	Signal
23	GRN/WHT	SHB (SHIFT SOLENOID VALVE B)	Drives shift solenoid valve B	With engine running in P, R, N, D (in 1st, 2nd, and 3rd gears), D3, 2, and 1 positions: battery voltage With engine running in D (in 4th and 5th) positions: about 0 V
24 ^{*2}	GRN/YEL	VTS (ROCKER ARM OIL CONTROL SOLENOID) (VTEC SOLENOID VALVE)	Drives rocker arm oil control solenoid (VTEC solenoid valve)	At idle: about 0 V
24 ^{*1}	GRN/YEL	CSS (ROCKER ARM OIL CONTROL SOLENOID) (VTEC SOLENOID VALVE)	Drives rocker arm oil control solenoid (VTEC solenoid valve)	With ignition switch ON (II) or at idle: about 0 V
25	BLU/YEL	SHA (SHIFT SOLENOID VALVE A)	Drives shift solenoid valve A	With engine running in D (in 1st, 2nd, and 5th gears), D3 (in 1st and 2nd gears), 2, and 1 positions: battery voltage With engine running in P, N, D (in 3rd and 4th gears), D3 (in 3rd gears) positions: about 0 V
26	RED/YEL	IAT (INTAKE AIR TEMPERATURE (IAT) SENSOR)	Detects IAT sensor signal	With ignition switch ON (II): about 0.1—4.8 V (depending on intake air temperature)
27	RED/WHT	ECT1 (ENGINE COOLANT TEMPERATURE (ECT) SENSOR 1)	Detects ECT sensor 1 signal	With ignition switch ON (II): about 0.1—4.8 V (depending on engine coolant temperature)
28	BLU/YEL	ATFT (ATF TEMPERATURE SENSOR)	Detects ATF temperature signal	With ignition switch ON (II): about 0.2—4.0 V (about 1.8 V at normal operating temperature) (depending on ATF temperature)
30	WHT	ATPR (TRANSMISSION RANGE SWITCH R)	Detects transmission range switch R position signal input	In R position: about 0 V In any position other than R position: battery voltage
31	RED/BLK	ATPN (TRANSMISSION RANGE SWITCH N)	Detects transmission range switch N position signal input	In N position: about 0 V In any position other than N position: battery voltage
32	LT BLU	ATPD (TRANSMISSION RANGE SWITCH D)	Detects transmission range switch D position signal input	In D position: about 0 V In any position other than D position: battery voltage

* 1: J35Z1 engine

* 2: J35A9 engine



PCM Inputs and Outputs at Connector C (○) (44P)



Terminal side of female terminals

NOTE: Standard battery voltage is about 12 V.

Terminal number	Wire color	Terminal name	Description	Signal
33	RED	ATPD3 (TRANSMISSION RANGE SWITCH D3)	Detects transmission range switch D3 signal input	In D3 position: about 0 V In any position other than D3 position: battery voltage
34	BLU	ATP2 (TRANSMISSION RANGE SWITCH 2)	Detects transmission range switch 2 signal input	In 2 position: about 0 V In any position other than 2 position: battery voltage
35	BRN	ATP1 (TRANSMISSION RANGE SWITCH 1)	Detects transmission range switch 1 signal input	In 1 position: about 0 V In any position other than 1 position: battery voltage
36	GRN/RED	ECT2 (ENGINE COOLANT TEMPERATURE (ECT) SENSOR 2)	Detects ECT sensor 2 signal	With ignition switch ON (II): about 0.1—4.8 V (depending on engine coolant temperature)
37	RED/YEL	PCS (EVAPORATIVE EMISSION (EVAP) CANISTER PURGE VALVE)	Drives EVAP canister purge valve	With engine running, engine coolant below 140 °F (60 °C): battery voltage With engine running, engine coolant above 140 °F (60 °C): duty controlled
38	WHT/GRN	ALTC (ALTERNATOR CONTROL)	Sends alternator control signal	With engine running and fully warmed up: battery voltage (depending on electrical load)
39	GRN/YEL	SG6 (SENSOR GROUND)	Sensor ground	Less than 1.0 V at all times
40	BRN/YEL	LG1 (LOGIC GROUND)	Ground circuit for PCM circuit	Less than 1.0 V at all times
41	WHT/RED	ALTF (ALTERNATOR FR SIGNAL)	Detects alternator FR signal	With engine running: 0—5.0 V (depending on electrical load)
42	RED/BLU	KS (KNOCK SENSOR)	Detects knock sensor signal	With engine knocking: pulses
43 ^{*1}	WHT/BLU	IMT+ (INTAKE MANIFOLD TUNING (IMT) ACTUATOR +SIDE)	Drives IMT actuator	With ignition switch ON (II): battery voltage
44 ^{*1}	WHT/RED	IMT- (INTAKE MANIFOLD TUNING (IMT) ACTUATOR -SIDE)	Ground for IMT actuator	With ignition switch ON (II): battery voltage

* 1: J35Z1 engine

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Fuel and Emissions Systems

System Description (cont'd)

PGM-FI System

The programmed fuel injection (PGM-FI) system is a sequential multiport fuel injection system.

Alternator Control

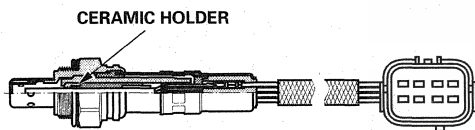
The alternator signals the PCM during charging.

Air Conditioning (A/C) Compressor Clutch Relay

When the PCM receives a demand for cooling from the A/C system, it delays the compressor from being energized, and enriches the mixture to assure smooth transition to the A/C mode.

Air Fuel Ratio (A/F) Sensor

The A/F sensor operates over a wide air/fuel range. The A/F sensor is installed upstream of the TWC, and sends signals to the PCM which varies the duration of fuel injection accordingly.

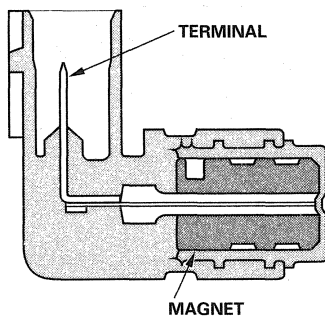


Barometric Pressure (BARO) Sensor

The BARO sensor is inside the PCM. It converts atmospheric pressure into a voltage signal that is used by the PCM to modify the basic duration of the fuel injection discharge.

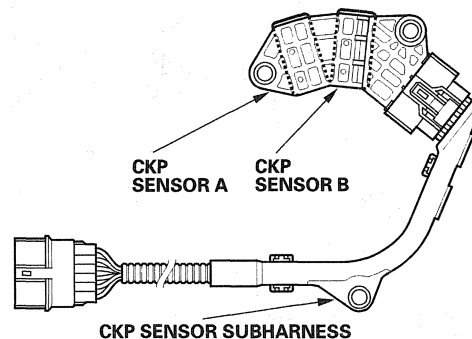
Camshaft Position (CMP) Sensor

The CMP sensor input is used by the PCM to determine ignition timing at start up (cranking) and when crank angle is abnormal.



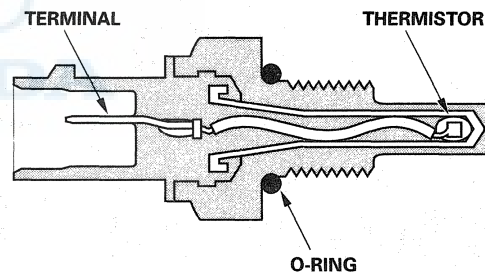
Crankshaft Position (CKP) Sensor

The CKP sensor detects crankshaft speed and is used by the PCM to determine ignition timing and timing for fuel injection of each cylinder, as well as detecting engine misfire.



Engine Coolant Temperature (ECT) Sensor 1 and 2

ECT sensors 1 and 2 are temperature dependent resistors (thermistors). The resistance decreases as the engine coolant temperature increases.



Ignition Timing Control

The PCM contains the memory for basic ignition timing at various engine speeds and manifold absolute pressures. It also adjusts the timing according to engine coolant temperature.

Injector Timing and Duration

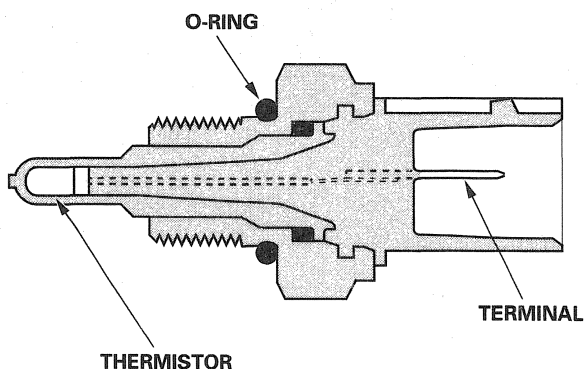
The PCM contains the memory for basic discharge duration at various engine speeds and manifold pressures. The basic discharge duration, after being read out from the memory, is further modified by signals sent from various sensors to obtain the final discharge duration.

By monitoring long term fuel trim, the PCM detects long term malfunctions in the fuel system and sets a diagnostic trouble code (DTC).



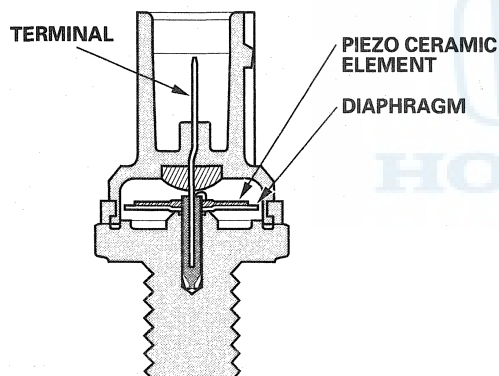
Intake Air Temperature (IAT) Sensor

The IAT sensor is a temperature dependent resistor (thermistor). The resistance of the thermistor decreases as the intake air temperature increases.



Knock Sensor

The knock control system adjusts the ignition timing to minimize knock.



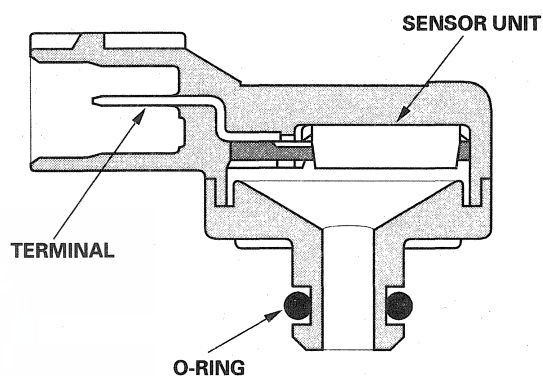
Malfunction Indicator Lamp (MIL) Indication (In relation to Readiness Codes)

The vehicle has certain "readiness codes" that are part of the on-board diagnostics for the emissions systems. If the vehicle's battery has been disconnected or gone dead, if the DTCs have been cleared, or if the PCM has been reset, these codes are reset. In some states, part of the emissions testing is to make sure these codes are set to complete. If all of them are not set to complete, the vehicle may fail the test, or the test cannot be finished.

To check if the readiness codes are set to complete, turn the ignition switch ON (II), but do not start the engine. The MIL will come on for 15—20 seconds. If it then goes off, the readiness codes are complete. If it flashes five times, one or more readiness codes are not set to complete. To set each code, drive the vehicle or run the engine as described in the procedures (see page 11-67).

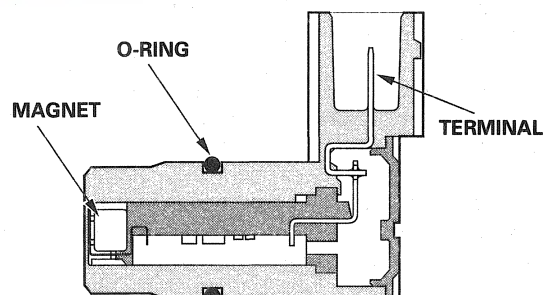
Manifold Absolute Pressure (MAP) Sensor

The MAP sensor converts manifold absolute pressure into electrical signals to the PCM.



Output Shaft (Countershaft) Speed Sensor

This sensor detects countershaft speed.



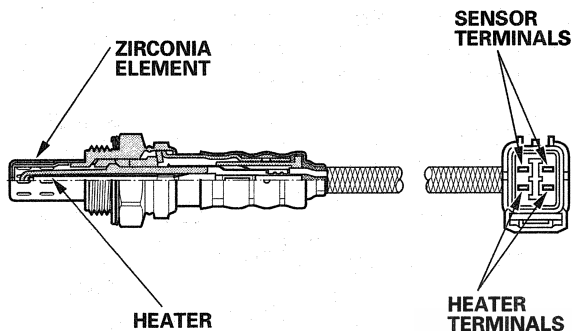
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Fuel and Emissions Systems

System Description (cont'd)

Secondary Heated Oxygen Sensor (Secondary HO2S)

The secondary HO2S detects the oxygen content in the exhaust gas downstream of the warm up three way catalytic converter (WU-TWC), and sends signals to the PCM. To stabilize its output, the sensor has an internal heater. The PCM compares the HO2S output with the A/F sensor output to determine catalyst efficiency. The secondary HO2S is on the WU-TWC.



Electronic Throttle Control System

The throttle is electronically controlled by the electronic throttle control system. Refer to the system diagram to see a functional layout of the system.

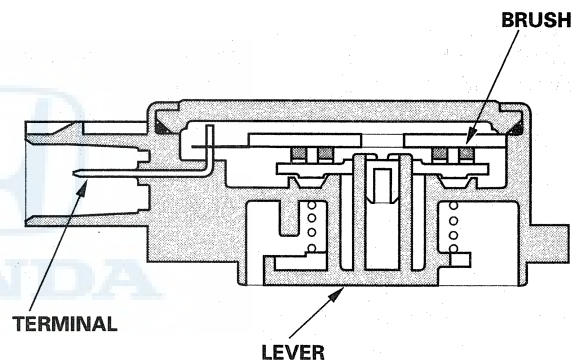
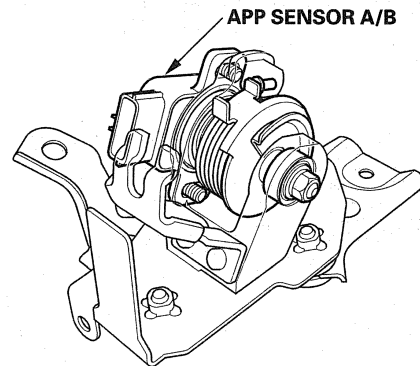
Idle control: When the engine is idling, the PCM controls the throttle actuator to maintain the proper idle speed according to engine loads.

Acceleration control: When the accelerator pedal is pressed, the PCM opens the throttle valve depending on the accelerator pedal position (APP) sensor signal.

Cruise control: The PCM controls the throttle actuator to maintain the set speed when cruise control is operating. The throttle actuator takes the place of the cruise control actuator.

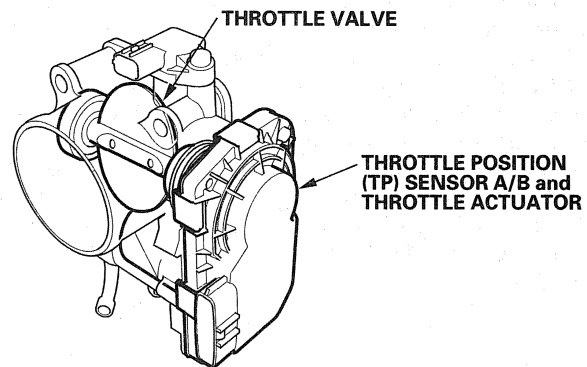
Accelerator Pedal Position (APP) Sensor

As the accelerator pedal position changes, the sensor varies the signal voltage to the PCM.



Throttle Body

The throttle body is a single-barrel side draft type. The lower portion of the throttle valve is heated by engine coolant from the cylinder head to prevent icing of the throttle plate.





Idle Control System

When the engine is cold, the A/C compressor is on, the transmission is in gear, the brake pedal is pressed, the power steering load is high, or the alternator is charging, the PCM controls current to the throttle actuator to maintain the correct idle speed.

Brake Pedal Position Switch

The brake pedal position switch signals the PCM when the brake pedal is pressed.

Power Steering Pressure (PSP) Switch

The PSP switch signals the PCM when the power steering load is high.

Fuel Supply System

Fuel Cutoff Control

During deceleration with the throttle valve closed, current to the injectors is cut off to improve fuel economy at engine speeds over 850 rpm (J35Z1 engine) or 950 rpm (J35A9 engine). Fuel cutoff control also occurs when the engine speed exceeds 6,500 rpm, regardless of the position of the throttle valve, to protect the engine from over-revving. When the vehicle is stopped, the PCM cuts the fuel at engine speeds over 5,000 rpm. On a cold engine, fuel cut occurs at a lower engine speed.

Fuel Pump Control

When the ignition is turned on, the PCM grounds PGM-FI main relay 2 (FUEL PUMP) which feeds current to the fuel pump for 2 seconds to pressurize the fuel system. With the engine running, the PCM grounds PGM-FI main relay 2 (FUEL PUMP) and feeds current to the fuel pump. When the engine is not running and the ignition is on, the PCM cuts ground to PGM-FI main relay 2 (FUEL PUMP) which cuts current to the fuel pump.

PGM-FI Main Relay 1 and 2

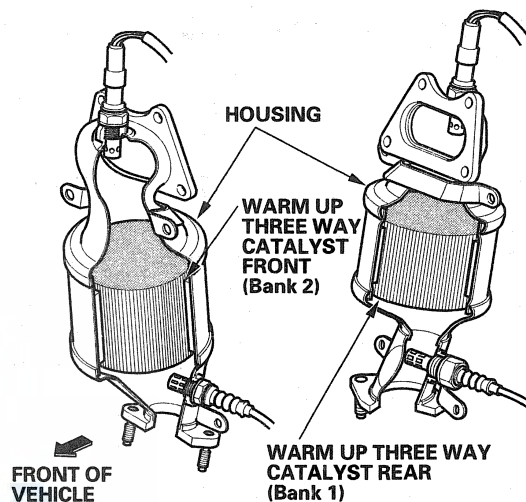
PGM-FI main relay 1 (FI MAIN) is energized whenever the ignition switch is ON (II) to supply battery voltage to the PCM, power to the injectors, and power for PGM-FI main relay 2 (FUEL PUMP). PGM-FI main relay 2 (FUEL PUMP) is energized to supply power to the fuel pump for 2 seconds when the ignition switch is turned ON (II), and when the engine is cranking or running.

Catalytic Converter System

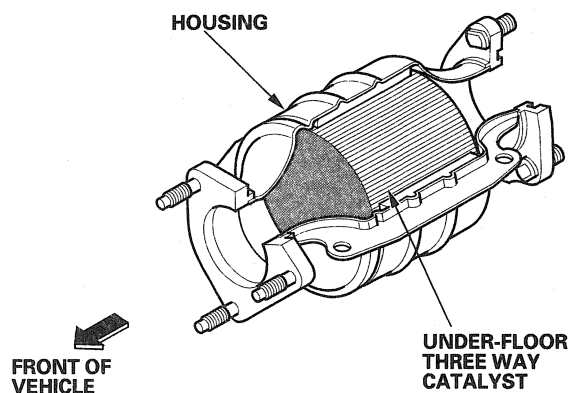
Warm Up Three Way Catalytic Converter (WU-TWC) and Under-Floor Three Way Catalytic Converter (TWC)

The WU-TWC/TWC converts hydrocarbons (HC), carbon monoxide (CO), and oxides of nitrogen (NOx) in the exhaust gas to carbon dioxide (CO₂), nitrogen (N₂), and water vapor.

WU-TWC



TWC



(cont'd)

Fuel and Emissions Systems

System Description (cont'd)

Exhaust Gas Recirculation (EGR) System

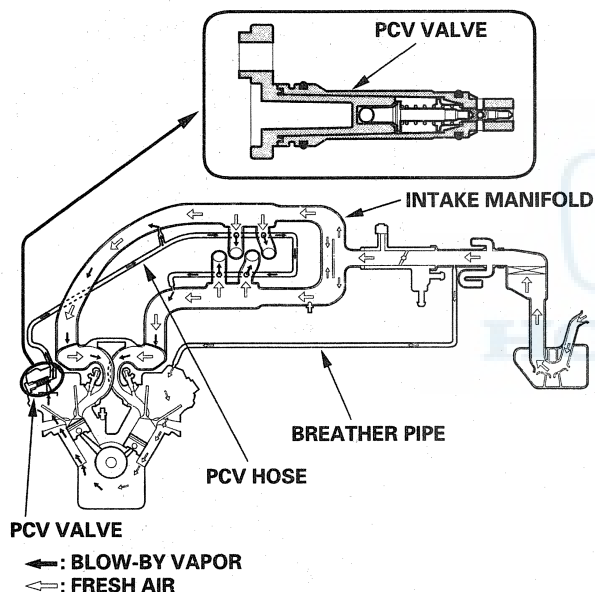
Refer to the system diagram to see a functional layout of the system.

EGR Valve

The EGR valve lowers peak combustion temperatures and reduces oxides of nitrogen emissions (NOx) by recirculating exhaust gas through the intake manifold and into the combustion chambers.

Positive Crankcase Ventilation (PCV) System

The PCV valve prevents blow-by gasses from escaping into the atmosphere by venting them into the intake manifold.



Evaporative Emission (EVAP) Control System

Refer to the system diagram to see a functional layout of the system.

EVAP Canister

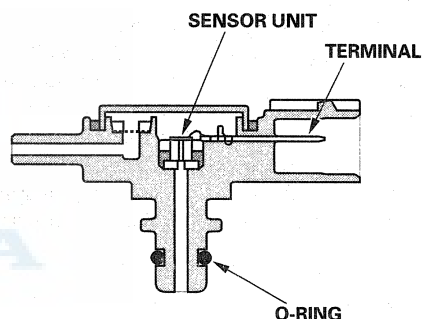
The EVAP canister temporarily stores fuel vapor from the fuel tank until it can be purged from the EVAP canister into the engine and burned.

EVAP Canister Purge Valve

When the engine coolant temperature is below 140 °F (60 °C), the PCM turns off the EVAP canister purge valve which cuts vacuum to the EVAP canister.

Fuel Tank Pressure (FTP) Sensor

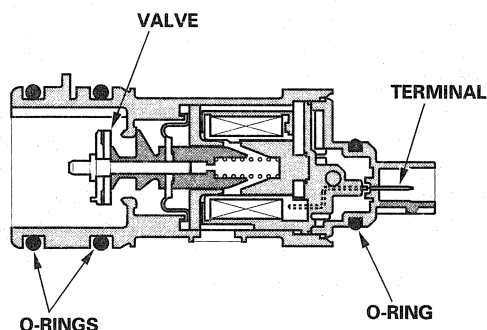
The FTP sensor converts fuel tank absolute pressure into an electrical input to the PCM.



EVAP Canister Vent Shut Valve

The EVAP canister vent shut valve is on the EVAP canister.

The EVAP canister vent shut valve controls the venting of the EVAP canister during the EVAP leak check.



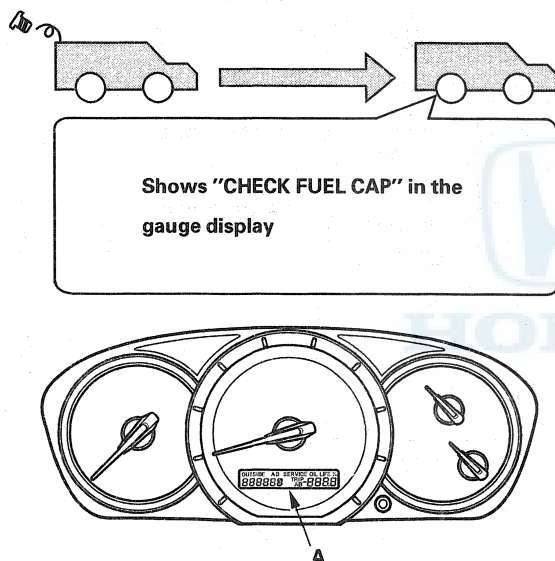


Fuel Cap Warning Message

The PCM will detect a loose or missing fuel fill cap as an evaporative system leak and alerts the driver by showing a warning message in the gauge display.

First drive cycle

The first time a leak is detected a "CHECK FUEL CAP" message in the gauge display (A). To scroll to another message, press the select/reset button. The "CHECK FUEL CAP" message will appear each time you restart the engine until the system turns the message off. Turn the engine off then replace or tighten the fuel fill cap until it clicks at least once. The message should go off after several days of normal driving after the fuel fill cap has been tightened or replaced.



To make the message go off (With the HDS)

Procedure

1. Tighten the fuel fill cap until it clicks.
2. Clear the Temporary DTC with the HDS.
3. Verify there is no leak by doing the EVAP FUNCTION TEST in the INSPECTION MENU with the HDS.

To make the message go off (Without the HDS) ('06 model)

Procedure

1. Tighten the fuel fill cap until it clicks.
2. The message should go off after several days of normal driving.

To make the message go off (Without the HDS) ('07-08 models)

Procedure

1. Tighten the fuel fill cap until it clicks.
2. Turn the ignition switch ON (II), then turn the ignition switch OFF.
3. Repeat Step 2 two more times.

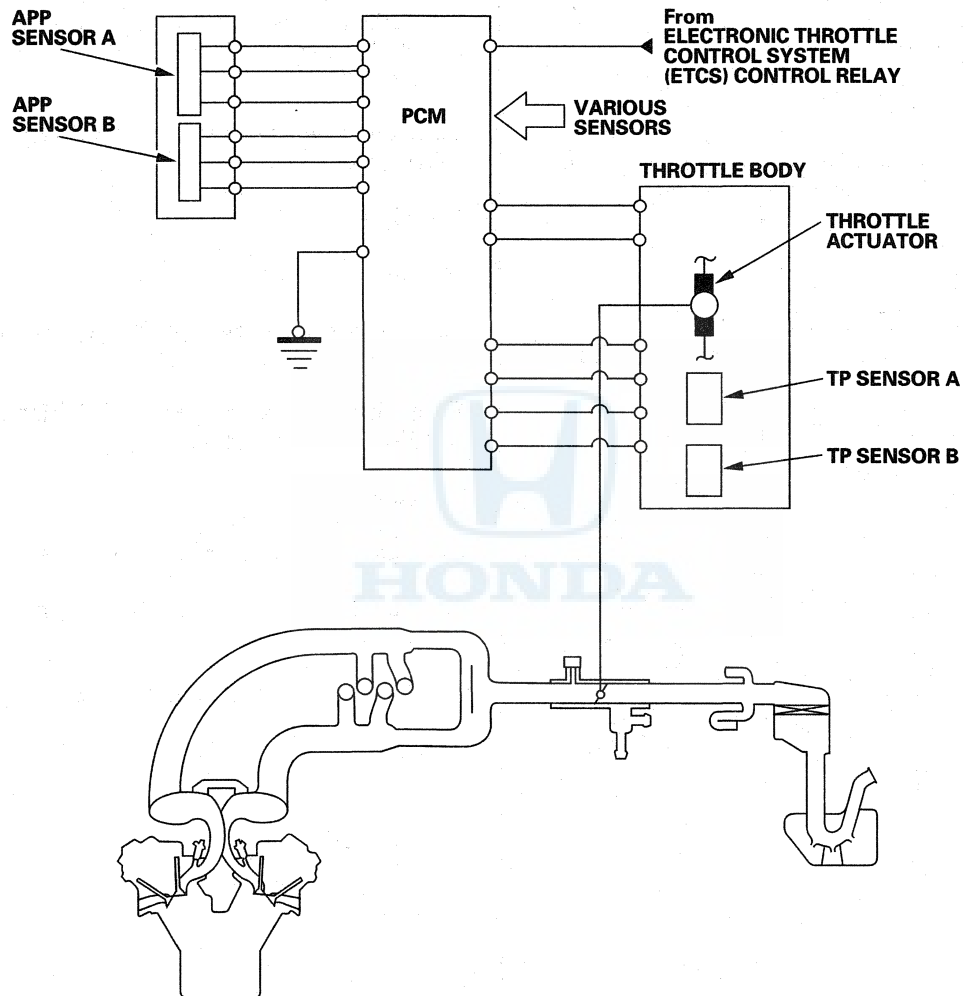
(cont'd)

Fuel and Emissions Systems

System Description (cont'd)

Electronic Throttle Control System Diagram

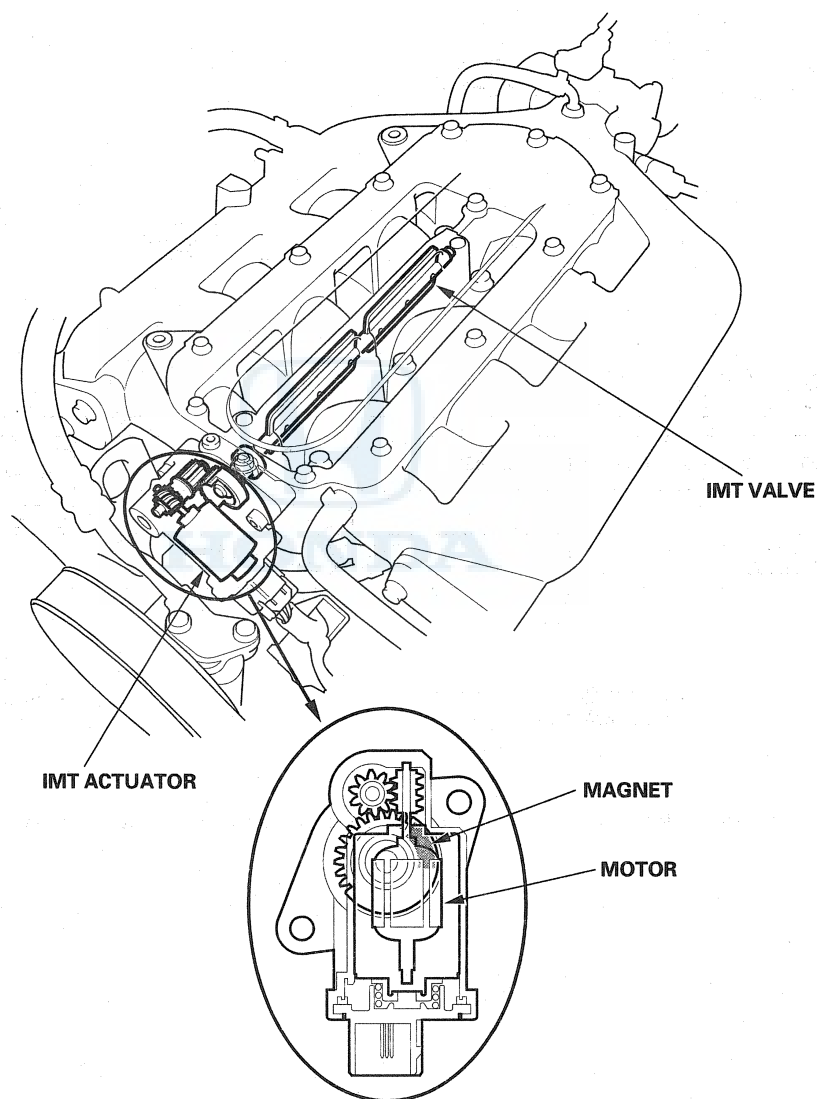
The electronic throttle control system consists of the throttle actuator, throttle position (TP) sensor A/B, accelerator pedal position (APP) sensor A/B, the electronic throttle control system (ETCS) control relay, and the PCM.





Intake Manifold Tuning (IMT) Valve System (J35Z1 Engine)

Engine power is adjusted by opening and closing the intake manifold tuning (IMT) actuator. When the valve is closed, there is high torque at low engine speed. When the valve is open, there is high torque at high engine speed. The intake manifold tuning (IMT) valve actuator has a sensor that detects the IMT valve position and sends it to the PCM.



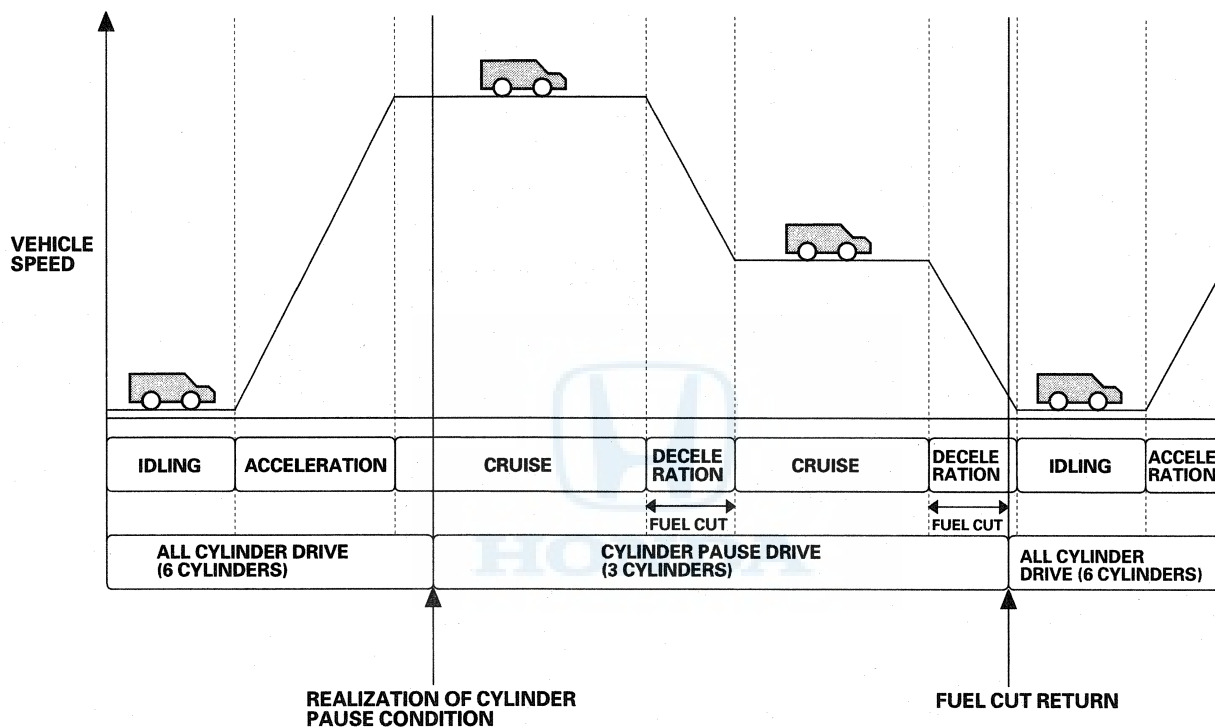
(cont'd)

Fuel and Emissions Systems

System Description (cont'd)

Variable Cylinder Management (VCM) System (J35Z1 Engine)

The i-VTEC (intelligent variable valve timing and lift electric control system) adopts a cylinder pause VTEC (variable cylinder system). The cylinder pause VTEC system pauses the intake and exhaust valves on the rear bank under certain conditions such as cruise and fuel cut (see illustration). Since the valves on the rear bank are closed, the frictional losses from valve spring compression and pumping are reduced because no air is compressed in the rear bank. This reduces engine drag.



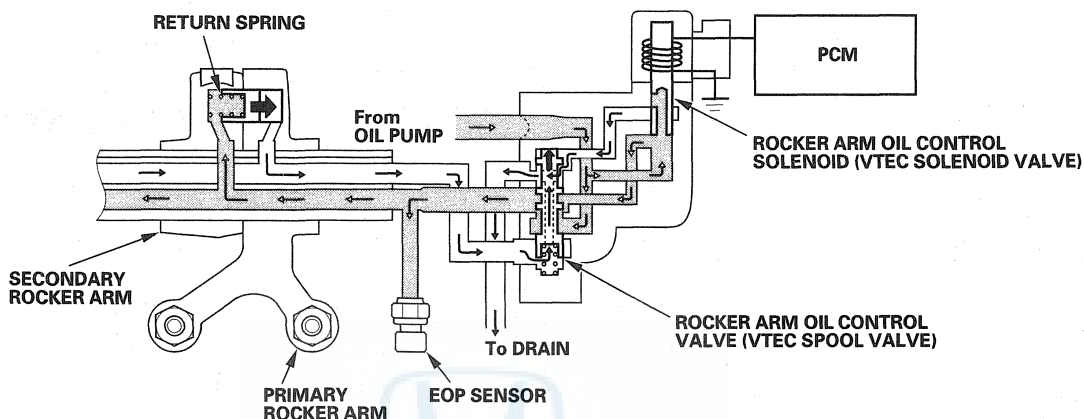
The vibration generated by three-cylinder operation is counteracted by an active control engine mount system.



Operation

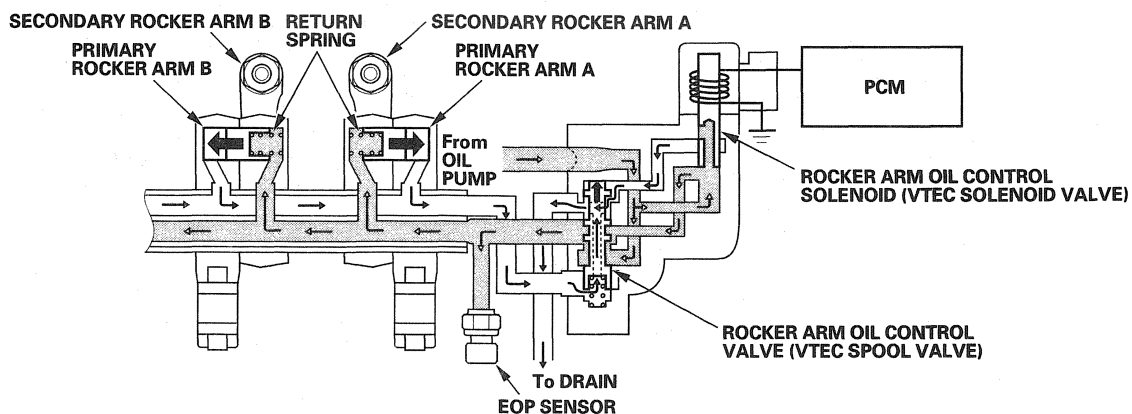
During 6 Cylinder Mode (intake valve side)

With the rocker arm oil control solenoid (VTEC solenoid valve) off, the rocker arm oil control valve (VTEC spool valve) directs oil pressure. Oil pressure then enters the secondary rocker arm from the oil passage in the intake rocker shaft, and it moves the VTEC switching piston in the rocker arm. This causes the VTEC switching piston to slide into primary rocker arm, locking primary rocker arm and the secondary rocker arm together. Primary rocker arm is then actuated by the secondary rocker arm.



During 6 Cylinder Mode (exhaust valve side)

With the rocker arm oil control solenoid (VTEC solenoid valve) off, the rocker arm oil control valve (VTEC spool valve) directs oil pressure. Oil pressure then enters secondary rocker arms A and B from the oil passage in the exhaust rocker shaft, and it moves the VTEC switching piston in the rocker arm. This causes the VTEC switching pistons to slide into primary rocker arms A and B, locking primary rocker arms A and B to the secondary rocker arms A and B. Secondary rocker arms A and B are then actuated by the primary rocker arms A and B.



When the engine is off, the VTEC switching piston is held in the engaged position by the return spring. This allows the rocker arms to operate when oil pressure is low during cranking.

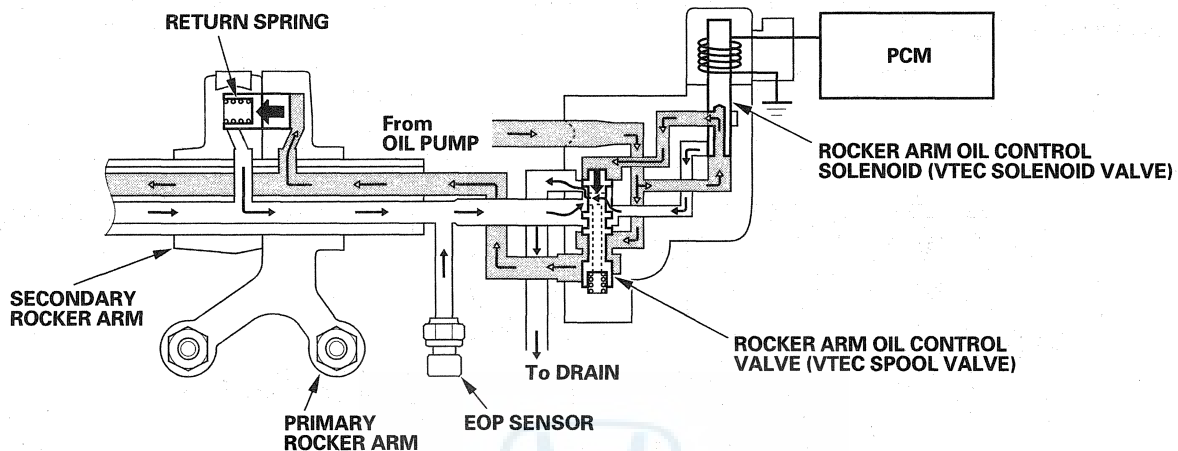
(cont'd)

Fuel and Emissions Systems

System Description (cont'd)

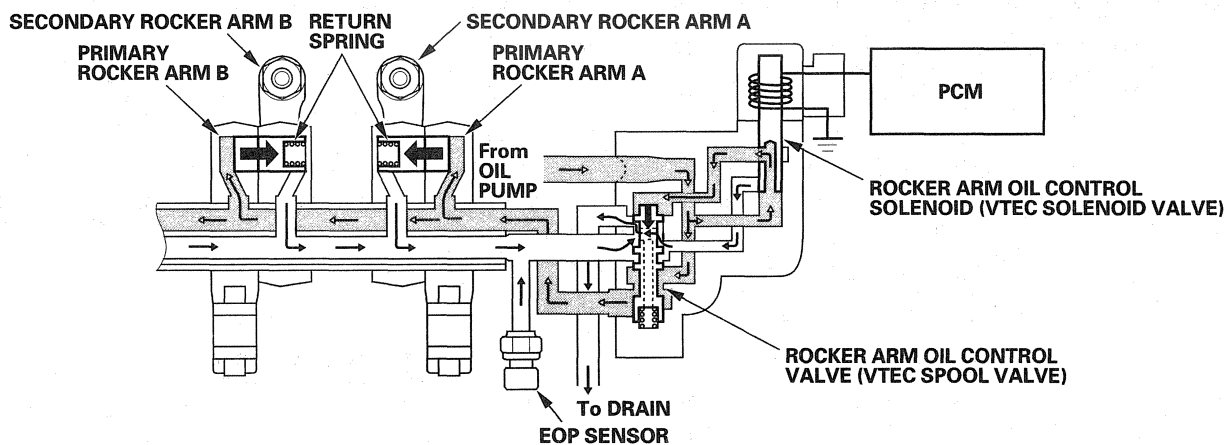
During Cylinder Pause Mode (intake valve side)

With the rocker arm oil control solenoid (VTEC solenoid valve) energized by the PCM, the rocker arm oil control valve (VTEC spool valve) switches oil pressure. Oil pressure then enters the primary rocker arm from the oil passage in the intake rocker shaft. This forces the VTEC switching piston into the secondary rocker arm and against the return spring, and disengages the primary rocker arm from the secondary rocker arm to stop valve actuation. The secondary rocker arm uses a lost motion spring to maintain tension.



During Cylinder Pause Mode (exhaust valve side)

With the rocker arm oil control solenoid (VTEC solenoid valve) energized by the PCM, the rocker arm oil control valve (VTEC spool valve) switches oil pressure. Oil pressure then enters primary rocker arms A and B from the oil passage in the exhaust rocker shaft. This forces the VTEC switching pistons into secondary rocker arms A and B and against the return springs, and disengages the secondary rocker arms from the primary rocker arms to stop valve actuation. The primary rocker arm uses a lost motion spring to maintain tension.

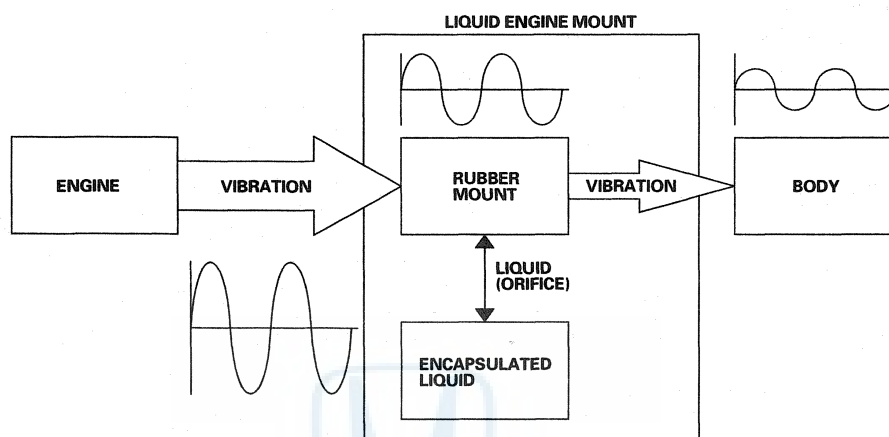




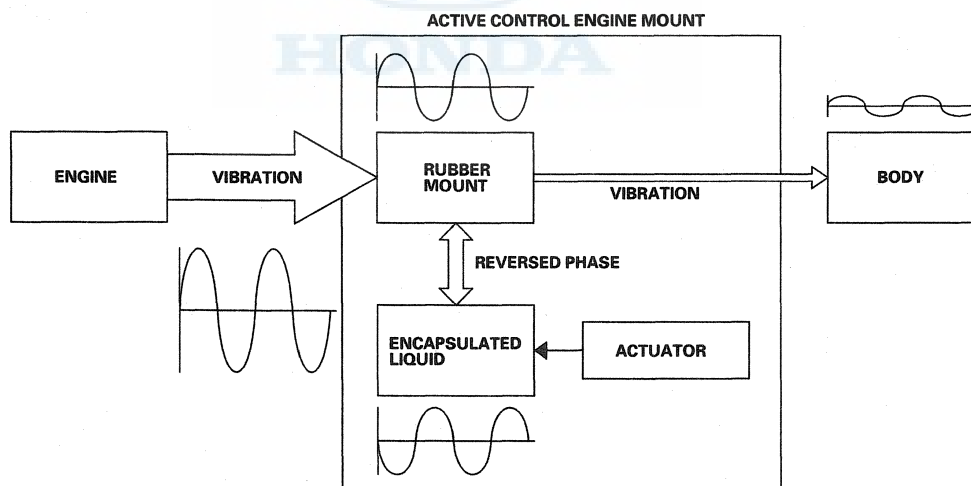
Active Control Engine Mount (ACM) System (J35Z1 Engine)

The active control engine mount (ACM) system decreases engine-to-chassis vibration at low rpm and when the engine is in cylinder pause mode. The system includes conventional, liquid-filled engine mounts that absorb vibration. In addition, the front and rear engine mounts contain an actuator that cancels engine vibration by producing a counter, or reverse vibration. The transmission has standard rubber mounts.

CONVENTIONAL LIQUID ENGINE MOUNT



ACTIVE CONTROL ENGINE MOUNT



(cont'd)

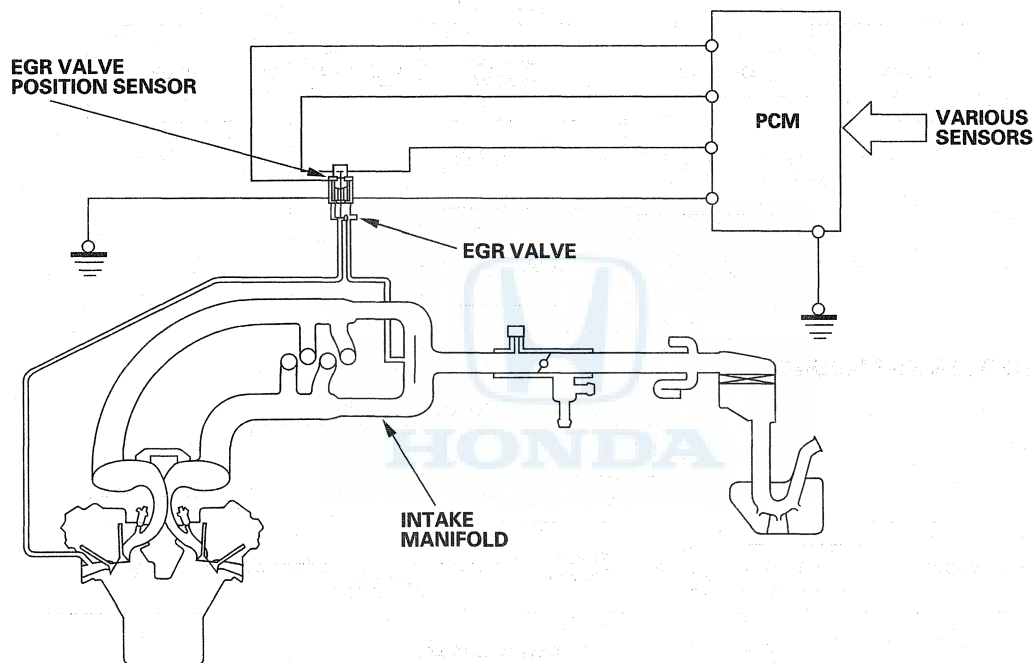
Fuel and Emissions Systems

System Description (cont'd)

Exhaust Gas Recirculation (EGR) System Diagram

The EGR system reduces oxides of nitrogen (NOx) emissions by recirculating exhaust gas through the EGR valve and the intake manifold into the combustion chambers. The PCM memory contains the ideal EGR valve position for various operating conditions.

The EGR valve position sensor detects the amount of EGR valve lift, and sends it to the PCM. The PCM then compares it with the ideal lift in its memory (based on signals sent from other sensors). If there is any difference between the two, the PCM cuts current to the EGR valve.

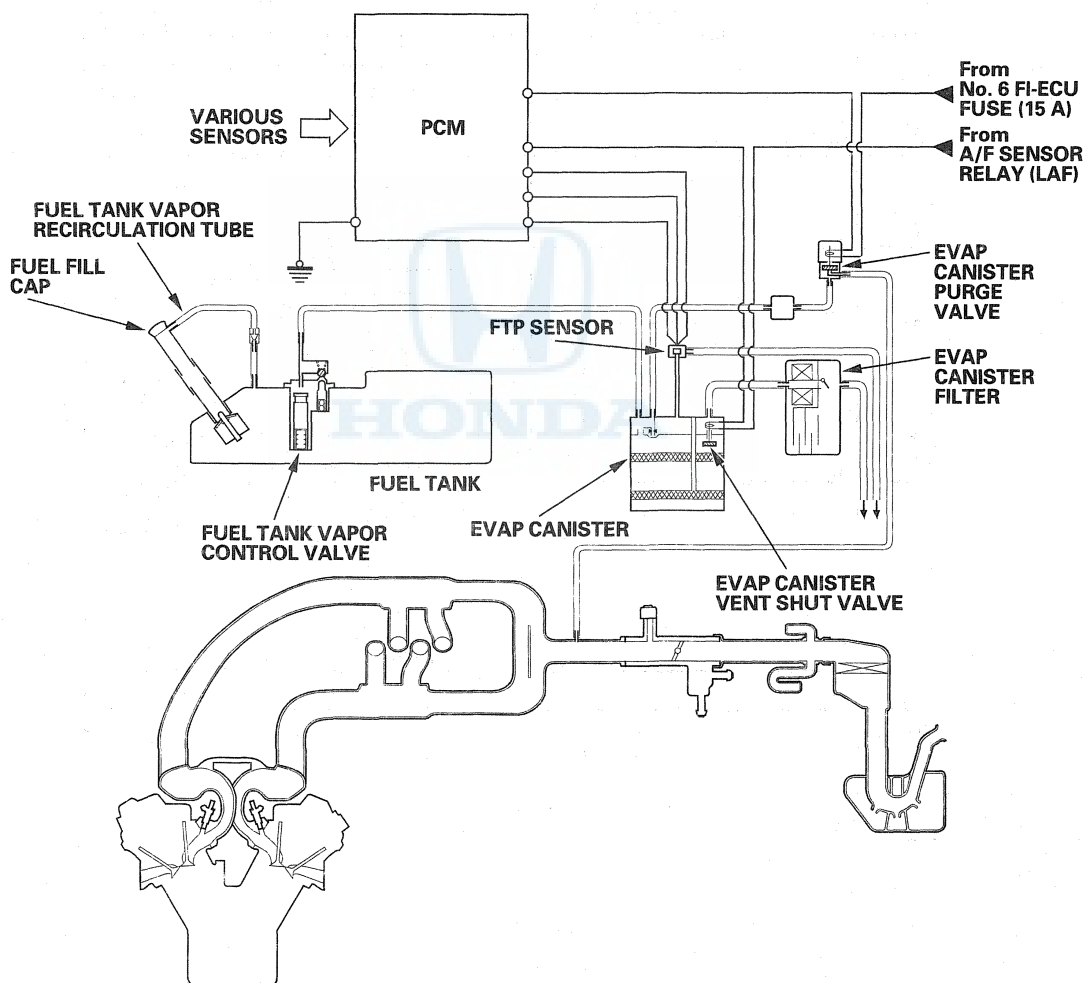




Evaporative Emission (EVAP) Control Diagram

The EVAP controls minimize the amount of fuel vapor escaping to the atmosphere. Vapor from the fuel tank is temporarily stored in the EVAP canister until it can be purged from the canister into the engine and burned.

- The EVAP canister is purged by drawing fresh air through it and into a port on the intake manifold. The purging vacuum is controlled by the EVAP canister purge valve, which operates whenever engine coolant temperature is above 140 °F (60 °C).
- During refueling, the fuel tank vapor control valve opens with the pressure in the fuel tank, and feeds the fuel vapor to the EVAP canister.

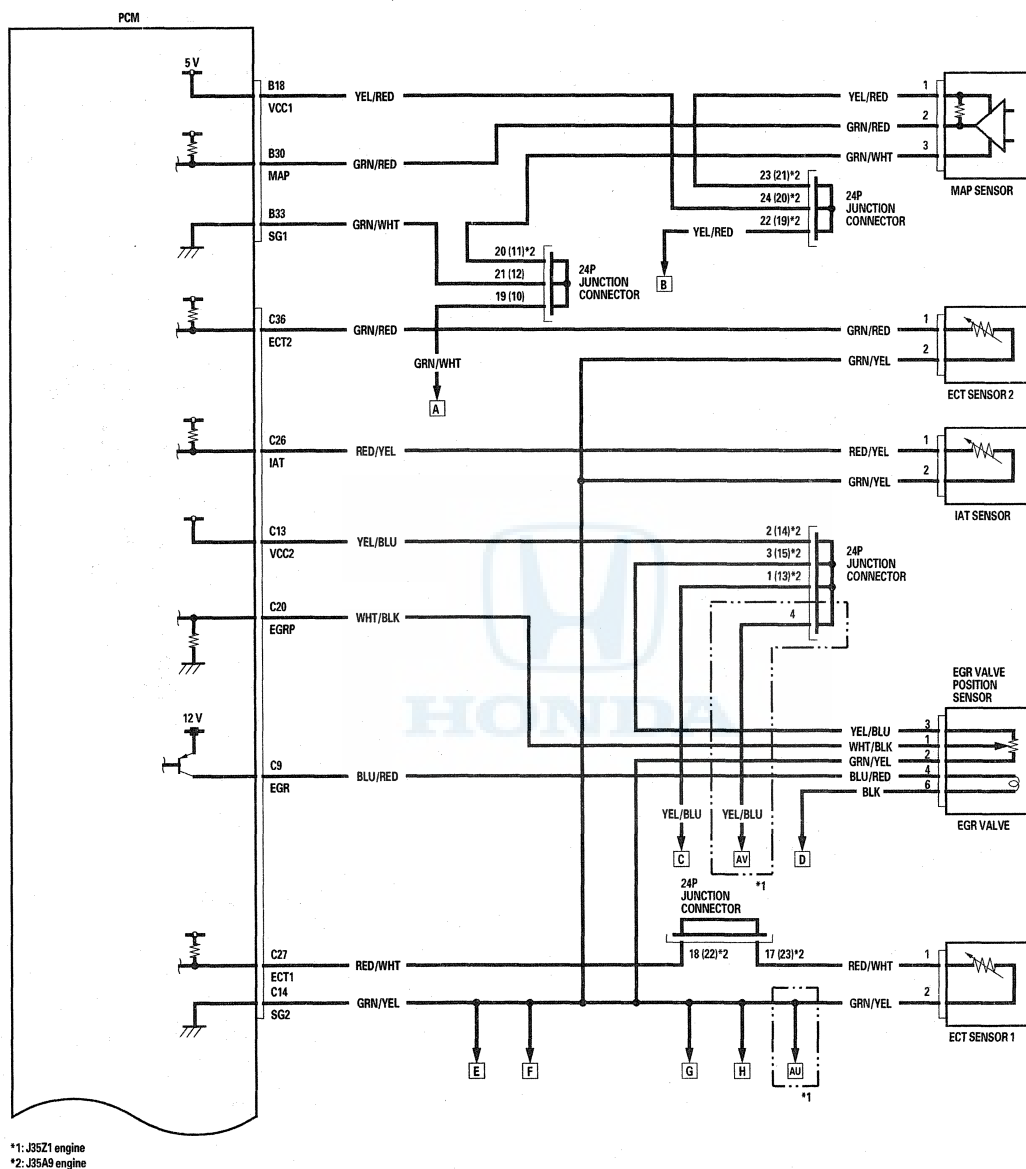


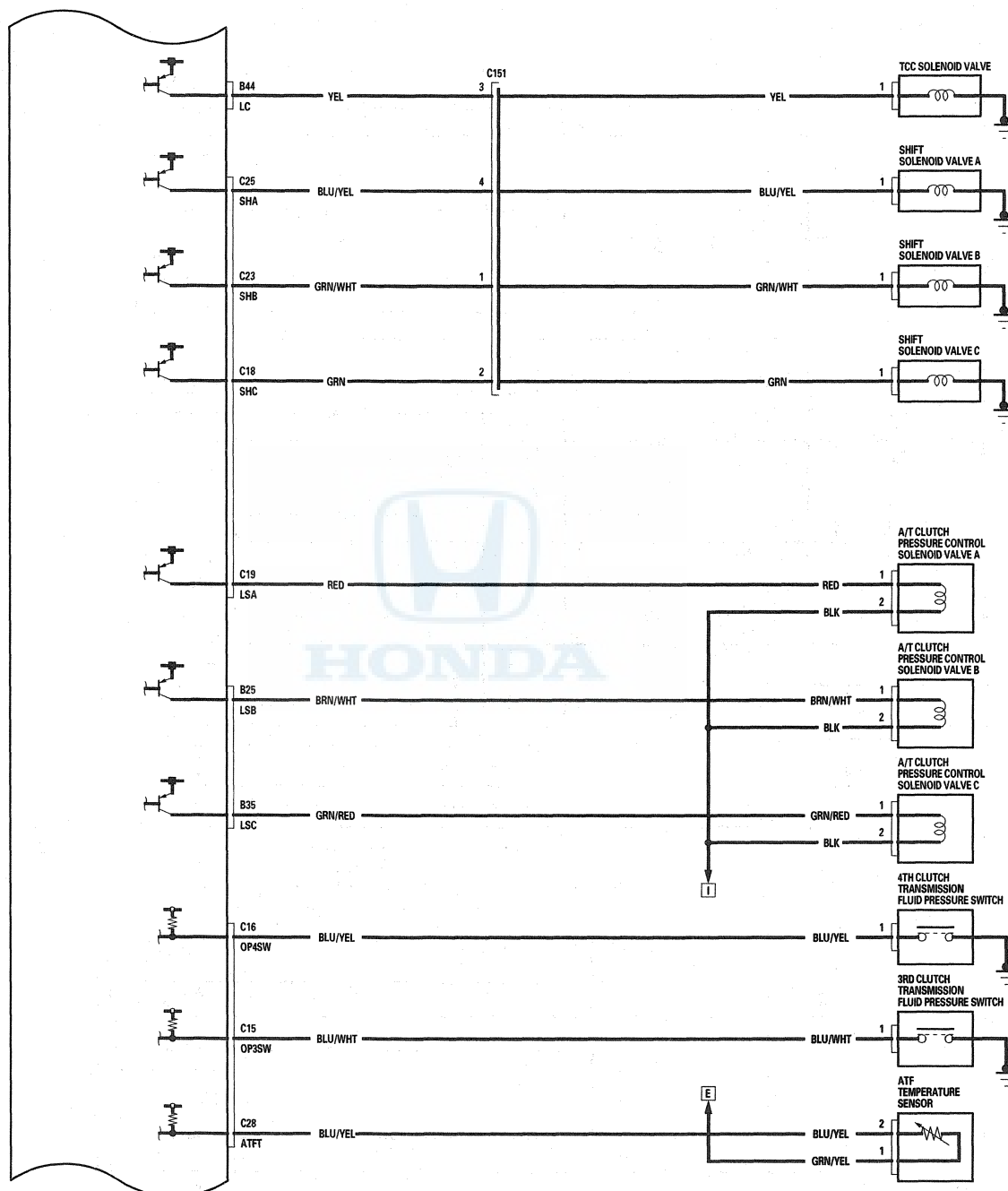
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Fuel and Emissions Systems

System Description (cont'd)

PCM Circuit Diagram



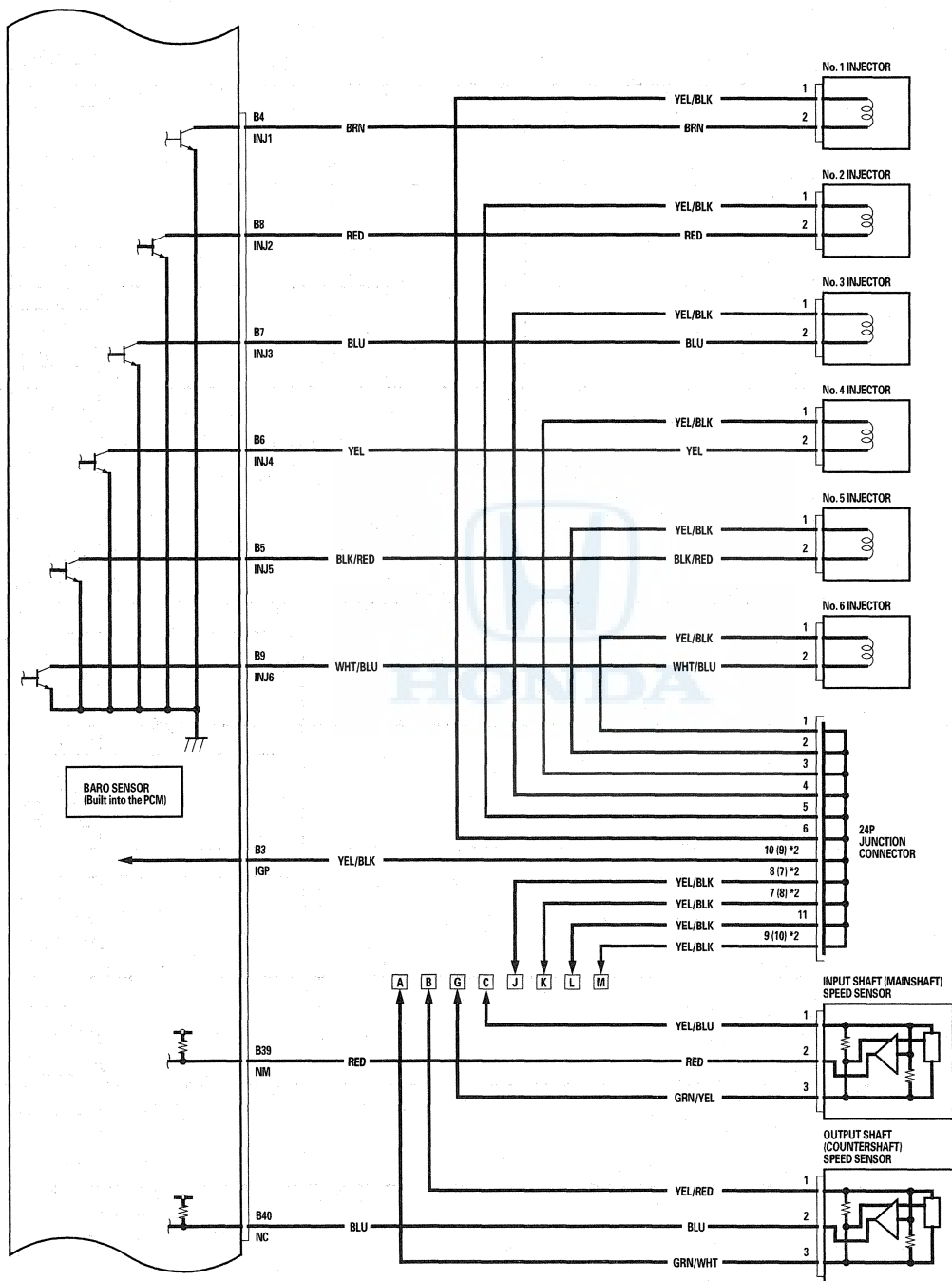


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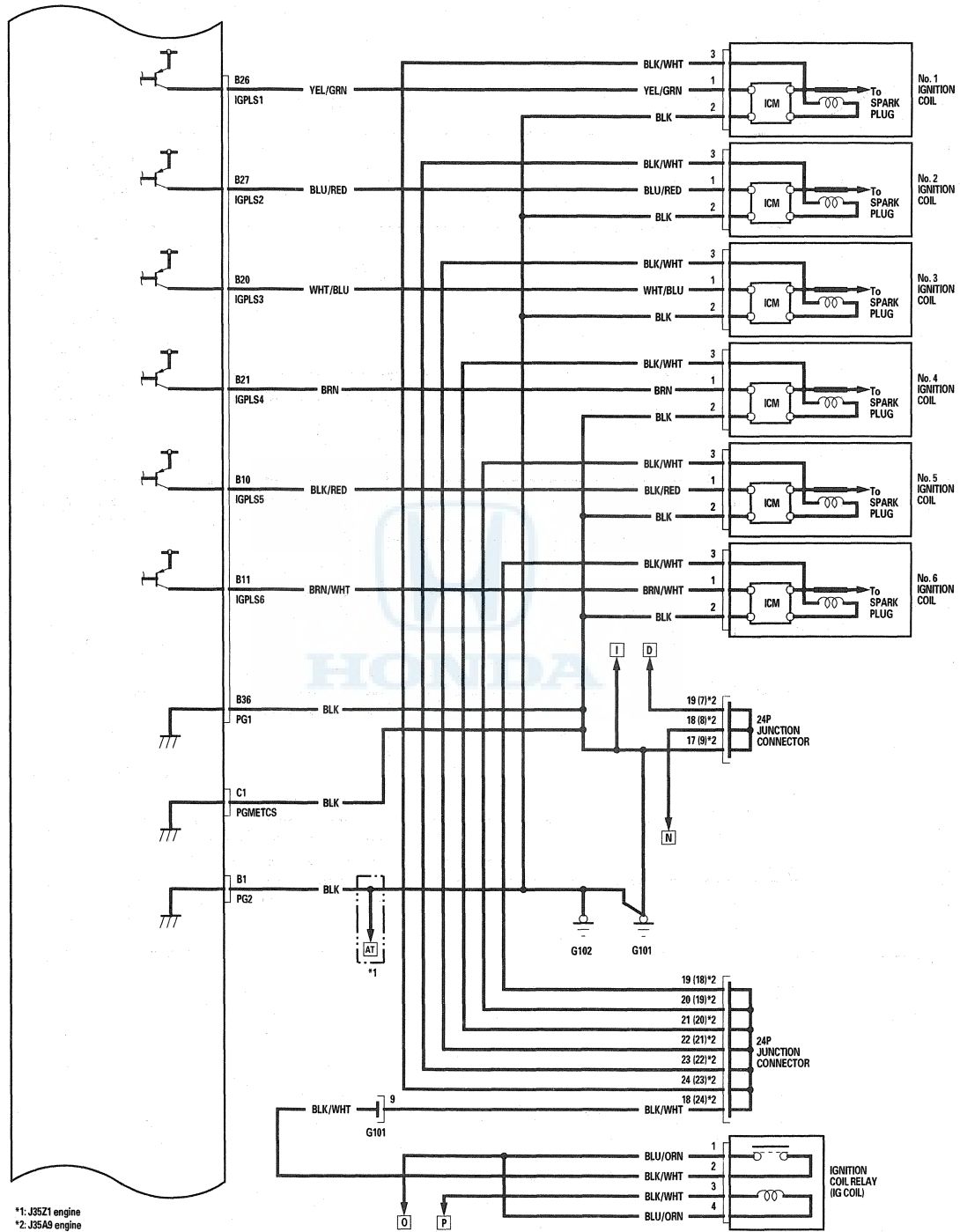
Fuel and Emissions Systems

System Description (cont'd)

PCM Circuit Diagram (cont'd)



*2: J35A9 engine

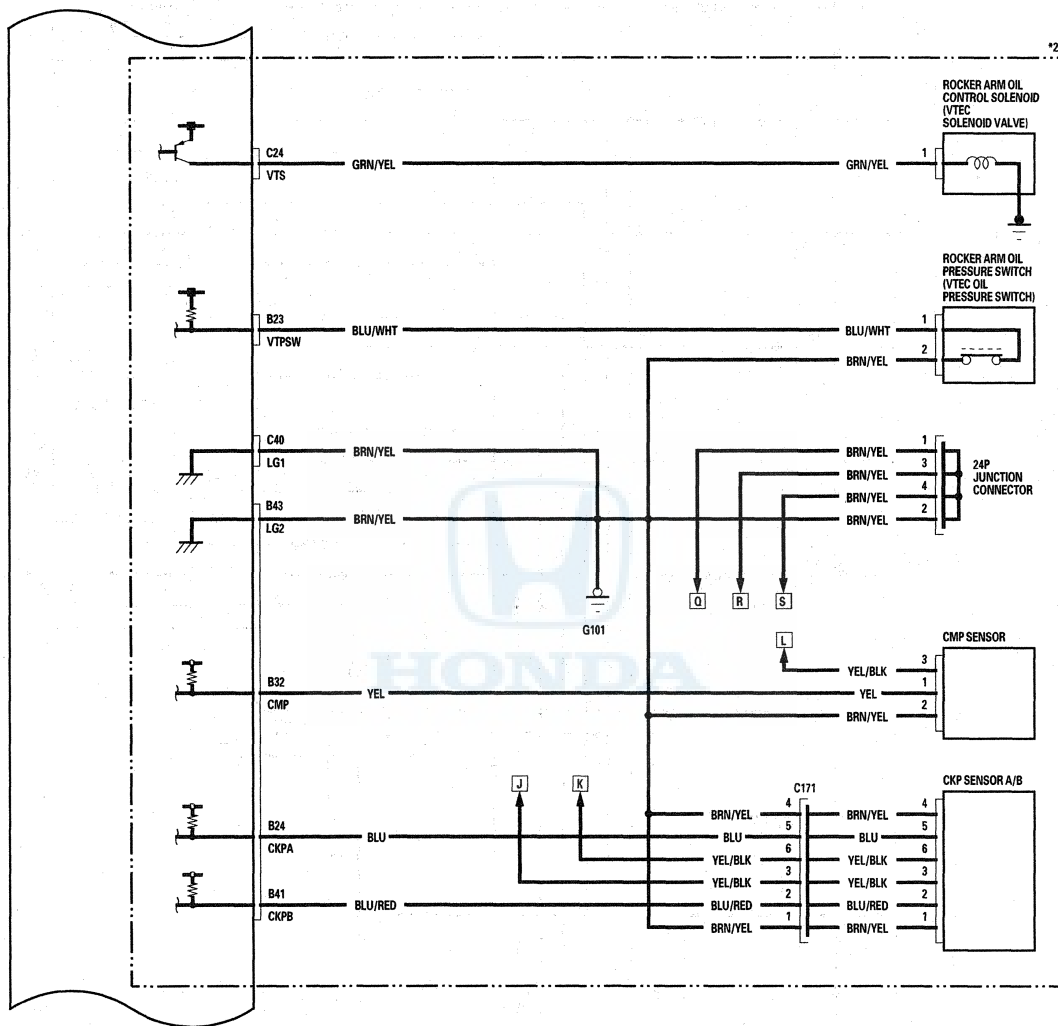


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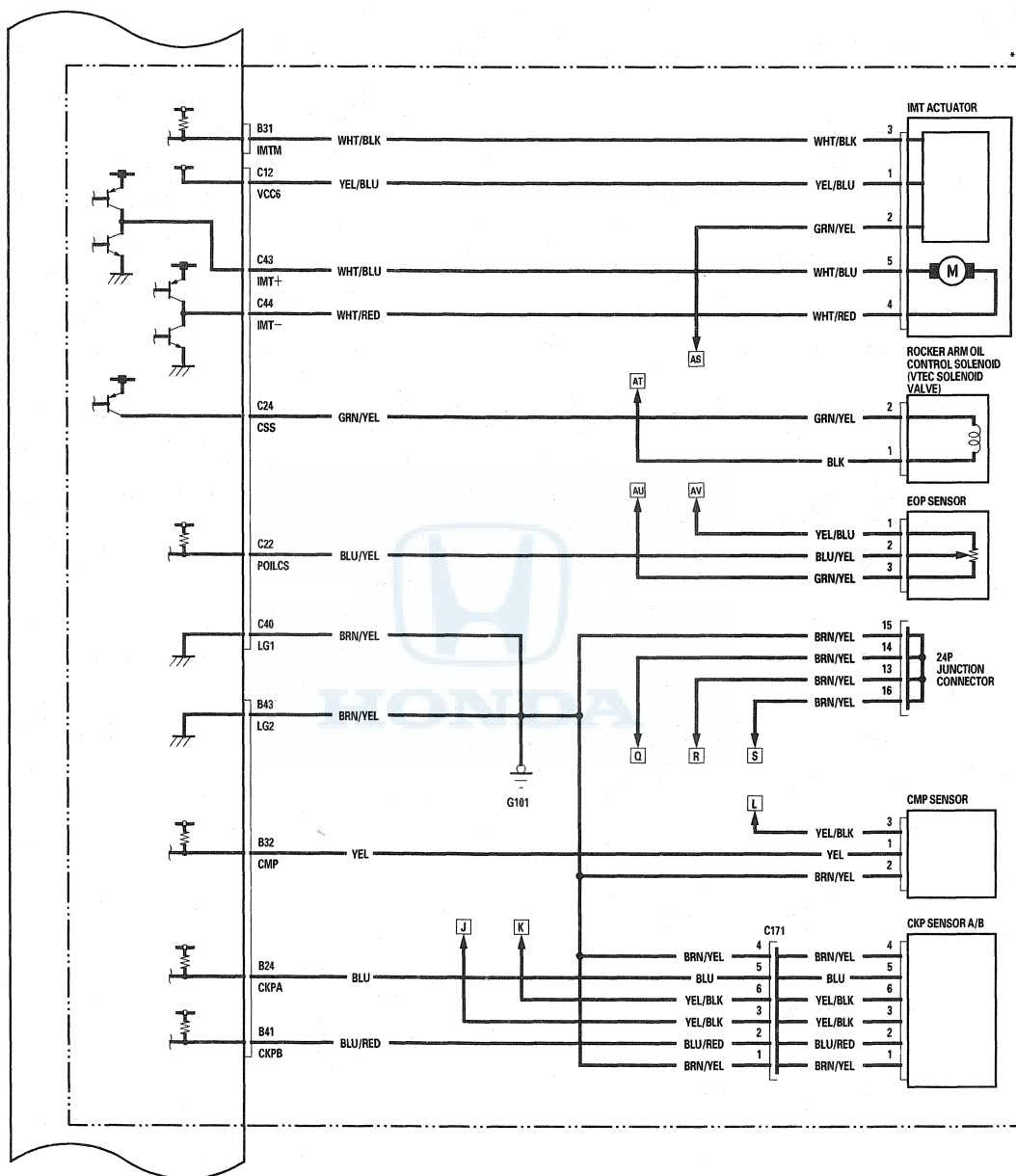
Fuel and Emissions Systems

System Description (cont'd)

PCM Circuit Diagram (cont'd)



*2: J35A9 engine



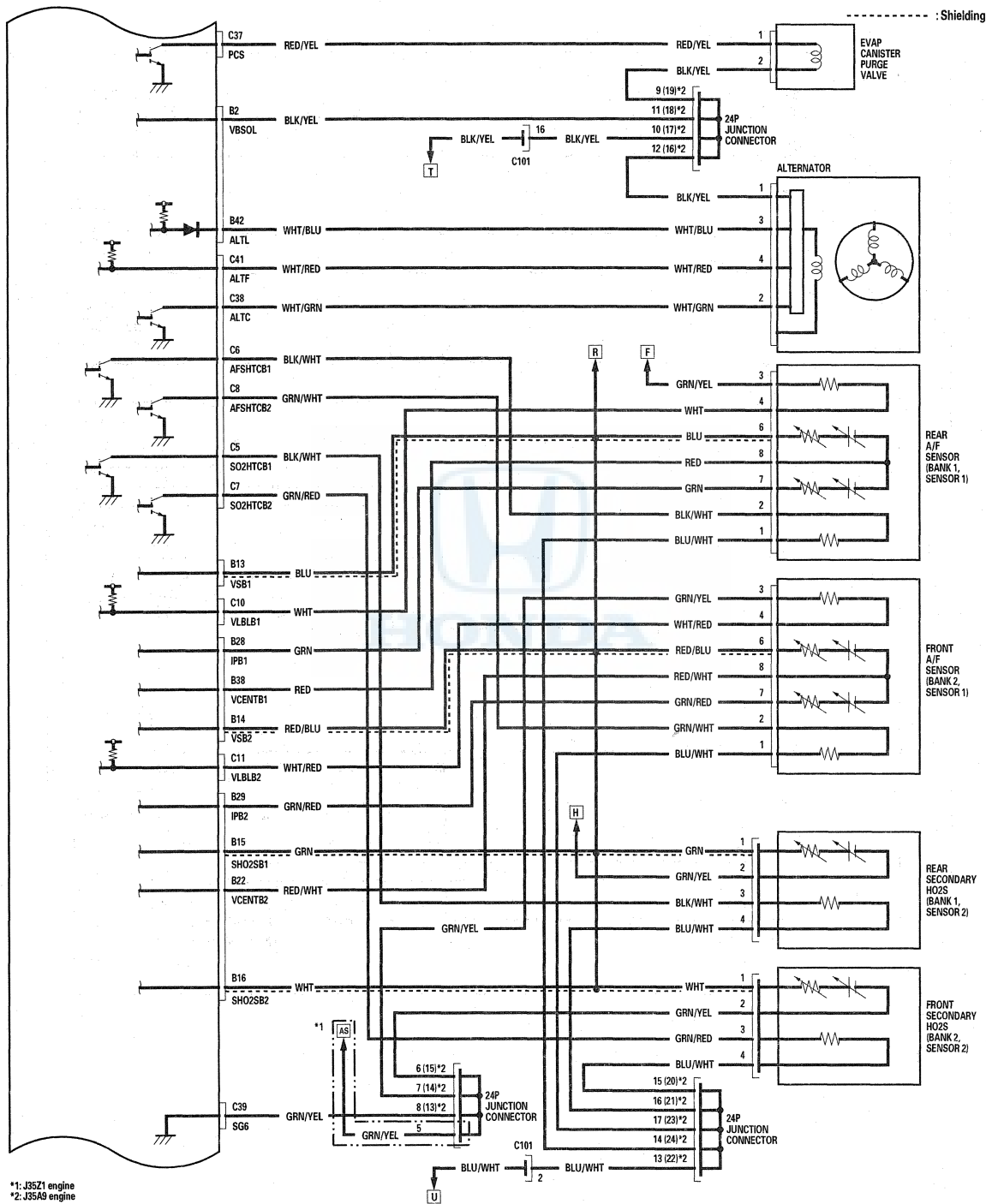
*1: J35Z1 engine

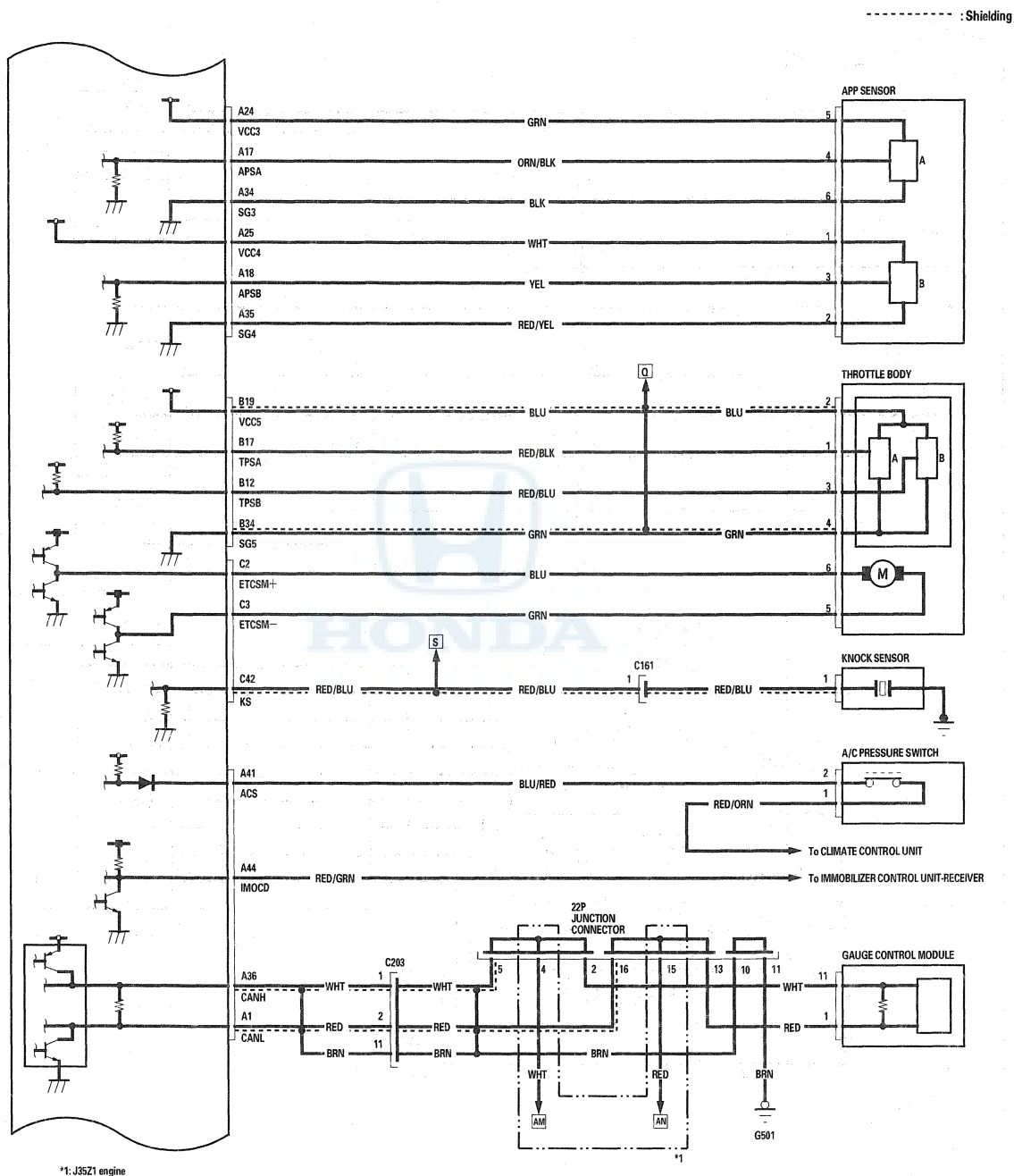
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Fuel and Emissions Systems

System Description (cont'd)

PCM Circuit Diagram (cont'd)



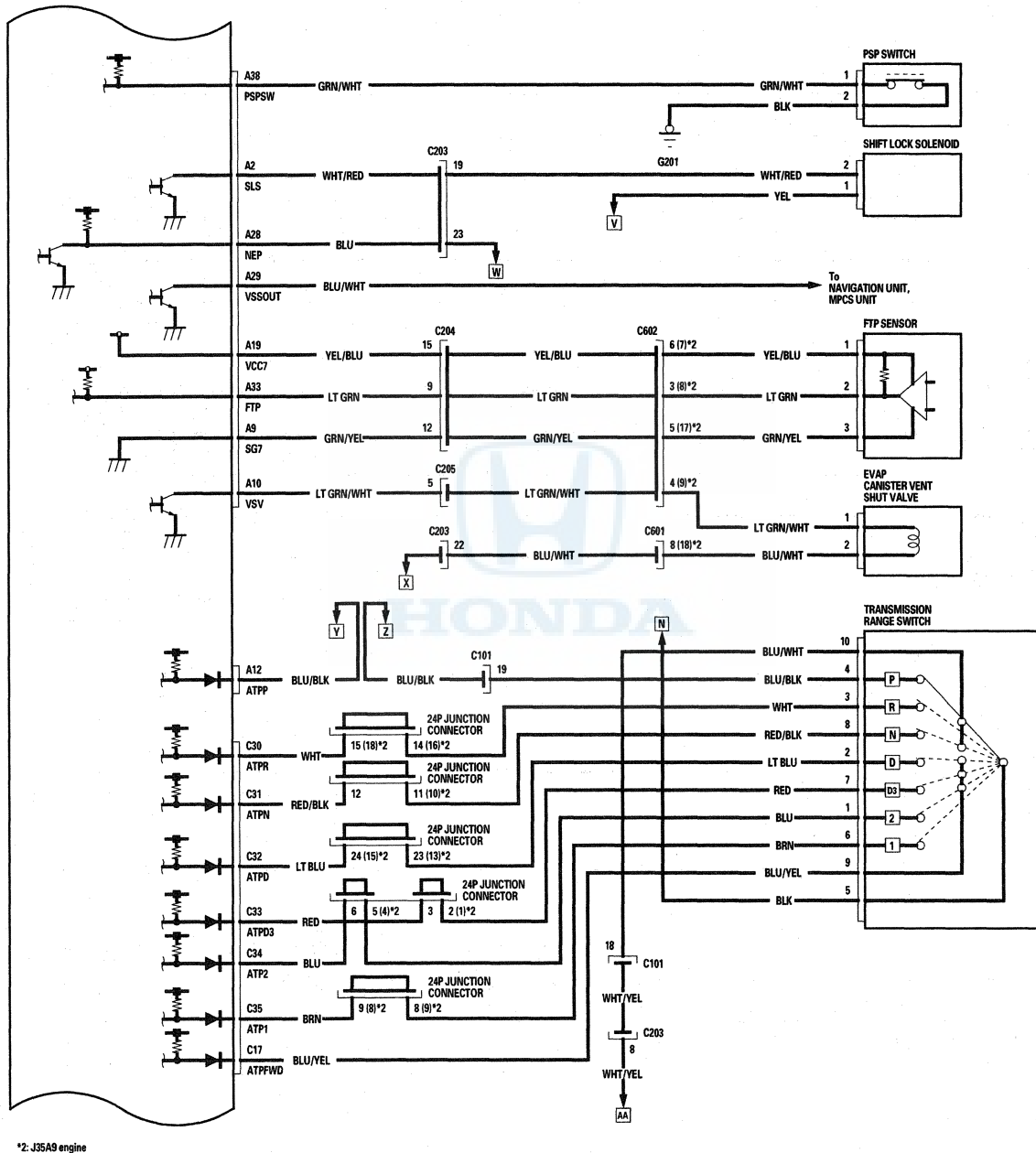


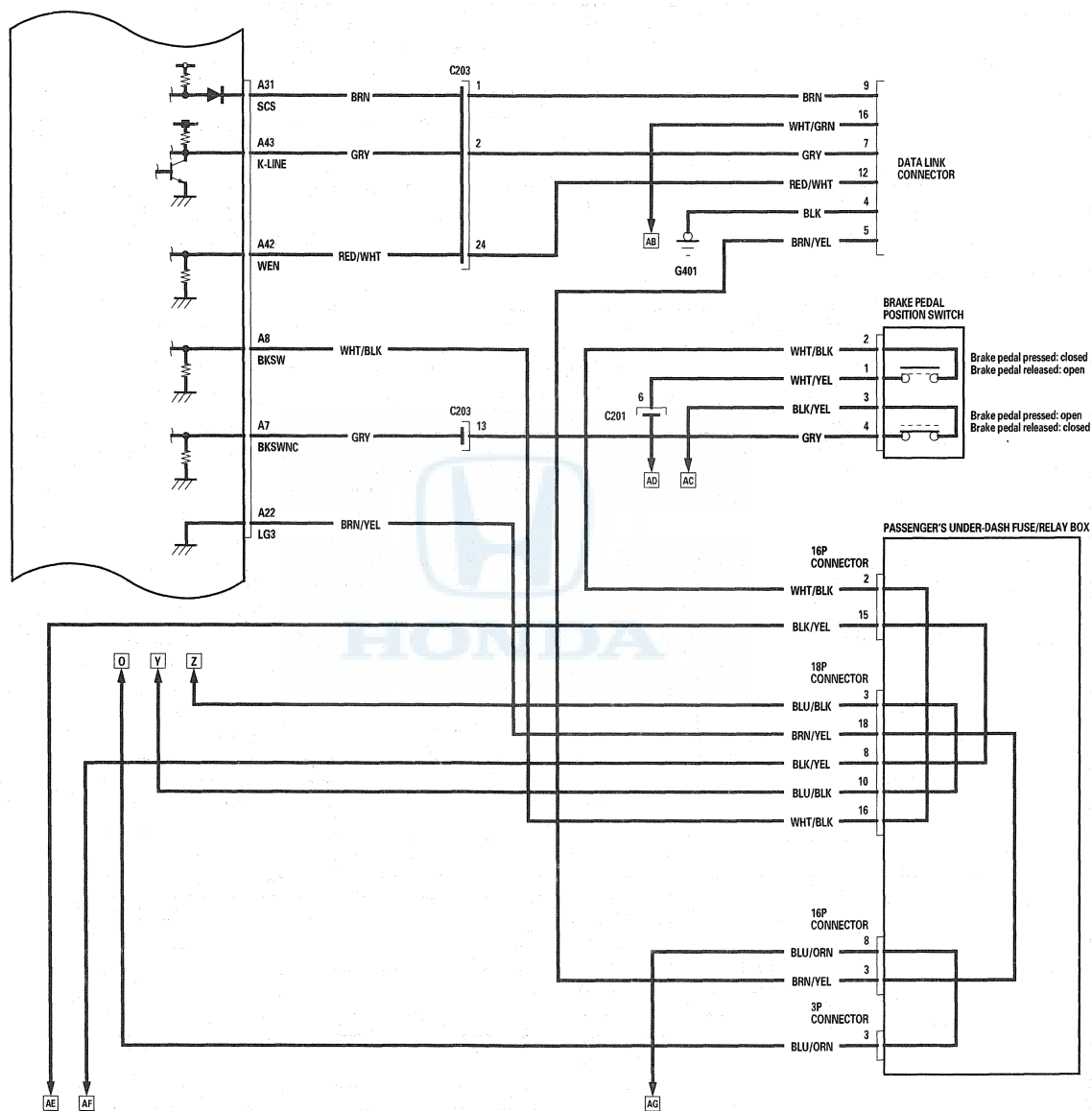
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Fuel and Emissions Systems

System Description (cont'd)

PCM Circuit Diagram (cont'd)



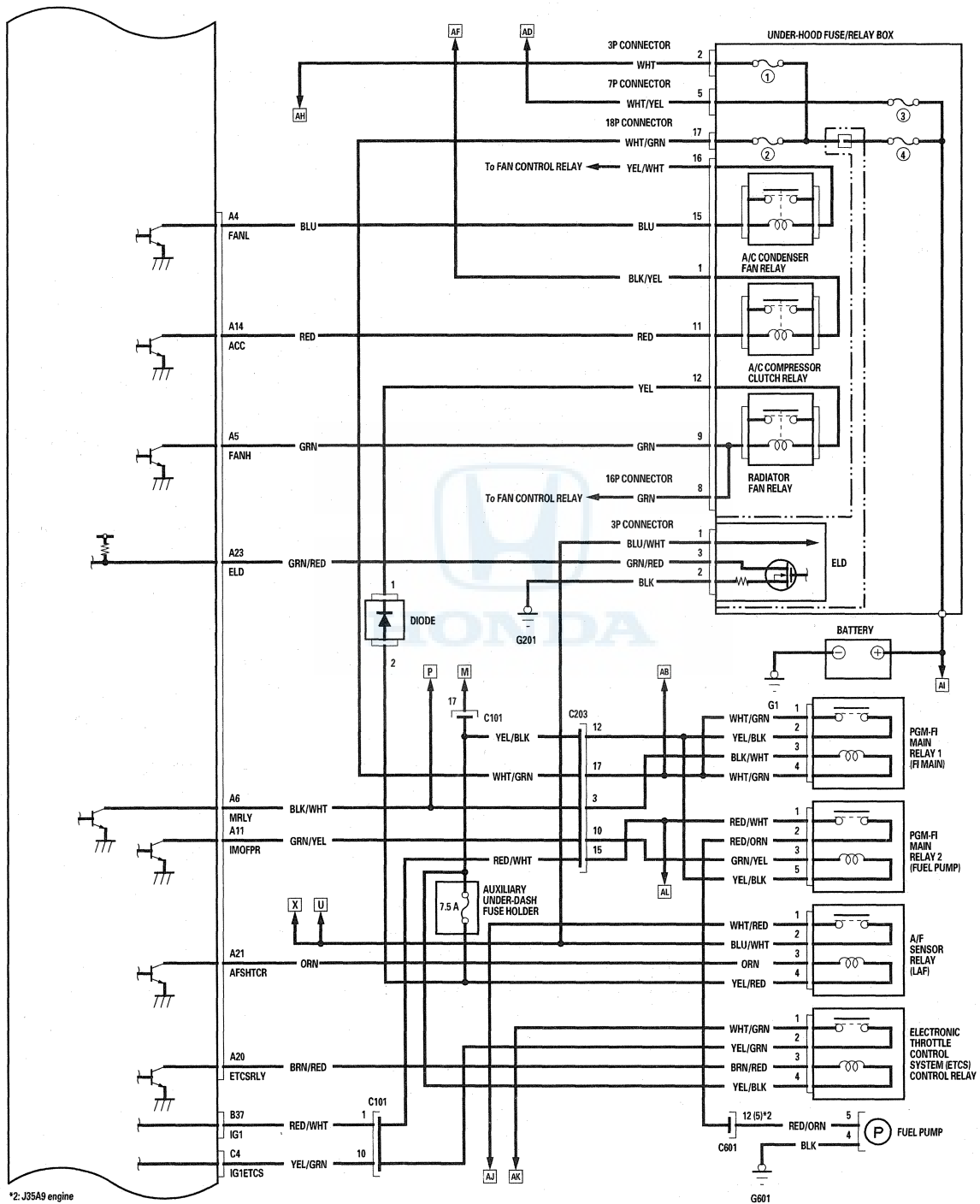


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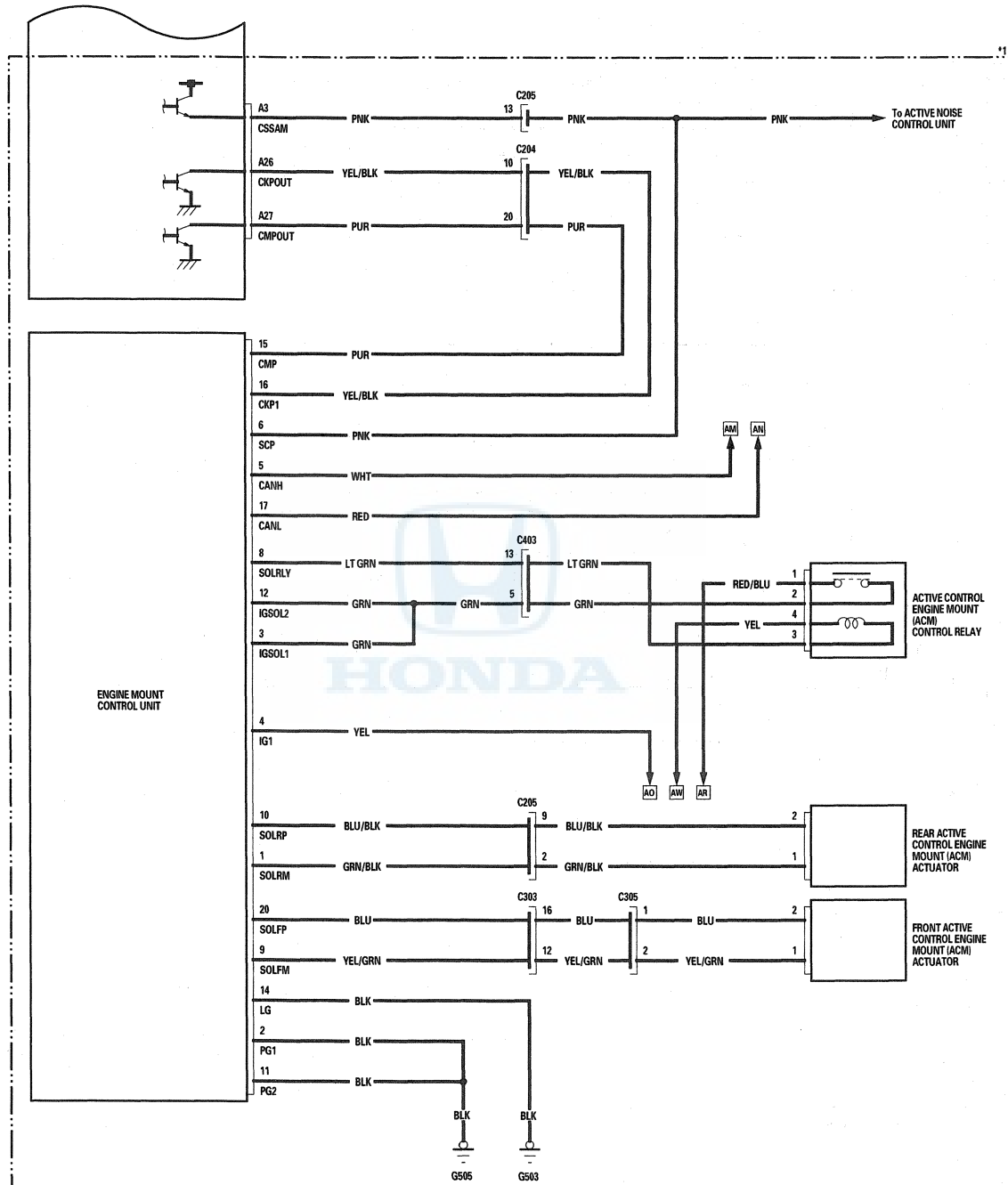
Fuel and Emissions Systems

System Description (cont'd)

PCM Circuit Diagram (cont'd)



*2: J35A9 engine



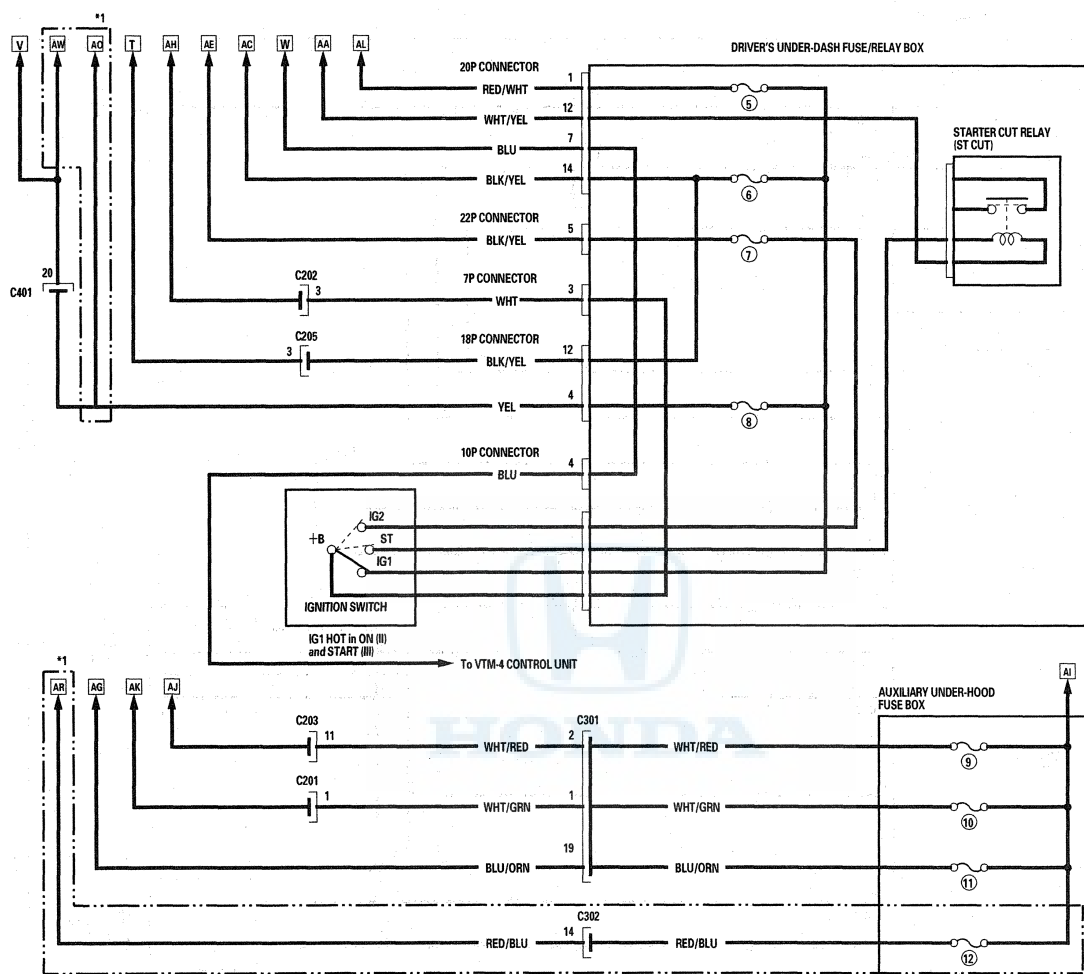
*1: J35Z1 engine

(cont'd)

Fuel and Emissions Systems

System Description (cont'd)

PCM Circuit Diagram (cont'd)



UNDER-HOOD FUSE/RELAY BOX:

- ① No. 42 IG1 MAIN (50 A)
- ② No. 46 ACGS (15 A)
- ③ No. 47 STOP (20 A)
- ④ No. 41 BATTERY (120 A)

DRIVER'S UNDER-DASH FUSE/RELAY BOX:

- ⑤ No. 1 FUEL PUMP (15 A)
- ⑥ No. 6 F-ECU (15 A)
- ⑦ No. 3 HEATER CONTROL, A/C CLUTCH RELAY, COOLING FAN RELAY (7.5 A)
- ⑧ No. 9 BACK UP LIGHT, INSTRUMENT LIGHT (10 A)

AUXILIARY UNDER-HOOD FUSE BOX:

- ⑨ No. 9 LAF (A/F SENSOR) (15 A)
- ⑩ No. 7 DBW (THROTTLE ACTUATOR CONTROL) (15 A)
- ⑪ No. 8 IG COIL (15 A)
- ⑫ No. 5 ACM (10 A)

*1: J3521 engine



How to Set Readiness Codes

Malfunction Indicator Lamp (MIL) Indication (In relation to Readiness Codes)

The vehicle has certain "readiness codes" that are part of the on-board diagnostics for the emissions systems. If the vehicle's battery has been disconnected or gone dead, if the DTCs have been cleared, or if the PCM has been reset, these readiness codes are reset to incomplete. In some states, part of the emissions testing is to make sure these codes are set to complete. If all of them are not set to complete, the vehicle may fail the emission test, or the test cannot be finished.

To check if the readiness codes are set to complete, turn the ignition switch ON (II), but do not start the engine. The MIL will come on for 15–20 seconds. If it then goes off, the readiness codes are complete. If it flashes five times, one or more readiness codes are not set to complete. To set readiness codes from incomplete to complete, do the procedure for the appropriate code.

To check the status of a specific DTC system, check the OBD status in the DTC MENU with the HDS (see page 11-9). This screen displays the code, the current data list of the enable criteria, and the status of the readiness testing.

Catalytic Converter Monitor and Readiness Code

NOTE:

- Do not turn the ignition switch off during the procedure.
- All readiness codes are cleared when the battery is disconnected, if the DTCs have been cleared, or if the PCM is reset with the HDS.
- Low ambient temperatures or excessive stop-and-go traffic may increase the drive time needed to switch the readiness code from incomplete to complete.
- The readiness code will not switch to complete until all the enable criteria are met.
- If a fault in the secondary HO2S system caused the MIL to come on, the readiness code cannot be set to complete until you correct the fault.

Enable Criteria

- ECT SENSOR 1 at 158 °F (70 °C) or more.
- Intake air temperature (IAT) at 20 °F (–7 °C) or more.
- Vehicle speed sensor (VSS) reads more than 25 mph (40 km/h).

Procedure

1. Connect the HDS to the vehicle's data link connector (DLC), and bring up the READINESS CODEs screen for Catalyst in the DTCs MENU.
2. Start the engine.
3. Test-drive the vehicle under stop-and-go conditions with short periods of steady cruise. After about 5 miles (8 km), the readiness code should switch to completed.
4. If the readiness code is still not set to complete, check for a Temporary DTC with the HDS. If there is no DTC, one or more of the enable criteria were probably not met; repeat the procedure.

(cont'd)

Fuel and Emissions Systems

How to Set Readiness Codes (cont'd)

Evaporative Emission (EVAP) Control System Monitor and Readiness Code

NOTE: All readiness codes are cleared when the battery is disconnected, if the DTCs have been cleared, or if the PCM is reset with the HDS.

Enable Criteria

- Battery voltage is higher than 10.5 V.
- Engine at idle.
- ECT SENSOR 1 and SENSOR 2 between 176 °F (80 °C) and 212 °F (100 °C).
- MAP sensor less than 46.6 kPa (14 in.Hg, 350 mmHg).
- Vehicle speed 0 mph (0 km/h).
- IAT SENSOR between 32 °F (0 °C) and 212 °F (100 °C).

Procedure

1. Connect the HDS to the vehicle's data link connector (DLC).
2. Start the engine.
3. Select EVAP TEST in the INSPECTION MENU with the HDS, then select the FUNCTION TEST in the EVAP TEST MENU.
 - If the result is normal, readiness is complete.
 - If the result is not normal, go to the next step.
4. Check for a Temporary DTC. If there is no DTC, one or more of the enable criteria were probably not met; repeat the procedure.

Air Fuel Ratio (A/F) Sensor Monitor and Readiness Code

NOTE:

- Do not turn the ignition switch off during the procedure.
- All readiness codes are cleared when the battery is disconnected, if the DTCs have been cleared, or if the PCM is reset with the HDS.

Enable Criteria

ECT SENSOR 1 at 140 °F (60 °C) or more.

Procedure

1. Start the engine.
2. Test-drive the vehicle under stop-and-go conditions with short periods of steady cruise. During the drive, decelerate (with the throttle fully closed) for 5 seconds. After about 3.5 miles (5.6 km), the readiness code should switch from incomplete to complete.
3. Check the readiness codes screen for the AIR FUEL RATIO (A/F) SENSOR in the DTCs MENU with the HDS.
 - If the screen shows complete, readiness is complete.
 - If the screen shows not complete, go to the next step.
4. Check for a Temporary DTC. If there is no DTC, the enable criteria was probably not met. Select the DATA LIST Menu. Check ECT SENSOR 1 in the ALL DATA LIST with the HDS. If ECT SENSOR 1 is lower than 140 °F (60 °C), run the engine until it is higher than 140 °F (60 °C), then repeat the procedure.



Air Fuel Ratio (A/F) Sensor Heater Monitor Readiness Code

NOTE: All readiness codes are cleared when the battery is disconnected, if the DTCs have been cleared, or if the PCM is reset with the HDS.

Procedure

1. Start the engine, and let it idle for 1 minute. The readiness code should switch from incomplete to complete.
2. If the readiness code is still not set to complete, check for a Temporary DTC. If there is no DTC, repeat the procedure.

Misfire Monitor and Readiness Code

- This readiness code is always set to available because misfiring is continuously monitored.
- Monitoring pauses, and the misfire counter resets, if the vehicle is driven over a rough road.
- Monitoring also pauses, and the misfire counter holds at its current value, if the throttle position changes more than a predetermined value, or if driving conditions fall outside the range of any related enable criteria.

Fuel System Monitor and Readiness Code

- This readiness code is always set to available because the fuel system is continuously monitored during closed loop operation.
- Monitoring pauses when the catalytic converter, EVAP control system, and A/F sensor monitors are active.
- Monitoring also pauses when any related enable criteria are not being met. Monitoring resumes when the enable criteria is again being met.

Comprehensive Component Monitor and Readiness Code

This readiness code is always set to available because the comprehensive component monitor is continuously running whenever the engine is cranking or running.

EGR Monitor and Readiness Code

NOTE:

- Do not turn the ignition switch off during the procedure.
- All readiness codes are cleared when the battery is disconnected, if the DTCs have been cleared, or if the PCM is reset with the HDS.

Enable Criteria

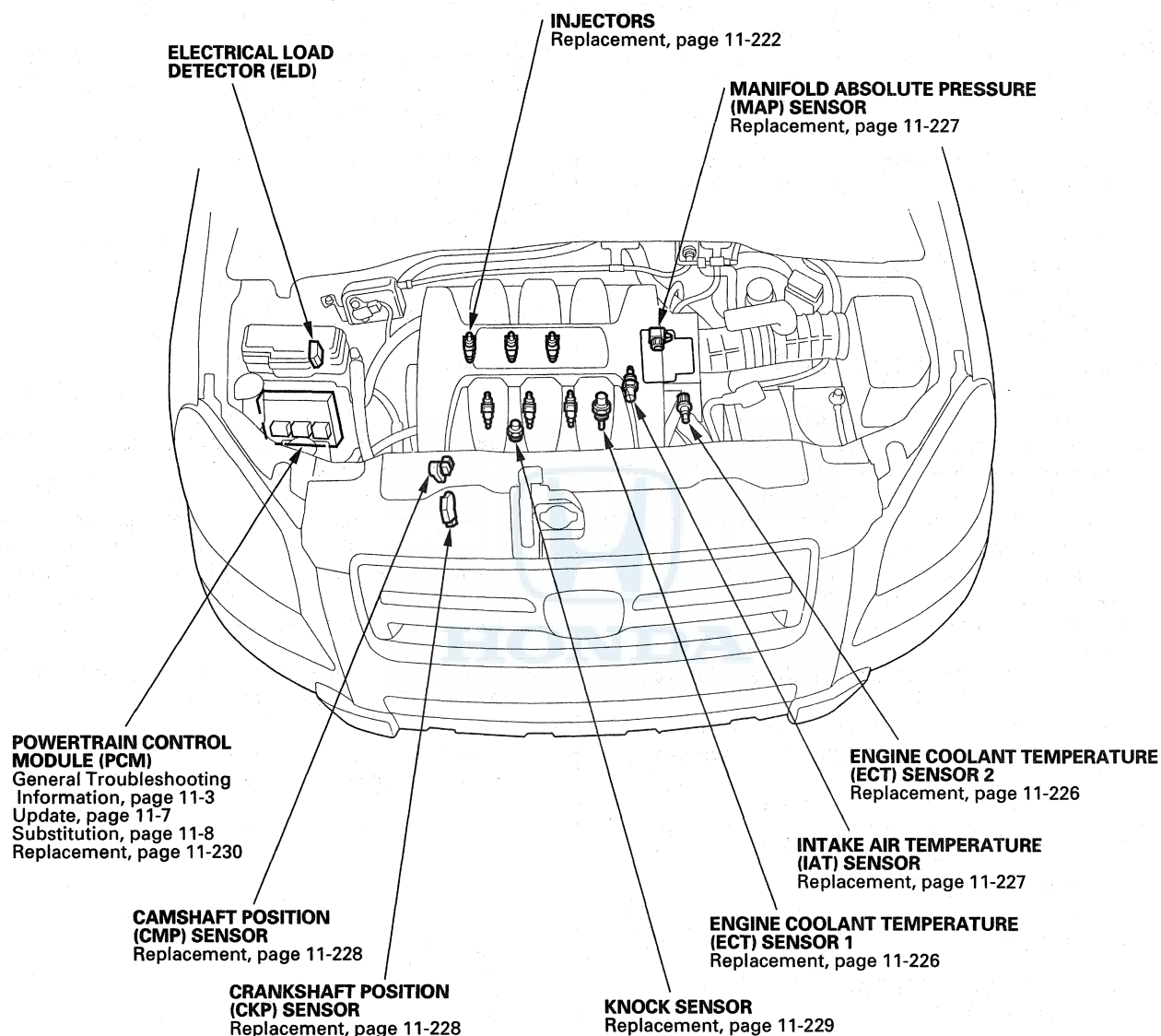
ECT SENSOR 1 at 176 °F (80 °C) or more.

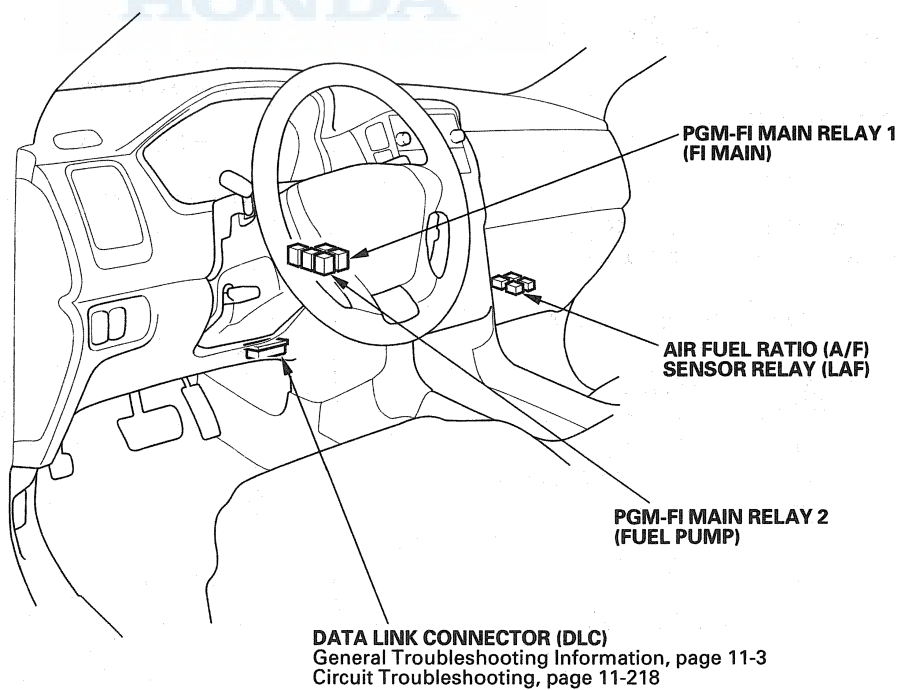
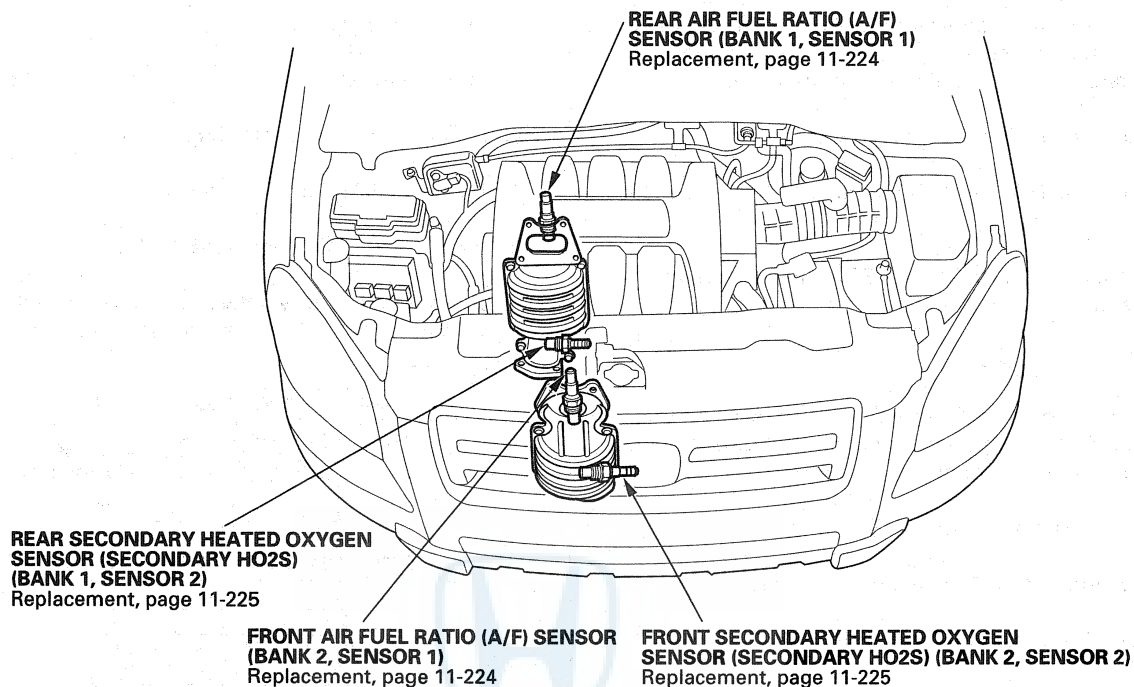
Procedure

1. Connect the HDS to the DLC.
2. Start the engine.
3. Drive at a steady speed with the transmission in D position, 50—62 mph (80—100 km/h) or above for more than 10 seconds.
4. With the transmission in D position, decelerate from 62 mph (100 km/h) or above by completely releasing the throttle for at least 5 seconds. If the engine is stopped during this procedure, go to step 3 and do the procedure again.
5. Check the OBD status screen for DTC P0401 in the DTC's MENU with the HDS.
 - If it is passed, readiness is complete.
 - If it is not passed, go to step 3 and retest.

PGM-FI System

Component Location Index





PGM-FI System

DTC Troubleshooting

DTC P0107: MAP Sensor Circuit Low Voltage

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch ON (II).
2. Check the MAP SENSOR in the DATA LIST with the HDS.

Is about 3 kPa (1.0 in.Hg, 26 mmHg), or 0.23 V or less indicated?

YES—Go to step 3.

NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the MAP sensor and the PCM. ■

3. Turn the ignition switch OFF.
4. Disconnect the MAP sensor 3P connector.
5. Turn the ignition switch ON (II).
6. Check the MAP SENSOR in the DATA LIST with the HDS.

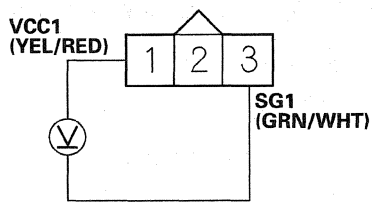
Is about 3 kPa (1.0 in.Hg, 26 mmHg), or 0.23 V or less indicated?

YES—Go to step 12.

NO—Go to step 7.

7. Measure voltage between MAP sensor 3P connector terminals No. 1 and No. 3.

MAP SENSOR 3P CONNECTOR



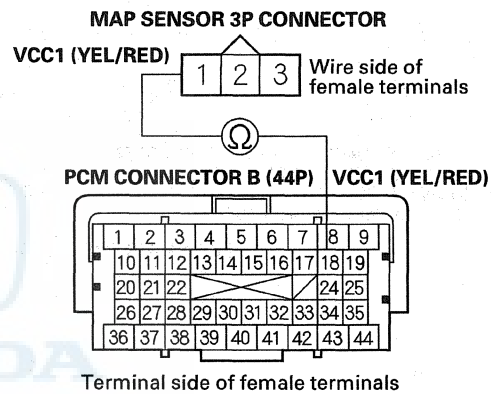
Wire side of female terminals

Is there about 5 V?

YES—Go to step 16.

NO—Go to step 8.

8. Turn the ignition switch OFF.
9. Jump the SCS line with the HDS.
10. Disconnect PCM connector B (44P).
11. Check for continuity between PCM connector terminal B18 and MAP sensor 3P connector terminal No. 1.



Is there continuity?

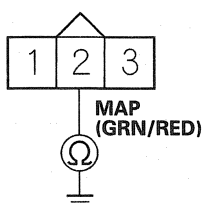
YES—Go to step 23.

NO—Repair open in the wire between the PCM (B18) and the MAP sensor, then go to step 18.



12. Turn the ignition switch OFF.
13. Jump the SCS line with the HDS.
14. Disconnect PCM connector B (44P).
15. Check for continuity between MAP sensor 3P connector terminal No. 2 and body ground.

MAP SENSOR 3P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair short in the wire between the PCM (B30) and the MAP sensor, then go to step 18.

NO—Go to step 23.

16. Turn the ignition switch OFF.
17. Replace the MAP sensor (see page 11-227).
18. Reconnect all connectors.
19. Turn the ignition switch ON (II).
20. Reset the PCM with the HDS.
21. Do the PCM idle learn procedure (see page 11-359).

22. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0107 indicated?

YES—Check for poor connections or loose terminals at the MAP sensor and the PCM, then go to step 1.

NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

23. Reconnect all connectors.
24. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).
25. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0107 indicated?

YES—Check for poor connections or loose terminals at the MAP sensor and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1.

NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-230). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

PGM-FI System

DTC Troubleshooting (cont'd)

DTC P0108: MAP Sensor Circuit High Voltage

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch ON (II).
2. Check the MAP SENSOR in the DATA LIST with the HDS.

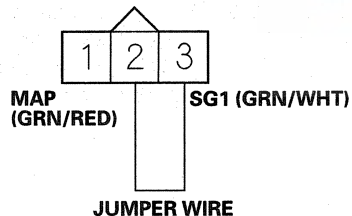
Is about 160 kPa (47.1 in.Hg, 1,197 mmHg), or 4.49 V or more indicated?

YES—Go to step 3.

NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the MAP sensor and the PCM. ■

3. Turn the ignition switch OFF.
4. Disconnect the MAP sensor 3P connector.
5. Connect MAP sensor 3P connector terminals No. 2 and No. 3 with a jumper wire.

MAP SENSOR 3P CONNECTOR



Wire side of female terminals

6. Turn the ignition switch ON (II).
7. Check the MAP SENSOR in the DATA LIST with the HDS.

Is about 160 kPa (47.1 in.Hg, 1,197 mmHg), or 4.49 V or more indicated?

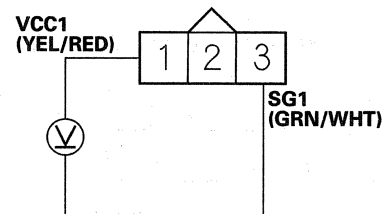
YES—Go to step 8.

NO—Go to step 18.

8. Remove the jumper wire from the MAP sensor 3P connector.

9. Measure voltage between MAP sensor 3P connector terminals No. 1 and No. 3.

MAP SENSOR 3P CONNECTOR



Wire side of female terminals

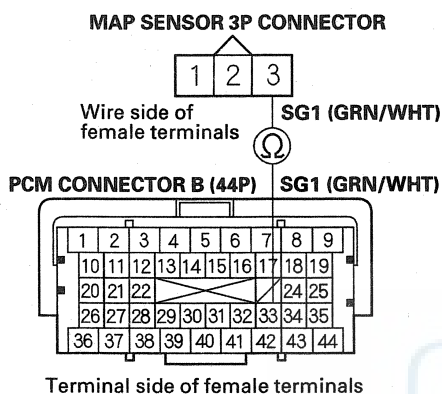
Is there about 5 V?

YES—Go to step 14.

NO—Go to step 10.



10. Turn the ignition switch OFF.
11. Jump the SCS line with the HDS.
12. Disconnect PCM connector B (44P).
13. Check for continuity between PCM connector terminal B33 and MAP sensor 3P connector terminal No. 3.

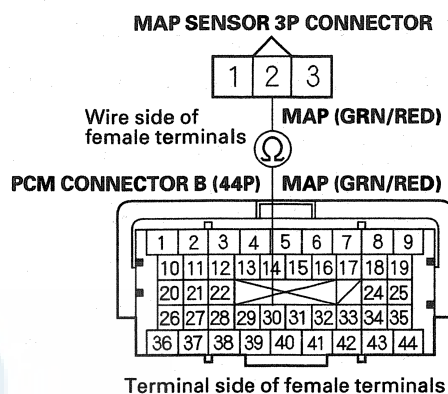


Is there continuity?

YES—Go to step 25.

NO—Repair open in the wire between the PCM (B33) and the MAP sensor, then go to step 20.

14. Turn the ignition switch OFF.
15. Jump the SCS line with the HDS.
16. Disconnect PCM connector B (44P).
17. Check for continuity between PCM connector terminal B30 and MAP sensor 3P connector terminal No. 2.



Is there continuity?

YES—Go to step 25.

NO—Repair open in the wire between the PCM (B30) and the MAP sensor, then go to step 20.

(cont'd)

PGM-FI System

DTC Troubleshooting (cont'd)

18. Turn the ignition switch OFF.
19. Replace the MAP sensor (see page 11-227).
20. Reconnect all connectors.
21. Turn the ignition switch ON (II).
22. Reset the PCM with the HDS.
23. Do the PCM idle learn procedure (see page 11-359).
24. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0108 indicated?

YES—Check for poor connections or loose terminals at the MAP sensor and the PCM, then go to step 1.

NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

25. Reconnect all connectors.
26. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).
27. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0108 indicated?

YES—Check for poor connections or loose terminals at the MAP sensor and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1.

NO— If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-230). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■



DTC P0111: IAT Sensor Circuit Range/Performance Problem

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Check for poor connections or loose terminals at ECT sensor 1/2 and the IAT sensor.

Are the connections and terminals OK?

YES—Go to step 2.

NO—Repair the connections or terminals, then go to step 15.

2. Remove the IAT sensor (see page 11-227).
3. Allow the IAT sensor to cool to ambient temperature.
4. Note the ambient temperature.
5. Connect the IAT sensor to its 2P connector, but do not install it on the intake manifold.
6. Turn the ignition switch ON (II).
7. Note the value of the IAT SENSOR quickly in the DATA LIST with the HDS.
8. Compare the value of the IAT SENSOR and the ambient temperature.

Does the value of the IAT SENSOR differ 5.4 °F (3 °C) or more?

YES—Go to step 13.

NO—Go to step 9.

9. Disconnect the IAT sensor 2P connector.
10. Using a heat gun, blow hot air on the IAT sensor for a few seconds. Do not apply heat longer than a few seconds or you will damage the sensor.
11. Connect the IAT sensor to its 2P connector, but do not install it on the intake manifold.

12. Check the IAT SENSOR in the DATA LIST with the HDS.

Does the IAT SENSOR change 45 °F (25 °C) or more?

YES—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the IAT sensor and the PCM. ■

NO—Go to step 13.

13. Turn the ignition switch OFF.
14. Replace the IAT sensor (see page 11-227).
15. Turn the ignition switch ON (II).
16. Reset the PCM with the HDS.
17. Do the PCM idle learn procedure (see page 11-359).
18. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0111 indicated?

YES—Check for poor connections or loose terminals at the IAT sensor and the PCM, then go to step 1.

NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

DTC Troubleshooting (cont'd)

DTC P0112: IAT Sensor Circuit Low Voltage

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch ON (II).
2. Check the IAT SENSOR in the DATA LIST with the HDS.

Is about 356 °F (180 °C) or more, or 0.08 V or less indicated?

YES—Go to step 3.

NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the IAT sensor and the PCM. ■

3. Turn the ignition switch OFF.
4. Disconnect the IAT sensor 2P connector.
5. Turn the ignition switch ON (II).
6. Check the IAT SENSOR in the DATA LIST with the HDS.

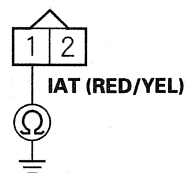
Is about 356 °F (180 °C) or more, or 0.08 V or less indicated?

YES—Go to step 7.

NO—Go to step 11.

7. Turn the ignition switch OFF.
8. Jump the SCS line with the HDS.
9. Disconnect PCM connector C (44P).
10. Check for continuity between IAT sensor 2P connector terminal No. 1 and body ground.

IAT SENSOR 2P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair short in the wire between the IAT sensor and the PCM (C26), then go to step 13.

NO—Go to step 18.

11. Turn the ignition switch OFF.
12. Replace the IAT sensor (see page 11-227).
13. Reconnect all connectors.
14. Turn the ignition switch ON (II).
15. Reset the PCM with the HDS.
16. Do the PCM idle learn procedure (see page 11-359).



17. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0112 indicated?

YES—Check for poor connections or loose terminals at the IAT sensor and the PCM, then go to step 1.

NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

18. Reconnect all connectors.

19. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).

20. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0112 indicated?

YES—Check for poor connections or loose terminals at the IAT sensor and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1.

NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-230). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

PGM-FI System

DTC Troubleshooting (cont'd)

DTC P0113: IAT Sensor Circuit High Voltage

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch ON (II).
2. Check the IAT SENSOR in the DATA LIST with the HDS.

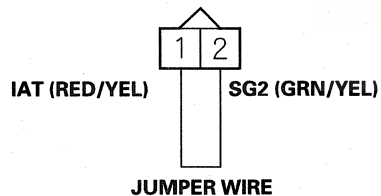
Is about -40°F (-40°C) or less, or 4.92 V or more indicated?

YES—Go to step 3.

NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the IAT sensor and the PCM. ■

3. Turn the ignition switch OFF.
4. Disconnect the IAT sensor 2P connector.
5. Connect IAT sensor 2P connector terminals No. 1 and No. 2 with a jumper wire.

IAT SENSOR 2P CONNECTOR



Wire side of female terminals

6. Turn the ignition switch ON (II).
7. Check the IAT SENSOR in the DATA LIST with the HDS.

Is about -40°F (-40°C) or less, or 4.92 V or more indicated?

YES—Go to step 8.

NO—Go to step 20.

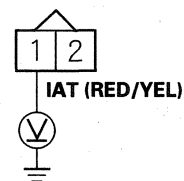
8. Turn the ignition switch OFF.

9. Remove the jumper wire.

10. Turn the ignition switch ON (II).

11. Measure voltage between IAT sensor 2P connector terminal No. 1 and body ground.

IAT SENSOR 2P CONNECTOR



Wire side of female terminals

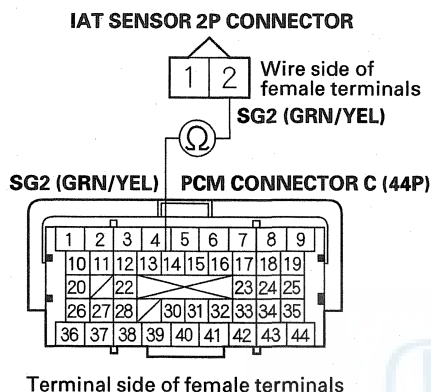
Is there about 5 V?

YES—Go to step 12.

NO—Go to step 16.



12. Turn the ignition switch OFF.
13. Jump the SCS line with the HDS.
14. Disconnect PCM connector C (44P).
15. Check for continuity between PCM connector terminal C14 and IAT sensor 2P connector terminal No. 2.

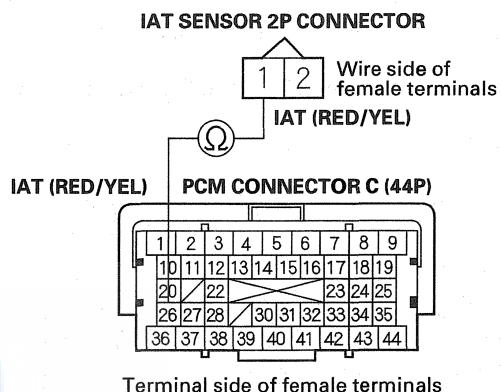


Is there continuity?

YES—Go to step 27.

NO—Repair open in the wire between the PCM (C14) and the IAT sensor, then go to step 22.

16. Turn the ignition switch OFF.
17. Jump the SCS line with the HDS.
18. Disconnect PCM connector C (44P).
19. Check for continuity between PCM connector terminal C26 and IAT sensor 2P connector terminal No. 1.



Is there continuity?

YES—Go to step 27.

NO—Repair open in the wire between the PCM (C26) and the IAT sensor, then go to step 22.

(cont'd)

PGM-FI System

DTC Troubleshooting (cont'd)

20. Turn the ignition switch OFF.
21. Replace the IAT sensor (see page 11-227).
22. Reconnect all connectors.
23. Turn the ignition switch ON (II).
24. Reset the PCM with the HDS.
25. Do the PCM idle learn procedure (see page 11-359).
26. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0113 indicated?

YES—Check for poor connections or loose terminals at the IAT sensor and the PCM, then go to step 1.

NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

27. Reconnect all connectors.
28. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).
29. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0113 indicated?

YES—Check for poor connections or loose terminals at the IAT sensor and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1.

NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-230). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■



DTC P0116: ECT Sensor 1 Circuit Range/Performance Problem

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch ON (II).
2. Check ECT SENSOR 1 in the DATA LIST with the HDS.

Is about 176 °F (80 °C) or more, or 0.78 V or less indicated?

YES—Go to step 6.

NO—Go to step 3.
3. Note the value of ECT SENSOR 1 in the DATA LIST with the HDS.
4. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.
5. Check ECT SENSOR 1 in the DATA LIST with the HDS.

Does ECT SENSOR 1 change 18 °F (10 °C) or more?

YES—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at ECT sensor 1 and the PCM. ■

NO—Go to step 11.
6. Note the value of ECT SENSOR 1 in the DATA LIST with the HDS.
7. Turn the ignition switch OFF.
8. Open the hood, and let the engine cool for 3 hours.
9. Turn the ignition switch ON (II).

10. Check ECT SENSOR 1 in the DATA LIST with the HDS.

Does ECT SENSOR 1 change 18 °F (10 °C) or more?

YES—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at ECT sensor 1 and the PCM. ■

NO—Go to step 11.

11. Turn the ignition switch OFF.
12. Replace ECT sensor 1 (see page 11-226).
13. Turn the ignition switch ON (II).
14. Reset the PCM with the HDS.
15. Do the PCM idle learn procedure (see page 11-359).
16. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0116 indicated?

YES—Check for poor connections or loose terminals at ECT sensor 1 and the PCM, then go to step 1.

NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

PGM-FI System

DTC Troubleshooting (cont'd)

DTC P0117: ECT Sensor 1 Circuit Low Voltage

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch ON (II).
2. Check ECT SENSOR 1 in the DATA LIST with the HDS.

Is about 356 °F (180 °C) or more, or 0.08 V or less indicated?

YES—Go to step 3.

NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the ECT sensor 1 and the PCM. ■

3. Turn the ignition switch OFF.
4. Disconnect the ECT sensor 1 2P connector.
5. Turn the ignition switch ON (II).
6. Check ECT SENSOR 1 in the DATA LIST with the HDS.

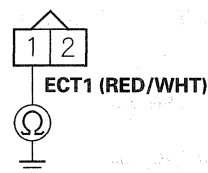
Is about 356 °F (180 °C) or more, or 0.08 V or less indicated?

YES—Go to step 7.

NO—Go to step 11.

7. Turn the ignition switch OFF.
8. Jump the SCS line with the HDS.
9. Disconnect PCM connector C (44P).
10. Check for continuity between ECT sensor 1 2P connector terminal No. 1 and body ground.

ECT SENSOR 1 2P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair short in the wire between the ECT sensor 1 and the PCM (C27), then go to step 13.

NO—Go to step 18.

11. Turn the ignition switch OFF.
12. Replace ECT sensor 1 (see page 11-226).
13. Reconnect all connectors.
14. Turn the ignition switch ON (II).
15. Reset the PCM with the HDS.
16. Do the PCM idle learn procedure (see page 11-359).



17. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0117 indicated?

YES—Check for poor connections or loose terminals at the ECT sensor 1 and the PCM, then go to step 1.

NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

18. Reconnect all connectors.

19. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).

20. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0117 indicated?

YES—Check for poor connections or loose terminals at the ECT sensor 1 and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1.

NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-230). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

PGM-FI System

DTC Troubleshooting (cont'd)

DTC P0118: ECT Sensor 1 Circuit High Voltage

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch ON (II).
2. Check ECT SENSOR 1 in the DATA LIST with the HDS.

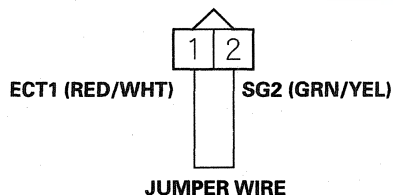
Is about -40°F (-40°C) or less, or 4.92 V or more indicated?

YES—Go to step 3.

NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at ECT sensor 1 and the PCM. ■

3. Turn the ignition switch OFF.
4. Disconnect the ECT sensor 1 2P connector.
5. Connect ECT sensor 1 2P connector terminals No. 1 and No. 2 with a jumper wire.

ECT SENSOR 1 2P CONNECTOR



Wire side of female terminals

6. Turn the ignition switch ON (II).
7. Check ECT SENSOR 1 in the DATA LIST with the HDS.

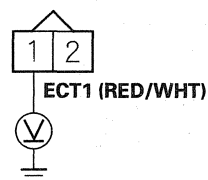
Is about -40°F (-40°C) or less, or 4.92 V or more indicated?

YES—Go to step 8.

NO—Go to step 20.

8. Turn the ignition switch OFF.
9. Remove the jumper wire.
10. Turn the ignition switch ON (II).
11. Measure voltage between ECT sensor 1 2P connector terminal No. 1 and body ground.

ECT SENSOR 1 2P CONNECTOR



Wire side of female terminals

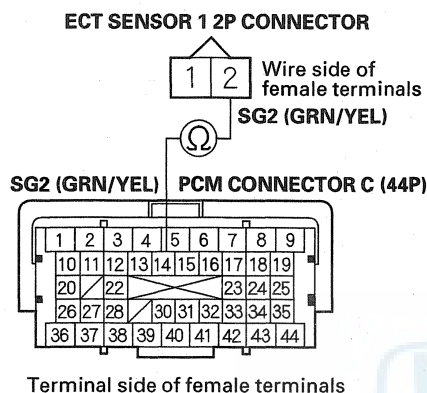
Is there about 5 V?

YES—Go to step 12.

NO—Go to step 16.



12. Turn the ignition switch OFF.
13. Jump the SCS line with the HDS.
14. Disconnect PCM connector C (44P).
15. Check for continuity between PCM connector terminal C14 and ECT sensor 1 2P connector terminal No. 2.

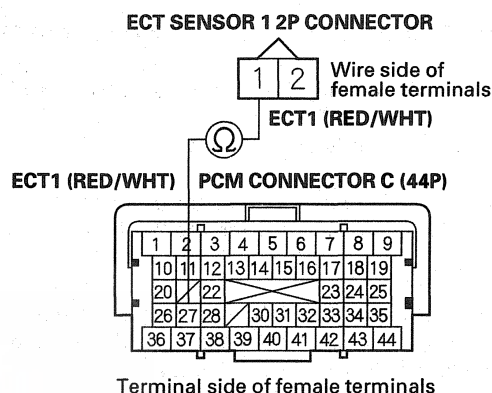


Is there continuity?

YES—Go to step 27.

NO—Repair open in the wire between the PCM (C14) and ECT sensor 1, then go to step 22.

16. Turn the ignition switch OFF.
17. Jump the SCS line with the HDS.
18. Disconnect PCM connector C (44P).
19. Check for continuity between PCM connector terminal C27 and ECT sensor 1 2P connector terminal No. 1.



Is there continuity?

YES—Go to step 27.

NO—Repair open in the wire between the PCM (C27) and ECT sensor 1, then go to step 22.

(cont'd)

PGM-FI System

DTC Troubleshooting (cont'd)

20. Turn the ignition switch OFF.
21. Replace ECT sensor 1 (see page 11-226).
22. Reconnect all connectors.
23. Turn the ignition switch ON (II).
24. Reset the PCM with the HDS.
25. Do the PCM idle learn procedure (see page 11-359).
26. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0118 indicated?

YES—Check for poor connections or loose terminals at ECT sensor 1 and the PCM, then go to step 1.

NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

27. Reconnect all connectors.
28. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).
29. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0118 indicated?

YES—Check for poor connections or loose terminals at ECT sensor 1 and the PCM, then go to step 1. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1.

NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-230). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■



DTC P0125: ECT Sensor 1 Malfunction/Slow Response

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Start the engine, and let it idle for 5 minutes or more.
2. Check ECT SENSOR 1 in the DATA LIST with the HDS.

Is about 10 °F (–12 °C) or less, or 4.45 V or more indicated?

YES—Go to step 9.

NO—Go to step 3.

3. Allow the engine to cool to 104 °F (40 °C) or less.
4. Note the value of ECT SENSOR 1 and ECT SENSOR 2 in the DATA LIST with the HDS.
5. Start the engine, and let it idle.
6. Let the engine idle until ECT SENSOR 1 goes up 40 °F (22 °C) or more from the recorded temperature.
7. Note the value of ECT SENSOR 2 in the DATA LIST with the HDS.
8. Compare ECT SENSOR 2 and the recorded temperature.

Did ECT SENSOR 2 change 17 °F (9.5 °C) or more?

YES—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at ECT sensor 1, ECT sensor 2, and the PCM. ■

NO—Test the thermostat (see page 10-4). If the thermostat is OK, go to step 9. If you replace the thermostat, go to step 11.

9. Turn the ignition switch OFF.
10. Replace ECT sensor 1 (see page 11-226).
11. Turn the ignition switch ON (II).
12. Reset the PCM with the HDS.
13. Do the PCM idle learn procedure (see page 11-359).
14. Allow the engine to cool to ambient temperature.
15. Start the engine, and let it idle 20 minutes.
16. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0125 indicated?

YES—Check for poor connections or loose terminals at ECT sensor 1, ECT sensor 2, and the PCM, then go to step 1.

NO—Go to step 17.

17. Monitor the OBD STATUS for DTC P0125 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 16, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at ECT sensor 1, ECT sensor 2, and the PCM, then go to step 1. If the screen indicates NOT COMPLETED, go to step 14.

DTC Troubleshooting (cont'd)

DTC P0128: Cooling System Malfunction

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Turn the blower switch OFF.
4. Turn the A/C switch OFF.
5. Check the FAN CTRL in the DATA LIST with the HDS.

Is it OFF?

YES—Go to step 6.

NO—Wait until the FAN CTRL is off, then go to step 6.

6. Check the radiator fan operation.

Does the radiator fan keep running?

YES—Check the radiator fan high speed circuit (see page 10-19). If the circuits and the relay is OK, go to step 20.

NO—Go to step 7.

7. Let the engine cool until the coolant temperature is 104 °F (40 °C) or less.
8. Note the value of ECT SENSOR 1 and ECT SENSOR 2 in the DATA LIST with the HDS.
9. Start the engine, and let it idle.
10. Let the engine idle until ECT SENSOR 1 goes up 40 °F (22 °C) or more from the recorded temperature.
11. Check ECT SENSOR 2 in the DATA LIST with the HDS.

12. Compare the recorded value of ECT SENSOR 2 and the present value of ECT SENSOR 2.

Did temperature rise 17 °F (9.5 °C) or more?

YES—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at ECT sensor 1, ECT sensor 2, and the PCM. ■

NO—Test the thermostat (see page 10-4), then go to step 13.

13. Turn the ignition switch ON (II).
14. Reset the PCM with the HDS.
15. Let the engine cool until the coolant temperature is between 21 °F (−6 °C) and 104 °F (40 °C).
16. Do the PCM idle learn procedure (see page 11-359).
17. Test-drive at a steady speed between 15—75 mph (24—120 km/h) for 10 minutes.
18. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0128 indicated?

YES—Check the cooling system, then go to step 1.

NO—Go to step 19.

19. Monitor the OBD STATUS for DTC P0128 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 18, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check the cooling system, then go to step 1. If the screen indicates NOT COMPLETED, go to step 15.



20. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).
21. Let the engine cool until the coolant temperature is between 21 °F (-6 °C) and 104 °F (40 °C).
22. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.
23. Test-drive at a steady speed between 15—75 mph (24—120 km/h) for 10 minutes.
24. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0128 indicated?

YES—Check for poor connections or loose terminals at ECT sensor 1, ECT sensor 2, and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then go to step 21. If the PCM was substituted, go to step 1.

NO—Go to step 25.

25. Monitor the OBD STATUS for DTC P0128 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-230). If any other Temporary DTCs or DTCs were indicated in step 24, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at ECT sensor 1, ECT sensor 2, and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then go to step 21. If the PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, go to step 21.

PGM-FI System

DTC Troubleshooting (cont'd)

DTC P0133: Rear A/F Sensor (Bank 1, Sensor 1) Malfunction/Slow Response

DTC P0153: Front A/F Sensor (Bank 2, Sensor 1) Malfunction/Slow Response

NOTE:

- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- If DTC P0139 and/or P0159* is stored at the same time as DTC P0133 and/or P0153*, troubleshoot DTC P0139 and/or P0159* first, then recheck for DTC P0133 and/or P0153*.
- Information marked with an asterisk (*) applies to the front bank (Bank 2).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.

4. Test-drive under these conditions:

- Engine coolant temperature (ECT SENSOR 1) above 158 °F (70 °C)
- Transmission in D position
- Drive the vehicle at 25 mph (40 km/h) or less for 5 minutes, then drive at a steady speed between 26–81 mph (41–130 km/h)

5. Monitor the OBD STATUS for DTC P0133 and/or P0153* in the DTCs MENU with the HDS.

Does the screen indicate FAILED?

YES—Go to step 6.

NO—If the screen indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM. If the screen indicates EXECUTING, keep driving until a result comes on. If the screen indicates OUT OF CONDITION, go to step 3 and recheck.

6. Turn the ignition switch OFF.
7. Replace the A/F sensor (Sensor 1) (see page 11-224).

8. Turn the ignition switch ON (II).

9. Reset the PCM with the HDS.

10. Do the PCM idle learn procedure (see page 11-359).

11. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.

12. Test-drive under these conditions:

- Engine coolant temperature (ECT SENSOR 1) above 158 °F (70 °C)
- Transmission in D position
- Drive the vehicle at 25 mph (40 km/h) or less for 5 minutes, then drive at a steady speed between 26–81 mph (41–130 km/h)

13. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0133 and/or P0153 indicated?*

YES—Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM, then go to step 1.

NO—Go to step 14.

14. Monitor the OBD STATUS for DTC P0133 and/or P0153* in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 13, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM, then go to step 1. If the screen indicates EXECUTING, keep driving until a result comes on. If the screen indicates OUT OF CONDITION, go to step 12.



DTC P0134: Rear A/F Sensor (Bank 1, Sensor 1) Heater System Malfunction

DTC P0154: Front A/F Sensor (Bank 2, Sensor 1) Heater System Malfunction

NOTE:

- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- If the vehicle was out of fuel and the engine stalled before this DTC was stored, refuel and clear the DTC with the HDS.
- If DTC P2251, P2237, P2240 *, and/or P2254 * is stored at the same time as DTC P0134 and/or P0154 *, troubleshoot DTC P2251, P2237, P2240 *, and/or P2254 * first, then recheck for P0134 and/or P0154 *.
- Information marked with an asterisk (*) applies to the front bank (Bank 2).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine, and let it idle for 2 minutes.
4. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0134 and/or P0154 indicated?*

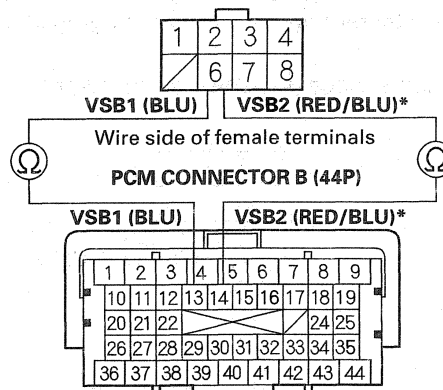
YES—Go to step 5.

NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM. ■

5. Turn the ignition switch OFF.
6. Jump the SCS line with the HDS.
7. Disconnect the A/F sensor (Sensor 1) 8P connector.
8. Disconnect PCM connector B (44P).

9. Check for continuity between A/F sensor (Sensor 1) 8P connector terminal No. 6 and PCM connector terminal B13 (B14) *.

A/F SENSOR (SENSOR 1) 8P CONNECTOR



Terminal side of female terminals

Is there continuity?

YES—Go to step 10.

NO—Repair open in the wire between the PCM (B13 (B14) *) and the A/F sensor (Sensor 1), then go to step 14.

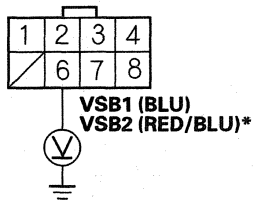
(cont'd)

PGM-FI System

DTC Troubleshooting (cont'd)

10. Reconnect PCM connector B (44P).
11. Start the engine, and let it idle for 2 minutes.
12. Measure voltage between A/F sensor (Sensor 1) 8P connector terminal No. 6 and body ground.

A/F SENSOR (SENSOR 1) 8P CONNECTOR



Wire side of female terminals

Is there about 0.2 V or less?

YES—Go to step 20.

NO—Go to step 13.

13. Replace the A/F sensor (see page 11-224).
14. Reconnect all connectors.
15. Turn the ignition switch ON (II).
16. Reset the PCM with the HDS.
17. Do the PCM idle learn procedure (see page 11-359).

18. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0134 and/or P0154 indicated?*

YES—Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM, then go to step 1.

NO—Go to step 19.

19. Monitor the OBD STATUS for DTC P0134 and/or P0154* in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 18, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM, then go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.



20. Turn the ignition switch OFF.
21. Reconnect all connectors.
22. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).
23. Start the engine, and let it idle 2 minutes.
24. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0134 and/or P0154 indicated?*

YES—Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then go to step 23. If the PCM was substituted, go to step 1.

NO—Go to step 25.

25. Monitor the OBD STATUS for DTC P0134 and/or P0154* in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-230). If any other Temporary DTCs or DTCs were indicated in step 24, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the A/F sensor (Sensor 1), the A/F sensor relay (LAF), and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then go to step 23. If the PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

PGM-FI System

DTC Troubleshooting (cont'd)

DTC P0135: Rear A/F Sensor (Bank 1, Sensor 1) Heater Circuit Malfunction

DTC P0155: Front A/F Sensor (Bank 2, Sensor 1) Heater Circuit Malfunction

NOTE:

- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- Information marked with an asterisk (*) applies to the front bank (Bank 2).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine.
4. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0135 and/or P0155 indicated?*

YES—Go to step 5.

NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the A/F sensor (Sensor 1), the A/F sensor relay (LAF), and the PCM. ■

5. Turn the ignition switch OFF.
6. Check these fuses:
 - No. 9 LAF (A/F SENSOR) (15 A) fuse in the auxiliary under-hood fuse/relay box
 - 7.5 A fuse in the auxiliary under-dash fuse holder

Are any of the above fuses blown?

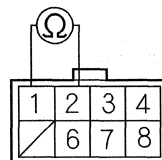
YES—Repair short in the wire between the A/F sensors, the A/F sensor relay (LAF), and the fuse(s). Also replace the blown fuse(s), then go to step 24.

NO—Go to step 7.

7. Disconnect the A/F sensor (Sensor 1) 8P connector.

8. At the sensor side, measure resistance between A/F sensor (Sensor 1) 8P connector terminals No. 1 and No. 2.

A/F SENSOR (SENSOR 1) 8P CONNECTOR



Terminal side of male terminals

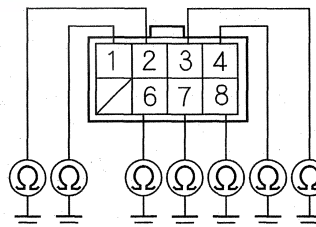
Is there 2.5—3.2 Ω at room temperature?

YES—Go to step 9.

NO—Go to step 22.

9. At the sensor side, check for continuity between each terminal at the A/F sensor (Sensor 1) 8P connector and body ground.

A/F SENSOR (SENSOR 1) 8P CONNECTOR



Terminal side of male terminals

Is there continuity?

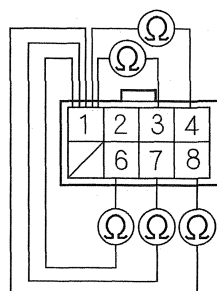
YES—Go to step 22.

NO—Go to step 10.



10. At the sensor side, check for continuity between A/F sensor (Sensor 1) 8P connector terminals No. 1 and No. 3, No. 4, No. 6, No. 7, and No. 8 individually.

A/F SENSOR (SENSOR 1) 8P CONNECTOR



Terminal side of male terminals

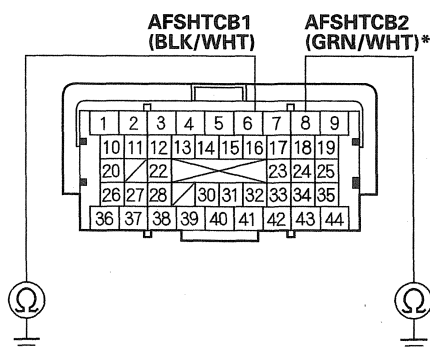
Is there continuity?

YES—Go to step 22.

NO—Go to step 11.

11. Jump the SCS line with the HDS.
12. Disconnect PCM connector C (44P).
13. Check for continuity between PCM connector terminal C6 (C8)* and body ground.

PCM CONNECTOR C (44P)



Terminal side of female terminals

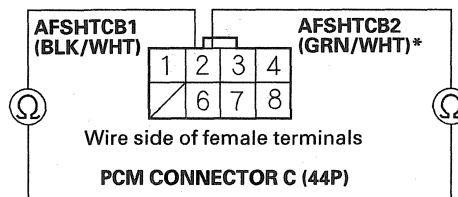
Is there continuity?

YES—Repair short in the wire between the PCM (C6 (C8)*) and the A/F sensor (Sensor 1), then go to step 23.

NO—Go to step 14.

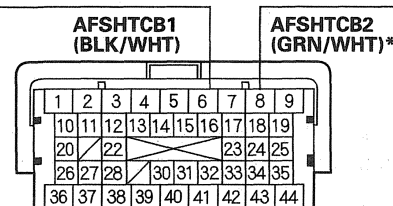
14. Check for continuity between A/F sensor (Sensor 1) 8P connector terminal No. 2 and PCM connector terminal C6 (C8)*.

A/F SENSOR (SENSOR 1) 8P CONNECTOR



Wire side of female terminals

PCM CONNECTOR C (44P)



Terminal side of female terminals

Is there continuity?

YES—Go to step 15.

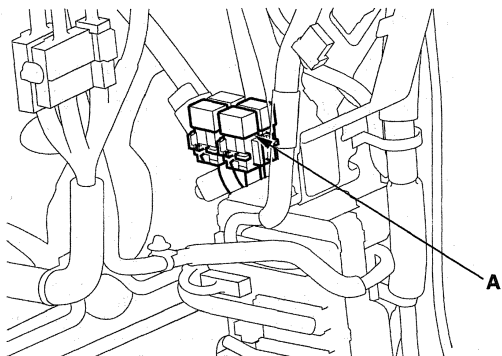
NO—Repair open in the wire between the PCM (C6 (C8)*) and the A/F sensor (Sensor 1), then go to step 23.

(cont'd)

PGM-FI System

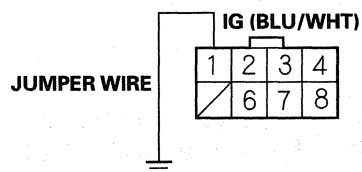
DTC Troubleshooting (cont'd)

15. Remove the A/F sensor relay (LAF) (A).



16. Connect A/F sensor (Sensor 1) 8P connector terminal No. 1 to body ground with a jumper wire.

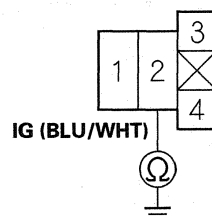
A/F SENSOR (SENSOR 1) 8P CONNECTOR



Wire side of female terminals

17. Check for continuity between A/F sensor relay (LAF) 4P connector terminal No. 2 and body ground.

A/F SENSOR RELAY (LAF) 4P CONNECTOR



Terminal side of female terminals

Is there continuity?

YES—Go to step 18.

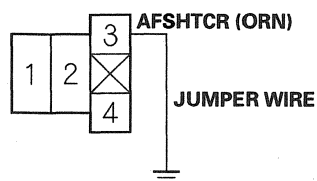
NO—Repair open in the wire between the A/F sensor (Sensor 1) and the A/F sensor relay (LAF), then go to step 23.

18. Disconnect PCM connector A (44P).



19. Connect A/F sensor relay (LAF) 4P connector terminal No. 3 to body ground with a jumper wire.

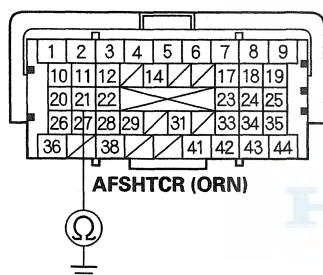
A/F SENSOR RELAY (LAF) 4P CONNECTOR



Terminal side of female terminals

20. Check for continuity between PCM connector terminal A21 and body ground.

PCM CONNECTOR A (44P)



Terminal side of female terminals

Is there continuity?

YES—Go to step 21.

NO—Repair open in the wire between the PCM (A21) and the A/F sensor relay (LAF), then go to step 23.

21. Test the A/F sensor relay (LAF) (see page 22-82).

Is the A/F sensor relay (LAF) OK?

YES—Go to step 29.

NO—Replace the A/F sensor relay (LAF), then go to step 23.

22. Replace the A/F sensor (Sensor 1) (see page 11-224).

23. Reconnect all connectors.

24. Turn the ignition switch ON (II).

25. Reset the PCM with the HDS.

26. Do the PCM idle learn procedure (see page 11-359).

27. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0135 and/or P0155 indicated?*

YES—Check for poor connections or loose terminals at the A/F sensor (Sensor 1), the A/F sensor relay (LAF), and the PCM, then go to step 1.

NO—Go to step 28.

28. Monitor the OBD STATUS for DTC P0135 and/or P0155* in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 27, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the A/F sensor (Sensor 1), the A/F sensor relay (LAF), and the PCM, then go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

(cont'd)

PGM-FI System

DTC Troubleshooting (cont'd)

29. Reconnect all connectors.
30. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).
31. Start the engine, and let it idle.
32. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0135 and/or P0155 indicated?*

YES—Check for poor connections or loose terminals at the A/F sensor (Sensor 1), the A/F sensor relay (LAF), and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then go to step 31. If the PCM was substituted, go to step 1.

NO—Go to step 33.

33. Monitor the OBD STATUS for DTC P0135 and/or P0155* in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-230). If any other Temporary DTCs or DTCs were indicated in step 32, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the A/F sensor (Sensor 1), the A/F sensor relay (LAF), and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then go to step 31. If the PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.



DTC P0137: Rear Secondary HO2S (Bank 1, Sensor 2) Circuit Low Voltage

DTC P0157: Front Secondary HO2S (Bank 2, Sensor 2) Circuit Low Voltage

NOTE:

- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- Information marked with an asterisk (*) applies to the front bank (Bank 2).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine, and let it idle without load (in Park or neutral) until the radiator fan comes on.
4. Check the HO2S S2 in the DATA LIST with the HDS.

Does the voltage stay at 0.29 V or less?

YES—Go to step 5.

NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the secondary HO2S (Sensor 2) and the PCM. ■

5. Turn the ignition switch OFF.
6. Disconnect the secondary HO2S (Sensor 2) 4P connector.
7. Turn the ignition switch ON (II).
8. Check the HO2S S2 in the DATA LIST with the HDS.

Does the voltage stay at 0.29 V or less?

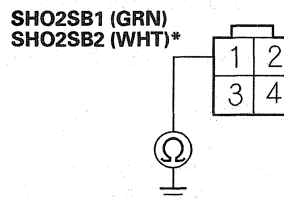
YES—Go to step 9.

NO—Go to step 13.

9. Turn the ignition switch OFF.
10. Jump the SCS line with the HDS.
11. Disconnect PCM connector B (44P).

12. Check for continuity between secondary HO2S (Sensor 2) 4P connector terminal No. 1 and body ground.

SECONDARY HO2S (SENSOR 2) 4P CONNECTOR



Is there continuity?

YES—Repair short in the wire between the PCM (B15 (B16)*) and the secondary HO2S (Sensor 2), then go to step 15.

NO—Go to step 23.

13. Turn the ignition switch OFF.
14. Replace the secondary HO2S (Sensor 2) (see page 11-225).
15. Reconnect all connectors.
16. Turn the ignition switch ON (II).
17. Reset the PCM with the HDS.
18. Do the PCM idle learn procedure (see page 11-359).
19. Start the engine, and let it idle without load (in Park or neutral) until the radiator fan comes on.

(cont'd)

PGM-FI System

DTC Troubleshooting (cont'd)

20. Test-drive under these conditions:

- Engine coolant temperature (ECT SENSOR 1) above 158 °F (70 °C)
- Transmission in D position
- Engine speed at 1,500—3,000 rpm
- Drive at a steady speed for 1 minute or more

21. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0137 and/or P0157 indicated?*

YES—Check for poor connections or loose terminals at the secondary HO2S (Sensor 2) and the PCM, then go to step 1.

NO—Go to step 22.

22. Monitor the OBD STATUS for DTC P0137 and/or P0157* in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 21, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the secondary HO2S (Sensor 2) and the PCM, then go to step 1. If the screen indicates EXECUTING, keep driving until a result comes on. If the screen indicates OUT OF CONDITION, go to step 19.

23. Reconnect all connectors.

24. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).

25. Start the engine, and let it idle without load (in Park or neutral) until the radiator fan comes on.

26. Test-drive under these conditions:

- Engine coolant temperature (ECT SENSOR 1) above 158 °F (70 °C)
- Transmission in D position
- Engine speed at 1,500—3,000 rpm
- Drive at a steady speed for 1 minute or more

27. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0137 and/or P0157 indicated?*

YES—Check for poor connections or loose terminals at the secondary HO2S (Sensor 2) and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then go to step 25. If the PCM was substituted, go to step 1.

NO—Go to step 28.

28. Monitor the OBD STATUS for DTC P0137 and/or P0157* in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-230). If any other Temporary DTCs or DTCs were indicated in step 27, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the secondary HO2S (Sensor 2) and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then go to step 25. If the PCM was substituted, go to step 1. If the screen indicates EXECUTING, keep driving until a result comes on. If the screen indicates OUT OF CONDITION, go to step 25.



DTC P0138: Rear Secondary HO2S (Bank 1, Sensor 2) Circuit High Voltage

DTC P0158: Front Secondary HO2S (Bank 2, Sensor 2) Circuit High Voltage

NOTE:

- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- Information marked with an asterisk (*) applies to the front bank (Bank 2).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine, and let it idle without load (in Park or neutral) until the radiator fan comes on.
4. Check the HO2S S2 in the DATA LIST with the HDS.

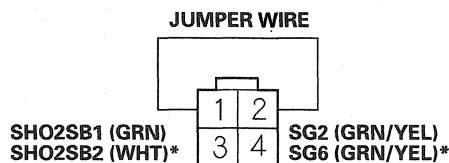
Does the voltage stay at 1.27 V or more?

YES—Go to step 5.

NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the secondary HO2S (Sensor 2) and the PCM. ■

5. Turn the ignition switch OFF.
6. Disconnect the secondary HO2S (Sensor 2) 4P connector.
7. Connect secondary HO2S (Sensor 2) 4P connector terminals No. 1 and No. 2 with a jumper wire.

SECONDARY HO2S (SENSOR 2) 4P CONNECTOR



Wire side of female terminals

8. Turn the ignition switch ON (II).

9. Check the HO2S S2 in the DATA LIST with the HDS.

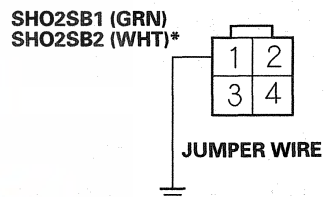
Does the voltage stay at 1.27 V or more?

YES—Go to step 10.

NO—Go to step 19.

10. Turn the ignition switch OFF.
11. Remove the jumper wire from the secondary HO2S (Sensor 2) 4P connector.
12. Connect secondary HO2S (Sensor 2) 4P connector terminal No. 1 to body ground with a jumper wire.

SECONDARY HO2S (SENSOR 2) 4P CONNECTOR



Wire side of female terminals

13. Turn the ignition switch ON (II).
14. Check the HO2S S2 in the DATA LIST with the HDS.

Does the voltage stay at 1.27 V or more?

YES—Go to step 15.

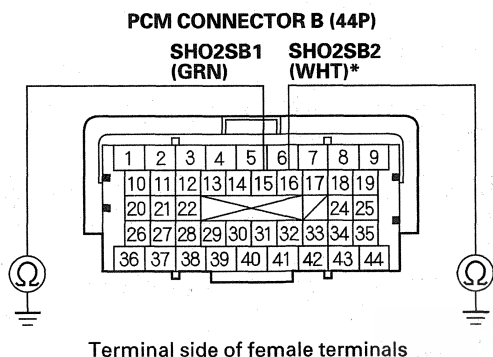
NO—Repair open in the wire between the PCM (C14 (C39) *) and the secondary HO2S (Sensor 2), then go to step 21.

(cont'd)

PGM-FI System

DTC Troubleshooting (cont'd)

15. Turn the ignition switch OFF.
16. Jump the SCS line with the HDS.
17. Disconnect PCM connector B (44P).
18. Check for continuity between PCM connector terminal B15 (B16)* and body ground.



Is there continuity?

YES—Go to step 29.

NO—Repair open in the wire between the PCM (B15 (B16)*) and the secondary HO2S (Sensor 2), then go to step 21.

19. Turn the ignition switch OFF.
20. Replace the secondary HO2S (Sensor 2) (see page 11-225).
21. Reconnect all connectors.
22. Turn the ignition switch ON (II).
23. Reset the PCM with the HDS.
24. Do the PCM idle learn procedure (see page 11-359).
25. Start the engine, and let it idle without load (in Park or neutral) until the radiator fan comes on.

26. Test-drive under these conditions:

- Engine coolant temperature (ECT SENSOR 1) above 176 °F (80 °C)
- Transmission in D position
- Engine speed at 1,500—3,000 rpm
- Drive at a steady speed for 1 minute or more

27. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0138 and/or P0158 indicated?*

YES—Check for poor connections or loose terminals at the secondary HO2S (Sensor 2) and the PCM, then go to step 1.

NO—Go to step 28.

28. Monitor the OBD STATUS for DTC P0138 and/or P0158* in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 27, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the secondary HO2S (Sensor 2) and the PCM, then go to step 1. If the screen indicates EXECUTING, keep driving until a result comes on. If the screen indicates OUT OF CONDITION, go to step 25.



29. Reconnect all connectors.
30. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).
31. Start the engine, and let it idle without load (in Park or neutral) until the radiator fan comes on.
32. Test-drive under these conditions:
 - Engine coolant temperature (ECT SENSOR 1) above 176 °F (80 °C)
 - Transmission in D position
 - Engine speed at 1,500—3,000 rpm
 - Drive at a steady speed for 1 minute or more

33. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0138 and/or P0158 indicated?*

YES—Check for poor connections or loose terminals at the secondary HO2S (Sensor 2) and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then go to step 31. If the PCM was substituted, go to step 1.

NO—Go to step 34.

34. Monitor the OBD STATUS for DTC P0138 and/or P0158* in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-230). If any other Temporary DTCs or DTCs were indicated in step 33, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the secondary HO2S (Sensor 2) and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then go to step 31. If the PCM was substituted, go to step 1. If the screen indicates EXECUTING, keep driving until a result comes on. If the screen indicates OUT OF CONDITION, go to step 31.

PGM-FI System

DTC Troubleshooting (cont'd)

DTC P0139: Rear Secondary HO2S (Bank 1, Sensor 2) Slow Response

DTC P0159: Front Secondary HO2S (Bank 2, Sensor 2) Slow Response

NOTE:

- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- Information marked with an asterisk (*) applies to the front bank (Bank 2).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine, and let it idle without load (in Park or neutral) until the radiator fan comes on.
4. Test-drive under these conditions:

- Engine coolant temperature (ECT SENSOR 1) above 158 °F (70 °C)
- Transmission in D position
- Vehicle speed above 35 mph (56 km/h)
- Drive 20 seconds or more

5. Monitor the OBD STATUS for DTC P0139 and/or P0159* in the DTCs MENU with the HDS.

Does the screen indicate FAILED?

YES—Go to step 6.

NO—If the screen indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the secondary HO2S (Sensor 2) and the PCM. If the screen indicates EXECUTING, keep driving until a result comes on. If the screen indicates OUT OF CONDITION, go to step 3 and recheck.

6. Turn the ignition switch OFF.
7. Replace the secondary HO2S (Sensor 2) (see page 11-225).
8. Turn the ignition switch ON (II).
9. Reset the PCM with the HDS.
10. Do the PCM idle learn procedure (see page 11-359).

11. Start the engine, and let it idle without load (in Park or neutral) until the radiator fan comes on.

12. Test-drive under these conditions:

- Engine coolant temperature (ECT SENSOR 1) above 158 °F (70 °C)
- Transmission in D position
- Vehicle speed above 35 mph (56 km/h)
- Drive 20 seconds or more

13. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0139 and/or P0159 indicated?*

YES—Check for poor connections or loose terminals at the secondary HO2S (Sensor 2) and the PCM, then go to step 1.

NO—Go to step 14.

14. Monitor the OBD STATUS for DTC P0139 and/or P0159* in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 13, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the secondary HO2S (Sensor 2) and the PCM, then go to step 1. If the screen indicates EXECUTING, keep driving until a result comes on. If the screen indicates OUT OF CONDITION, go to step 11.



DTC P0141: Rear Secondary HO2S (Bank 1, Sensor 2) Heater Circuit Malfunction

DTC P0161: Front Secondary HO2S (Bank 2, Sensor 2) Heater Circuit Malfunction

NOTE:

- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- Information marked with an asterisk (*) applies to the front bank (Bank 2).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine.
4. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0141 and/or P0161 indicated?*

YES—Go to step 5.

NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the secondary HO2S (Sensor 2), the A/F sensor relay (LAF), and the PCM. ■

5. Turn the ignition switch OFF.
6. Check these fuses:
 - No. 9 LAF (A/F SENSOR) (15 A) fuse in the auxiliary under-hood fuse/relay box
 - 7.5 A fuse in the auxiliary under-dash fuse holder

Are any of the fuses blown?

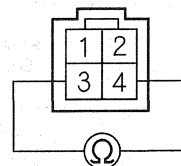
YES—Repair short in the wire between the secondary HO2S (Sensor 2), the A/F sensor relay (LAF), and the fuse(s). Also replace the blown fuse(s), then go to step 23.

NO—Go to step 7.

7. Disconnect the secondary HO2S (Sensor 2) 4P connector.

8. At the secondary HO2S (Sensor 2) side, measure resistance between secondary HO2S (Sensor 2) 4P connector terminals No. 3 and No. 4.

SECONDARY HO2S (SENSOR 2) 4P CONNECTOR



Terminal side of male terminals

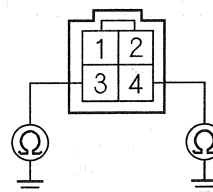
Is there 5.4—7.3 Ω at room temperature?

YES—Go to step 9.

NO—Go to step 22.

9. At the secondary HO2S (Sensor 2) side, check for continuity between body ground and secondary HO2S (Sensor 2) 4P connector terminals No. 3 and No. 4 individually.

SECONDARY HO2S (SENSOR 2) 4P CONNECTOR



Terminal side of male terminals

Is there continuity?

YES—Go to step 22.

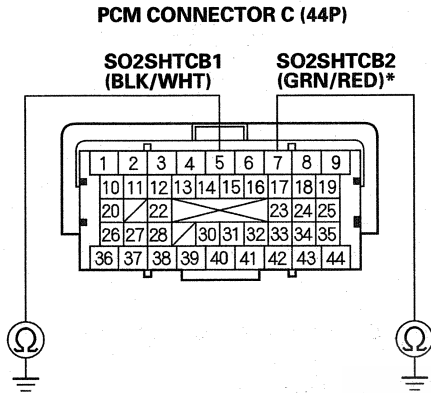
NO—Go to step 10.

(cont'd)

PGM-FI System

DTC Troubleshooting (cont'd)

10. Jump the SCS line with the HDS.
11. Disconnect PCM connector C (44P).
12. Check for continuity between PCM connector terminal C5 (C7)* and body ground.

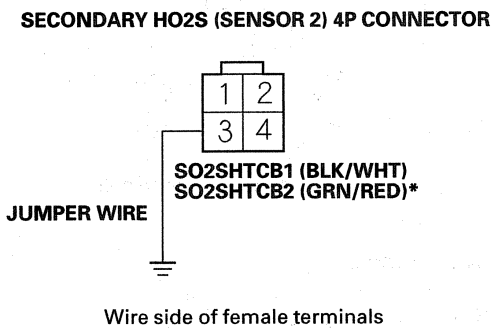


Is there continuity?

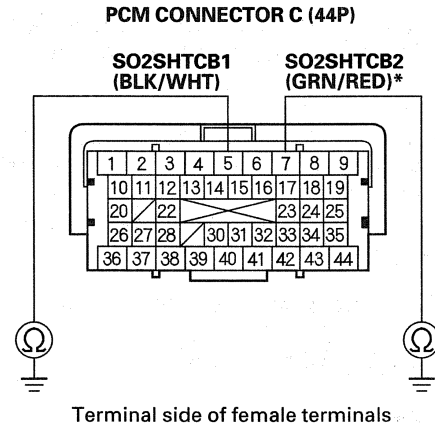
YES—Repair short in the wire between the PCM (C5 (C7)*) and the secondary HO2S (Sensor 2), then go to step 23.

NO—Go to step 13.

13. Connect secondary HO2S (Sensor 2) 4P connector terminal No. 3 to body ground with a jumper wire.



14. Check for continuity between PCM connector terminal C5 (C7)* and body ground.

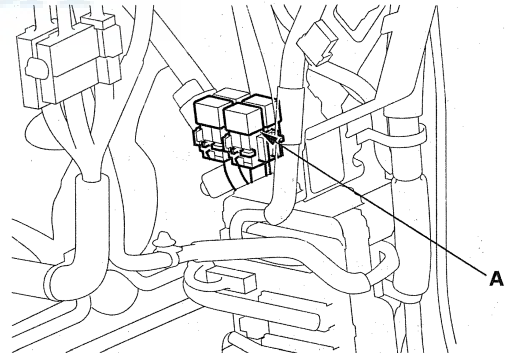


Is there continuity?

YES—Go to step 15.

NO—Repair open in the wire between the PCM (C5 (C7)*) and the secondary HO2S (Sensor 2), then go to step 23.

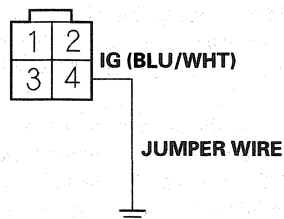
15. Remove the A/F sensor relay (LAF) (A).





16. Connect secondary HO2S (Sensor 2) 4P connector terminal No. 4 to body ground with a jumper wire.

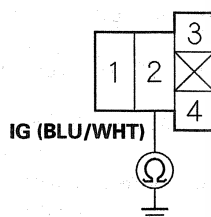
SECONDARY HO2S (SENSOR 2) 4P CONNECTOR



Wire side of female terminals

17. Check for continuity between A/F sensor relay (LAF) 4P connector terminal No. 2 and body ground.

A/F SENSOR RELAY (LAF) 4P CONNECTOR



Terminal side of female terminals

Is there continuity?

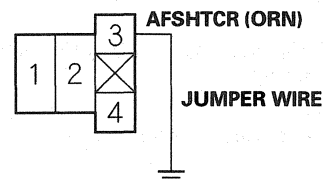
YES—Go to step 18.

NO—Repair open in the wire between the secondary HO2S (Sensor 2) and the A/F sensor relay (LAF), then go to step 23.

18. Disconnect PCM connector A (44P).

19. Connect A/F sensor relay (LAF) 4P connector terminal No. 3 to body ground with a jumper wire.

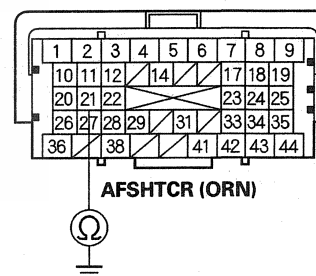
A/F SENSOR RELAY (LAF) 4P CONNECTOR



Terminal side of female terminals

20. Check for continuity between PCM connector terminal A21 and body ground.

PCM CONNECTOR A (44P)



Terminal side of female terminals

Is there continuity?

YES—Go to step 21.

NO—Repair open in the wire between the PCM (A21) and the A/F sensor relay (LAF), then go to step 23.

(cont'd)

PGM-FI System

DTC Troubleshooting (cont'd)

21. Test the A/F sensor relay (LAF) (see page 22-82).

Is the A/F sensor relay (LAF) OK?

YES—Go to step 29.

NO—Replace the A/F sensor relay (LAF), then go to step 23.

22. Replace the secondary HO2S (Sensor 2) (see page 11-225).

23. Reconnect all connectors.

24. Turn the ignition switch ON (II).

25. Reset the PCM with the HDS.

26. Do the PCM idle learn procedure (see page 11-359).

27. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0141 and/or P0161 indicated?*

YES—Check for poor connections or loose terminals at the secondary HO2S (Sensor 2), the A/F sensor relay (LAF), and the PCM, then go to step 1.

NO—Go to step 28.

28. Monitor the OBD STATUS for DTC P0141 and/or P0161* in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 27, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the secondary HO2S (Sensor 2), the A/F sensor relay (LAF), and the PCM, then go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

29. Reconnect all connectors.

30. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).

31. Start the engine, and let it idle.

32. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0141 and/or P0161 indicated?*

YES—Check for poor connections or loose terminals at the secondary HO2S (Sensor 2), the A/F sensor relay (LAF), and the PCM, then go to step 1. If the PCM was updated, substitute a known-good PCM (see page 11-8), then go to step 31. If the PCM was substituted, go to step 1.

NO—Go to step 33.



33. Monitor the OBD STATUS for DTC P0141 and/or P0161* in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-230). If any other Temporary DTCs or DTCs were indicated in step 32, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the secondary HO2S (Sensor 2), the A/F sensor relay (LAF), and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then go to step 31. If the PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.



PGM-FI System

DTC Troubleshooting (cont'd)

DTC P0171: Rear Bank (Bank 1) Fuel System Too Lean

DTC P0172: Rear Bank (Bank 1) Fuel System Too Rich

DTC P0174: Front Bank (Bank 2) Fuel System Too Lean

DTC P0175: Front Bank (Bank 2) Fuel System Too Rich

NOTE:

- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- If some of the DTCs listed below are stored at the same time as DTC P0171, P0172, P0174, and/or P0175, troubleshoot those DTCs first, then recheck for P0171, P0172, P0174, and/or P0175.

P0107, P0108, P1128, P1129: Manifold absolute pressure (MAP) sensor

P0133, P0153, P1172, P1174, P2195, P2197, P2237, P2238, P2240, P2241, P2243, P2245, P2247, P2249, P2251, P2252, P2254, P2255, P2627, P2628, P2630, P2631, P2A00, P2A03: Air fuel ratio (A/F) sensor (Sensor 1)

P0134, P0135, P0154, P0155: Air fuel ratio (A/F) sensor (Sensor 1) heater

P0137, P0138, P0139, P0157, P0158, P0159, P2270, P2271, P2272, P2273: Secondary HO2S (Sensor 2)

P0141, P0161: Secondary HO2S (Sensor 2) heater

P0401, P0404, P0406, P2413: Exhaust gas

recirculation (EGR) system

P0522, P0523, P2646, P2647, P2648, P2649: Variable Cylinder Management (VCM) system (J35Z1 engine)

P2279: Intake air leakage

P2646, P2647, P2648, P2649: VTEC system (J35A9 engine)

1. Check the fuel pressure (see page 11-375).

Is the fuel pressure OK?

YES—If you are troubleshooting DTC P0171 or P0174, go to step 2. If you are troubleshooting DTC P0172 or P0175, check the valve clearances, and adjust if necessary. If the valve clearances are OK, replace the injectors (see page 11-222), then go to step 2.

NO—If the pressure is too high, replace the fuel pressure regulator (see page 11-386), then go to step 2. If the pressure is too low, check the fuel pump, the fuel pressure regulator, the fuel filter, and the fuel feed pipe, then go to step 2.

2. Turn the ignition switch ON (II).
3. Reset the PCM with the HDS.
4. Do the PCM idle learn procedure (see page 11-359).
5. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.
6. Test-drive under these conditions:
 - Engine coolant temperature (ECT SENSOR 1) above 158 °F (70 °C)
 - Transmission in D position
 - Drive at a steady speed between 15—75 mph (24—120 km/h) for 15 minutes.

NOTE: DTC P0171, P0172, P0174, and/or P0175 may take up to 40 minutes of test driving to set. Using the HDS, monitor the long term fuel trim (LT FUEL TRIM). If the LT FUEL TRIM stays within 0.84—1.8, there is no problem at this time.

7. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0171, P0172, P0174, and/or P0175 indicated?

YES—Go to step 1.

NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■



DTC P0300: Random Misfire and Any Combination of the Following:

DTC P0301: No. 1 Cylinder Misfire Detected

DTC P0302: No. 2 Cylinder Misfire Detected

DTC P0303: No. 3 Cylinder Misfire Detected

DTC P0304: No. 4 Cylinder Misfire Detected

DTC P0305: No. 5 Cylinder Misfire Detected

DTC P0306: No. 6 Cylinder Misfire Detected

Special Tools Required

- Pressure gauge adapter 07NAJ-P07010A
- A/T low pressure gauge w/panel 07406-0070301
- A/T pressure hose 07406-0020201
- A/T pressure hose, 2,210 mm 07MAJ-PY4011A
- A/T pressure adapter 07MAJ-PY40120
- Oil pressure hose 07ZAJ-S5AA200

NOTE:

- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- If the misfire is frequent enough to trigger detection of increased emissions during two consecutive driving cycles, the MIL will come on, and DTC P0300 (and some combination of P0301 through P0306) will be stored.
- If the misfire is frequent enough to damage the catalyst, the MIL will blink whenever the misfire occurs, and DTC P0300 (and some combination of P0301 through P0306) will be stored. When the misfire stops, the MIL will remain on.
- Troubleshoot the following DTCs first, if any of them were stored along with the random misfire DTC(s) (Because parts can sometimes fail without setting DTCs, you should also do a physical inspection of the below systems.):

P0107, P0108, P1128, P1129: Manifold absolute pressure (MAP) sensor
P0171, P0172, P0174, P0175: Fuel system
P0335, P0339, P0385, P0389: Crankshaft position (CKP) sensor A/B
P0340, P0344: Camshaft position (CMP) sensor
P0401, P0404, P0406, P2413: Exhaust gas recirculation (EGR) system
P0506, P0507: Idle control system
P2646, P2647, P2648, P2649: VTEC system (J35A9 engine)

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine, and let it idle without load (in Park or neutral).
4. Monitor the OBD STATUS for DTC P0301, P0302, P0303, P0304, P0305, or P0306 in the DTCs MENU with the HDS.

Does the screen indicate FAILED?

YES—Go to step 9.

NO—If the screen indicates PASSED, go to step 5. If the screen indicates EXECUTING, let it idle until a result comes on. If the screen indicates OUT OF CONDITION, wait for several minutes, then recheck.

5. Check the CYL1 MISFIRE, CYL2 MISFIRE, CYL3 MISFIRE, CYL4 MISFIRE, CYL5 MISFIRE, and/or CYL6 MISFIRE in the DATA LIST for 10 minutes with the HDS.

Does CYL1 MISFIRE, CYL2 MISFIRE, CYL3 MISFIRE, CYL4 MISFIRE, CYL5 MISFIRE, and/or CYL6 MISFIRE show misfire counts?

YES—Go to step 9.

NO—Go to step 6.

6. Test-drive the vehicle for several minutes in the range of these recorded freeze data parameters:

- ENGINE SPEED
- VSS
- REL TP SENSOR
- CLV (calculated load value)
- ECT SENSOR 1
- APP SENSOR
- GEAR POSITION

(cont'd)

PGM-FI System

DTC Troubleshooting (cont'd)

7. Monitor the OBD STATUS for DTC P0301, P0302, P0303, P0304, P0305, or P0306 in the DTCs MENU with the HDS.

Does the screen indicate FAILED?

YES—Go to step 9.

NO—If the screen indicates PASSED, go to step 8. If the screen indicates EXECUTING, keep driving until a result comes on. If the screen indicates OUT OF CONDITION, go to step 6 and recheck.

8. Check the CYL1 MISFIRE, CYL2 MISFIRE, CYL3 MISFIRE, CYL4 MISFIRE, CYL5 MISFIRE, and/or CYL6 MISFIRE in the DATA LIST for 10 minutes with the HDS.

Does CYL1 MISFIRE, CYL2 MISFIRE, CYL3 MISFIRE, CYL4 MISFIRE, CYL5 MISFIRE, and/or CYL6 MISFIRE show misfire counts?

YES—Go to step 9.

NO—Intermittent failure, the system is OK at this time. ■

9. Turn the ignition switch OFF.

10. Check the fuel quality.

Is the quality good?

YES—Go to step 11.

NO—Drain the tank, and fill it with a known-good fuel, then go to step 20.

11. Inspect the spark plugs (see page 4-22). If the spark plugs are fouled or worn, replace them.

12. Test-drive the vehicle for several minutes in the range of these recorded freeze data parameters:

- ENGINE SPEED
- VSS
- REL TP SENSOR
- CLV (calculated load value)
- ECT SENSOR 1
- APP SENSOR
- GEAR POSITION

13. Check the CYL1 MISFIRE, CYL2 MISFIRE, CYL3 MISFIRE, CYL4 MISFIRE, CYL5 MISFIRE, and/or CYL6 MISFIRE in the DATA LIST for 10 minutes with the HDS.

Does CYL1 MISFIRE, CYL2 MISFIRE, CYL3 MISFIRE, CYL4 MISFIRE, CYL5 MISFIRE, and/or CYL6 MISFIRE show misfire counts?

YES—Go to step 14.

NO—Go to step 20.

14. Check the fuel pressure (see page 11-375).

Is the fuel pressure OK?

YES—

- J35Z1 engine: Check for air in the fuel line, then go to step 20.
- J35A9 engine: Go to step 15.

NO—

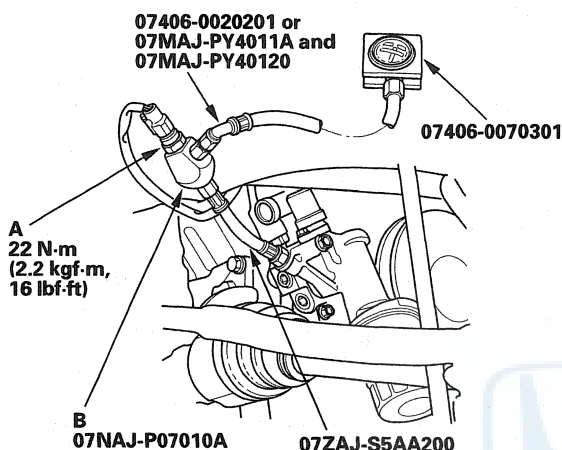
- If the pressure is too high, replace the fuel pressure regulator (see page 11-386), then go to step 20.
- If the pressure is too low, check the fuel pump, the fuel feed pipe, and the fuel filter. If they are OK, replace the fuel pressure regulator (see page 11-386), then go to step 20.

15. Turn the ignition switch OFF.



16. Remove the rocker arm oil pressure switch (VTEC oil pressure switch) (A), and install the special tools as shown, then install the rocker arm oil pressure switch (VTEC oil pressure switch) in the pressure gauge adapter (B).

NOTE: Install the parts in the reverse order of removal with a new O-ring.



17. Reconnect the rocker arm oil pressure switch (VTEC oil pressure switch) 2P connector.
18. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on.
19. Check the oil pressure at engine speeds of 1,000 and 2,000 rpm. Keep the measuring time as short as possible (less than 1 minute) because the engine is running without load.

Is the oil pressure below 49 kPa (0.5 kgf/cm², 7 psi) ?

YES—Check for air in the fuel line, then go to step 20.

NO—Inspect the VTEC system (see page 6-7), then go to step 20.

20. Turn the ignition switch ON (II).

21. Reset the PCM with the HDS.

22. Clear the CKP pattern with the HDS.

23. Do the PCM idle learn procedure (see page 11-359).

24. Do the CKP pattern learn procedure (see page 11-5).

25. Test-drive the vehicle for several minutes in the range of these recorded freeze data parameters:

- ENGINE SPEED
- VSS
- REL TP SENSOR
- CLV (calculated load value)
- ECT SENSOR 1
- APP SENSOR
- GEAR POSITION

26. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0300 and any combination of DTC P0301, P0302, P0303, P0304, P0305, or P0306 indicated?

YES—Check for poor connections or loose terminals at the ignition coils, the injectors, and the PCM, then go to DTC P0301, P0302, P0303, P0304, P0305 or P0306 (see page 11-116) troubleshooting.

NO—Go to step 27.

27. Monitor the OBD STATUS for DTC P0301, P0302, P0303, P0304, P0305, or P0306 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 26, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the ignition coils, the injectors, and the PCM, then go to step 1. If the screen indicates EXECUTING, keep driving until a result comes on. If the screen indicates OUT OF CONDITION, go to step 25.

PGM-FI System

DTC Troubleshooting (cont'd)

DTC P0301: No. 1 Cylinder Misfire Detected

DTC P0302: No. 2 Cylinder Misfire Detected

DTC P0303: No. 3 Cylinder Misfire Detected

DTC P0304: No. 4 Cylinder Misfire Detected

DTC P0305: No. 5 Cylinder Misfire Detected

DTC P0306: No. 6 Cylinder Misfire Detected

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine, and let it idle without load for 2 minutes (in Park or neutral).
4. Monitor the OBD STATUS for DTC P0301, P0302, P0303, P0304, P0305, or P0306 in the DTCs MENU with the HDS.

Does the screen indicate FAILED?

YES—Go to step 9.

NO—If the screen indicates PASSED, go to step 5. If the screen indicates EXECUTING, keep idling until a result comes on. If the screen indicates OUT OF CONDITION, wait for several minutes, and recheck.

5. Check the CYL1 MISFIRE, CYL2 MISFIRE, CYL3 MISFIRE, CYL4 MISFIRE, CYL5 MISFIRE, and/or CYL6 MISFIRE in the DATA LIST for 10 minutes with the HDS.

Does CYL1 MISFIRE, CYL2 MISFIRE, CYL3 MISFIRE, CYL4 MISFIRE, CYL5 MISFIRE, and/or CYL6 MISFIRE show misfire counts?

YES—Go to step 9.

NO—Go to step 6.

6. Test-drive the vehicle for several minutes in the range of these recorded freeze data parameters:

- ENGINE SPEED
- VSS
- REL TP SENSOR
- CLV (calculated load value)
- GEAR POSITION
- ECT SENSOR 1

7. Monitor the OBD STATUS for DTC P0301, P0302, P0303, P0304, P0305, or P0306 in the DTCs MENU with the HDS.

Does the screen indicate FAILED?

YES—Go to step 9.

NO—If the screen indicates PASSED, go to step 8. If the screen indicates EXECUTING, keep driving until a result comes on. If the screen indicates OUT OF CONDITION, go to step 6.

8. Check the CYL1 MISFIRE, CYL2 MISFIRE, CYL3 MISFIRE, CYL4 MISFIRE, CYL5 MISFIRE, and/or CYL6 MISFIRE in the DATA LIST for 10 minutes with the HDS.

Does CYL1 MISFIRE, CYL2 MISFIRE, CYL3 MISFIRE, CYL4 MISFIRE, CYL5 MISFIRE, and/or CYL6 MISFIRE show misfire counts?

YES—Go to step 9.

NO—Intermittent failure, the system is OK at this time. Check the fuel and ignition system circuit connectors for loose wires or poor connections. ■

9. Turn the ignition switch OFF.
10. Exchange the ignition coil from the problem cylinder with one from another cylinder.
11. Reconnect all connectors.



12. Test-drive the vehicle for several minutes in the range of these recorded freeze data parameters:

- ENGINE SPEED
- VSS
- REL TP SENSOR
- CLV (calculated load value)
- GEAR POSITION
- ECT SENSOR 1

13. Check the CYL1 MISFIRE, CYL2 MISFIRE, CYL3 MISFIRE, CYL4 MISFIRE, CYL5 MISFIRE, and/or CYL6 MISFIRE in the DATA LIST for 10 minutes with the HDS.

Does CYL1 MISFIRE, CYL2 MISFIRE, CYL3 MISFIRE, CYL4 MISFIRE, CYL5 MISFIRE, and/or CYL6 MISFIRE show misfire counts?

YES—Go to step 14.

NO—Intermittent failure due to poor contact at the ignition coil contactor (no misfire at this time). Make sure that the ignition coil connectors are secure. ■

14. Determine which cylinder had the misfire.

Does the misfire occur in the cylinder where the ignition coil was moved?

YES—Replace the faulty ignition coil (see page 4-19), then go to step 53.

NO—Go to step 15.

15. Turn the ignition switch OFF.

16. Exchange the spark plug from the problem cylinder with the one from another cylinder.

17. Reconnect all connectors.

18. Test-drive the vehicle for several minutes in the range of these recorded freeze data parameters:

- ENGINE SPEED
- VSS
- REL TP SENSOR
- CLV (calculated load value)
- GEAR POSITION
- ECT SENSOR 1

19. Check the CYL1 MISFIRE, CYL2 MISFIRE, CYL3 MISFIRE, CYL4 MISFIRE, CYL5 MISFIRE, and/or CYL6 MISFIRE in the DATA LIST for 10 minutes with the HDS.

Does CYL1 MISFIRE, CYL2 MISFIRE, CYL3 MISFIRE, CYL4 MISFIRE, CYL5 MISFIRE, and/or CYL6 MISFIRE show misfire counts?

YES—Go to step 20.

NO—Intermittent failure due to spark plug fouling (no misfire at this time). ■

20. Determine which cylinder had the misfire.

Does the misfire occur in the cylinder where the spark plug was exchanged?

YES—Replace the faulty spark plug, then go to step 53.

NO—Go to step 21.

21. Turn the ignition switch OFF.

22. Disconnect the ignition coil 3P connector from the problem cylinder.

23. Turn the ignition switch ON (II).

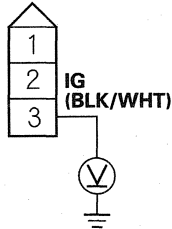
(cont'd)

PGM-FI System

DTC Troubleshooting (cont'd)

24. Measure voltage between ignition coil 3P connector terminal No. 3 and body ground.

IGNITION COIL 3P CONNECTOR



Wire side of female terminals

Is there battery voltage?

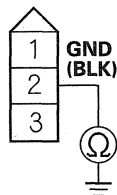
YES—Go to step 25.

NO—Repair open in the wire between the ignition coil and the ignition coil relay, then go to step 53.

25. Turn the ignition switch OFF.

26. Check for continuity between ignition coil 3P connector terminal No. 2 and body ground.

IGNITION COIL 3P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Go to step 27.

NO—Repair open in the wire between the ignition coil, G101, and G102, then go to step 53.

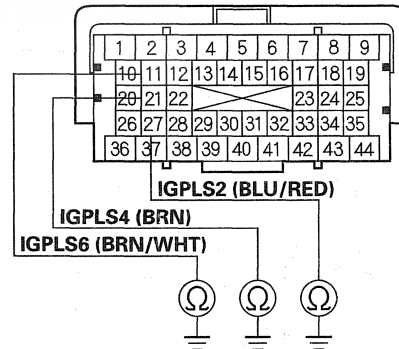
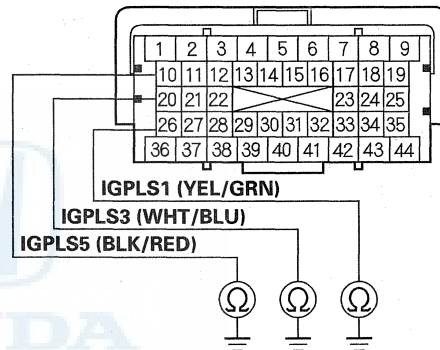
27. Jump the SCS line with the HDS.

28. Disconnect PCM connector B (44P).

29. Check for continuity between body ground and the appropriate PCM connector terminal (see table).

PROBLEM CYLINDER	DTC	PCM TERMINAL	WIRE COLOR
No. 1	P0301	B26	YEL/GRN
No. 2	P0302	B27	BLU/RED
No. 3	P0303	B20	WHT/BLU
No. 4	P0304	B21	BRN
No. 5	P0305	B10	BLK/RED
No. 6	P0306	B11	BRN/WHT

PCM CONNECTOR B (44P)



Terminal side of female terminals

Is there continuity?

YES—Repair short in the wire between the PCM and the ignition coil, then go to step 53.

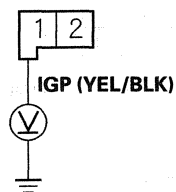
NO—Go to step 30.

PGM-FI System

DTC Troubleshooting (cont'd)

34. Turn the ignition switch OFF.
35. Disconnect the injector 2P connector from the problem cylinder.
36. Turn the ignition switch ON (II).
37. Measure voltage between injector 2P connector terminal No. 1 and body ground.

INJECTOR 2P CONNECTOR



Wire side of female terminals

Is there battery voltage?

YES—Go to step 38.

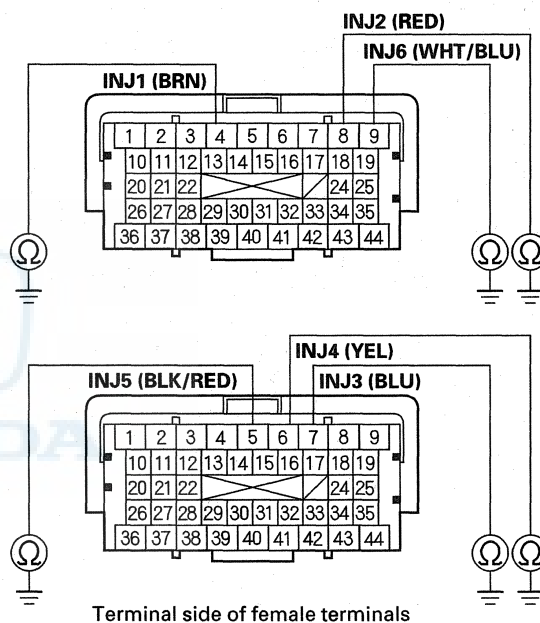
NO—Repair open in the wire between the injector and PGM-FI main relay 1 (FI MAIN), then go to step 50.

38. Turn the ignition switch OFF.

39. Check for continuity between body ground and the appropriate PCM connector terminal (see table).

PROBLEM CYLINDER	DTC	PCM TERMINAL	WIRE COLOR
No. 1	P0301	B4	BRN
No. 2	P0302	B8	RED
No. 3	P0303	B7	BLU
No. 4	P0304	B6	YEL
No. 5	P0305	B5	BLK/RED
No. 6	P0306	B9	WHT/BLU

PCM CONNECTOR B (44P)



Is there continuity?

YES—Repair short in the wire between the PCM and the injector, then go to step 53.

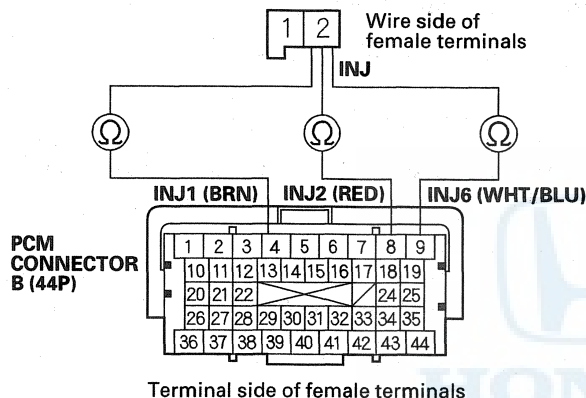
NO—Go to step 40.



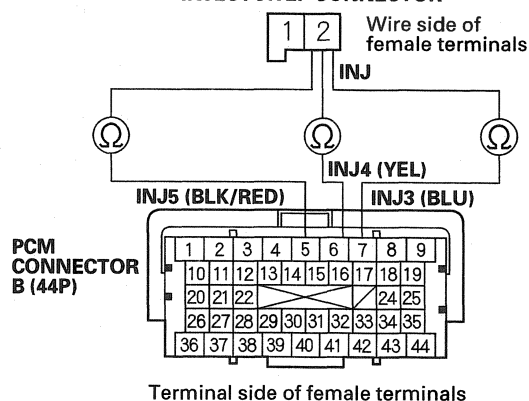
40. Check for continuity between appropriate injector 2P connector terminal No. 2 and the appropriate PCM connector terminal of the problem cylinder (see table).

PROBLEM CYLINDER	DTC	PCM TERMINAL	WIRE COLOR
No. 1	P0301	B4	BRN
No. 2	P0302	B8	RED </td
No. 3	P0303	B7	BLU
No. 4	P0304	B6	YEL
No. 5	P0305	B5	BLK/RED
No. 6	P0306	B9	WHT/BLU

INJECTOR 2P CONNECTOR



INJECTOR 2P CONNECTOR



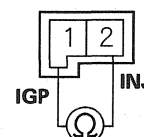
Is there continuity?

YES—Check for poor connections or loose terminals at the injector and PGM-FI main relay 1 (FI MAIN), then go to step 41.

NO—Repair open in the wire between the PCM and the injector, then go to step 53.

41. At the injector side, measure resistance between injector 2P connector terminals No. 1 and No. 2.

INJECTOR 2P CONNECTOR



Is there 10—13 Ω ?

YES—Go to step 42.

NO—Replace the injector (see page 11-222), then go to step 53.

42. Exchange the injector from the problem cylinder with the one from another cylinder. Also check the injector fuel inlet screen for debris, and clean if needed.
43. Reconnect all connectors, and install the intake manifold (see page 9-6).
44. Turn the ignition switch ON (II).
45. Clear the DTCs with the HDS.
46. Start the engine, and let it idle without load for 2 minutes (in Park or neutral).

(cont'd)

PGM-FI System

DTC Troubleshooting (cont'd)

47. Test-drive the vehicle for several minutes in the range of these recorded freeze data parameters:

- ENGINE SPEED
- VSS
- REL TP SENSOR
- CLV (calculated load value)
- GEAR POSITION
- ECT SENSOR 1

48. Check the CYL1 MISFIRE, CYL2 MISFIRE, CYL3 MISFIRE, CYL4 MISFIRE, CYL5 MISFIRE, and/or CYL6 MISFIRE in the DATA LIST for 10 minutes with the HDS.

Does CYL1 MISFIRE, CYL2 MISFIRE, CYL3 MISFIRE, CYL4 MISFIRE, CYL5 MISFIRE, and/or CYL6 MISFIRE show misfire counts?

YES—Go to step 49.

NO—Intermittent failure due to poor contact in the injector connector (no misfire at this time). Check for poor connections or loose terminals at the injector. ■

49. Determine which cylinder had the misfire.

Does the misfire occur in the cylinder where the injector was exchanged?

YES—Replace the faulty injector (see page 11-222), then go to step 53.

NO—Go to step 50.

50. Turn the ignition switch OFF.

51. Do an engine compression and a cylinder leakdown test; J35A9 engine (see page 6-6), J35Z1 engine (see page 6-61).

Did the engine pass both tests?

YES—

- J35A9 engine: Go to step 52.
- J35Z1 engine: Go to step 61.

NO—Repair the engine, then go to step 53.

52. Do the VTEC rocker arm test (see page 6-7).

Did the engine pass the test?

YES—Go to step 61.

NO—Repair the VTEC rocker arm, then go to step 53.

53. Reconnect all connectors.

54. Reset the PCM with the HDS.

55. Clear the CKP pattern with the HDS.

56. Do the PCM idle learn procedure (see page 11-359).

57. Do the CKP pattern learn procedure (see page 11-5).



58. Test-drive the vehicle for several minutes in the range of these recorded freeze data parameters:

- ENGINE SPEED
- VSS
- REL TP SENSOR
- CLV (calculated load value)
- GEAR POSITION
- ECT SENSOR 1

59. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0301, P0302, P0303, P0304, P0305, or P0306 indicated?

YES—Check for poor connections or loose terminals at the ignition coil, the injector, and the PCM, then go to step 1.

NO—Go to step 60.

60. Monitor the OBD STATUS for DTC P0301, P0302, P0303, P0304, P0305, or P0306 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 59, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the ignition coil, the injector, and the PCM, then go to step 1. If the screen indicates EXECUTING, keep driving until a result comes on. If the screen indicates OUT OF CONDITION, go to step 58.

61. Reconnect all connectors.

62. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).

63. Test-drive the vehicle for several minutes in the range of these recorded freeze data parameters:

- ENGINE SPEED
- VSS
- REL TP SENSOR
- CLV (calculated load value)
- GEAR POSITION
- ECT SENSOR 1

64. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0301, P0302, P0303, P0304, P0305, or P0306 indicated?

YES—Check for poor connections or loose terminals at the ignition coil, the injector, and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then go to step 63. If the PCM was substituted, go to step 1.

NO—Go to step 65.

(cont'd)

PGM-FI System

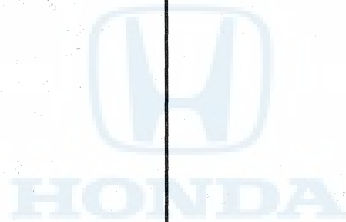
DTC Troubleshooting (cont'd)

65. Monitor the OBD STATUS for DTC P0301, P0302, P0303, P0304, P0305, or P0306 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-230). If any other Temporary DTCs or DTCs were indicated in step 64, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the ignition coil, the injector, and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then go to step 63. If the PCM was substituted, go to step 1. If the screen indicates EXECUTING, keep driving until a result comes on. If the screen indicates OUT OF CONDITION, go to step 63.





DTC P0325: Knock Sensor Circuit Malfunction

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.
4. Hold the engine speed at 3,000—4,000 rpm for at least 10 seconds.

5. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0325 indicated?

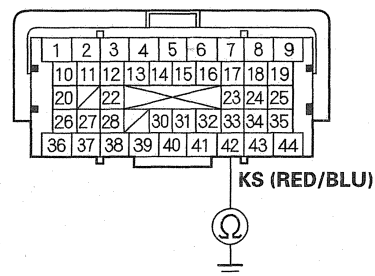
YES—Go to step 6.

NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the knock sensor and the PCM. ■

6. Turn the ignition switch OFF.
7. Jump the SCS line with the HDS.
8. Disconnect the knock sensor subharness 1P connector.
9. Disconnect PCM connector C (44P).

10. Check for continuity between PCM connector terminal C42 and body ground.

PCM CONNECTOR C (44P)



Terminal side of female terminals

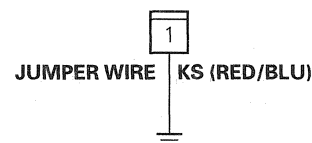
Is there continuity?

YES—Repair short in the wire between the PCM (C42) and the knock sensor subharness, then go to step 19.

NO—Go to step 11.

11. Connect the knock sensor subharness 1P connector terminal to body ground with a jumper wire.

KNOCK SENSOR SUBHARNESSES
1P CONNECTOR



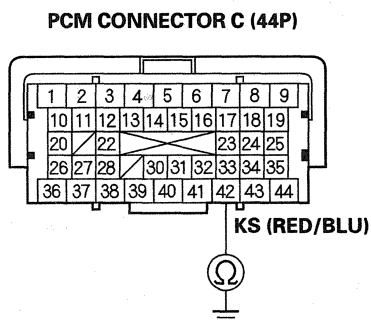
Wire side of female terminals

(cont'd)

PGM-FI System

DTC Troubleshooting (cont'd)

12. Check for continuity between PCM connector terminal C42 and body ground.



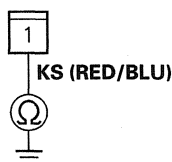
Is there continuity?

YES—Go to step 13.

NO—Repair open in the wire between the PCM (C42) and the knock sensor subharness, then go to step 19.

13. Remove the intake manifold (see page 9-4) and injector base.
14. Disconnect the knock sensor 1P connector.
15. Check for continuity between the knock sensor subharness 1P connector terminal and body ground.

**KNOCK SENSOR SUBHARNESS
1P CONNECTOR**



Is there continuity?

YES—Repair short in the knock sensor subharness, then go to step 18.

NO—Go to step 16.

16. Check for an open in the knock sensor subharness.

Is the harness OK?

YES—Go to step 17.

NO—Repair open in the knock sensor subharness, then go to step 19.

17. Replace the knock sensor (see page 11-229).
18. Install the intake manifold (see page 9-6) and injector base.
19. Reconnect all connectors.
20. Turn the ignition switch ON (II).
21. Reset the PCM with the HDS.
22. Do the PCM idle learn procedure (see page 11-359).
23. Hold the engine speed at 3,000—4,000 rpm for at least 10 seconds.



24. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0325 indicated?

YES—Check for poor connections or loose terminals at the knock sensor and the PCM, then go to step 26.

NO—Go to step 25.

25. Monitor the OBD STATUS for DTC P0325 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 24, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the knock sensor and the PCM, then go to step 1. If the screen indicates NOT COMPLETED, go to step 23.

26. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).
27. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.
28. Hold the engine speed at 3,000—4,000 rpm for at least 10 seconds.
29. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0325 indicated?

YES—Check for poor connections or loose terminals at the knock sensor and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then go to step 27. If the PCM was substituted, go to step 1.

NO—Go to step 30.

30. Monitor the OBD STATUS for DTC P0325 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-230). If any other Temporary DTCs or DTCs were indicated in step 29, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the knock sensor and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then go to step 27. If the PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, go to step 27.

PGM-FI System

DTC Troubleshooting (cont'd)

DTC P0335: CKP Sensor A No Signal

DTC P0385: CKP Sensor B No Signal

NOTE:

- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- Information marked with an asterisk (*) applies to CKP sensor B.

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine.
4. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0335 and/or P0385 indicated?*

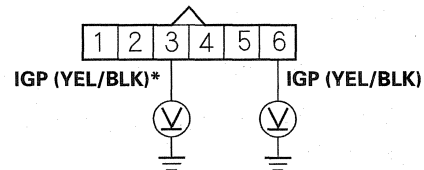
YES—Go to step 5.

NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at CKP sensor A/B and the PCM. ■

5. Turn the ignition switch OFF.
6. Disconnect CKP sensor A/B 6P connector (see page 11-228).
7. Turn the ignition switch ON (II).

8. Measure voltage between CKP sensor A/B 6P connector terminal No. 6 (No. 3)* and body ground.

CKP SENSOR A/B 6P CONNECTOR



Wire side of female terminals

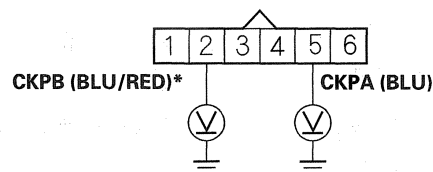
Is there battery voltage?

YES—Go to step 9.

NO—Repair open in the wire between CKP sensor A/B and PGM-FI main relay 1 (FI MAIN), then go to step 18.

9. Measure voltage between CKP sensor A/B 6P connector terminal No. 5 (No. 2)* and body ground.

CKP SENSOR A/B 6P CONNECTOR



Wire side of female terminals

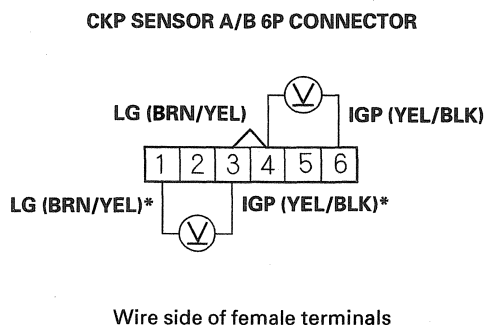
Is there about 5 V?

YES—Go to step 10.

NO—Go to step 11.



10. Measure voltage between CKP sensor A/B 6P connector terminals No. 4 (No. 1)* and No. 6 (No. 3)*.



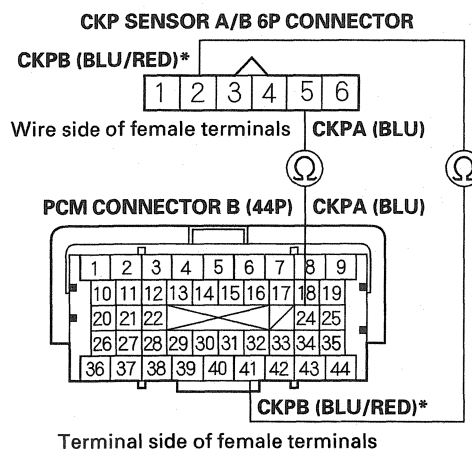
Is there battery voltage?

YES—Go to step 16.

NO—Repair open in the wire between CKP sensor A/B and G101, then go to step 18.

11. Turn the ignition switch OFF.
12. Jump the SCS line with the HDS.
13. Disconnect PCM connector B (44P).

14. Check for continuity between PCM connector terminal B24 (B41)* and CKP sensor A/B 6P connector No. 5 (No. 2)*.

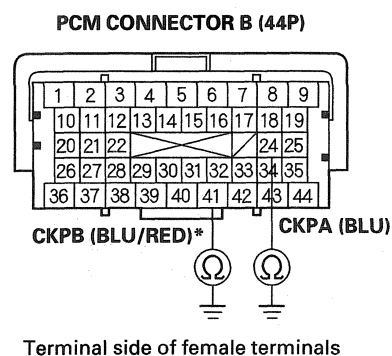


Is there continuity?

YES—Go to step 15.

NO—Repair open in the wire between the PCM B24 (B41)* and CKP sensor A/B, then go to step 18.

15. Check for continuity between PCM connector terminal B24 (B41)* and body ground.



Is there continuity?

YES—Repair short in the wire between the PCM (B24 (B41)*) and CKP sensor A/B, then go to step 18.

NO—Go to step 25.

(cont'd)

PGM-FI System

DTC Troubleshooting (cont'd)

16. Turn the ignition switch OFF.
17. Replace the CKP sensor (see page 11-228).
18. Reconnect all connectors.
19. Turn the ignition switch ON (II).
20. Reset the PCM with the HDS.
21. Clear the CKP pattern with the HDS.
22. Do the PCM idle learn procedure (see page 11-359).
23. Do the CKP pattern learn procedure (see page 11-5).
24. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0335 and/or P0385 indicated?*

YES—Check for poor connections or loose terminals at CKP sensor A/B and the PCM, then go to step 1.

NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

25. Reconnect all connectors.
26. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).
27. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0335 and/or P0385 indicated?*

YES—Check for poor connections or loose terminals at CKP sensor A/B and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1.

NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-230). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■



DTC P0339: CKP Sensor A Circuit Intermittent Interruption

DTC P0389: CKP Sensor B Circuit Intermittent Interruption

NOTE:

- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- Information marked with an asterisk (*) applies to CKP sensor B.

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Test-drive the vehicle for several minutes in the range of these recorded freeze data parameters:
 - ENGINE SPEED
 - VSS
4. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0339 and/or P0389 indicated?*

YES—Go to step 5.

NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at CKP sensor A/B and the PCM. ■

5. Check for poor or loose connections at these connectors and terminals:

- CKP sensor A/B
- PCM
- Engine ground
- Body ground

Are the connections OK?

YES—Go to step 6.

NO—Reconnect or repair the connectors or terminals, then go to step 9.

6. Check for damage to the CKP sensor A/B pulse plate on the timing belt drive pulley; J35A9 engine (see page 6-25), J35Z1 engine (see page 6-82).

Is there damage?

YES—Replace CKP sensor A/B pulse plate/timing belt drive pulley; J35A9 engine (see page 6-25), J35Z1 engine (see page 6-82), then go to step 9.

NO—Go to step 7.

7. Turn the ignition switch OFF.
8. Replace the CKP sensor (see page 11-228).
9. Turn the ignition switch ON (II).
10. Reset the PCM with the HDS.
11. Clear the CKP pattern with the HDS.
12. Do the PCM idle learn procedure (see page 11-359).
13. Do the CKP pattern learn procedure (see page 11-5).
14. Test-drive the vehicle for several minutes in the range of these recorded freeze data parameters:

- ENGINE SPEED
- VSS

15. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0339 and/or P0389 indicated?*

YES—Check for poor connections or loose terminals at CKP sensor A/B and the PCM, then go to step 1.

NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

PGM-FI System

DTC Troubleshooting (cont'd)

DTC P0340: CMP Sensor No Signal

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine.
4. Check for Temporary DTCs or DTCs with the HDS.

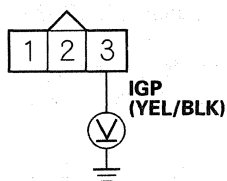
Is DTC P0340 indicated?

YES—Go to step 5.

NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the CMP sensor and the PCM. ■

5. Turn the ignition switch OFF.
6. Disconnect the CMP sensor 3P connector.
7. Turn the ignition switch ON (II).
8. Measure voltage between CMP sensor 3P connector terminal No. 3 and body ground.

CMP SENSOR 3P CONNECTOR



Wire side of female terminals

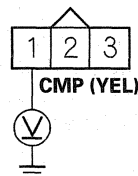
Is there battery voltage?

YES—Go to step 9.

NO—Repair open in the wire between the CMP sensor and PGM-FI main relay 1 (FI MAIN), then go to step 18.

9. Measure voltage between CMP sensor 3P connector terminal No. 1 and body ground.

CMP SENSOR 3P CONNECTOR



Wire side of female terminals

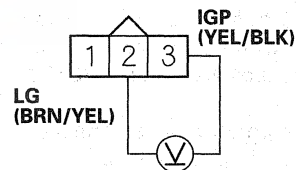
Is there about 5 V?

YES—Go to step 10.

NO—Go to step 11.

10. Measure voltage between CMP sensor 3P connector terminals No. 2 and No. 3.

CMP SENSOR 3P CONNECTOR



Wire side of female terminals

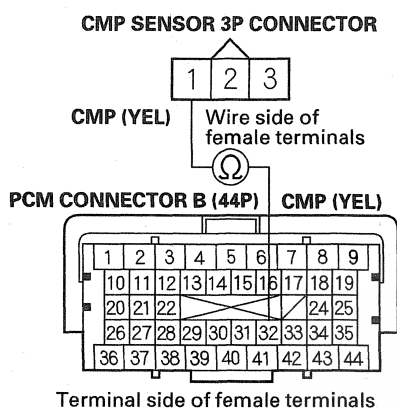
Is there battery voltage?

YES—Go to step 16.

NO—Repair open in the wire between the CMP sensor and G101, then go to step 18.



11. Turn the ignition switch OFF.
12. Jump the SCS line with the HDS.
13. Disconnect PCM connector B (44P).
14. Check for continuity between PCM connector terminal B32 and CMP sensor 3P connector terminal No. 1.



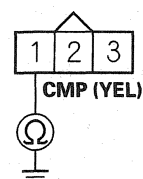
Is there continuity?

YES—Go to step 15.

NO—Repair open in the wire between the PCM (B32) and the CMP sensor, then go to step 18.

15. Check for continuity between CMP sensor 3P connector terminal No. 1 and body ground.

CMP SENSOR 3P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair short in the wire between the PCM (B32) and the CMP sensor, then go to step 18.

NO—Go to step 26.

(cont'd)

PGM-FI System

DTC Troubleshooting (cont'd)

16. Turn the ignition switch OFF.
17. Replace the CMP sensor (see page 11-228).
18. Reconnect all connectors.
19. Turn the ignition switch ON (II).
20. Reset the PCM with the HDS.
21. Clear the CKP pattern with the HDS.
22. Do the PCM idle learn procedure (see page 11-359).
23. Do the CKP pattern learn procedure (see page 11-5).
24. Start the engine.
25. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0340 indicated?

YES—Check for poor connections or loose terminals at the CMP sensor and the PCM, then go to step 1.

NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

26. Reconnect all connectors.
27. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).
28. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0340 indicated?

YES—Check for poor connections or loose terminals at the CMP sensor and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1.

NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-230). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■



DTC P0344: CMP Sensor Circuit Intermittent Interruption

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Test-drive the vehicle for several minutes in the range of these recorded freeze data parameters:
 - ENGINE SPEED
 - VSS
4. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0344 indicated?

YES—Go to step 5.

NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the CMP sensor and the PCM. ■

5. Check for poor or loose connections at these connectors and terminals:
 - CMP sensor
 - PCM
 - Engine ground
 - Body ground

Are the connections OK?

YES—Go to step 6.

NO—Reconnect or repair the connectors or terminals, then go to step 9.

6. Check for damage to the CMP sensor pulse projection on the front camshaft pulley (see page 11-228).

Is there damage?

YES—Replace the front camshaft pulley (see page 11-228), then go to step 9.

NO—Go to step 7.

7. Turn the ignition switch OFF.
8. Replace the CMP sensor (see page 11-228).
9. Turn the ignition switch ON (II).
10. Reset the PCM with the HDS.
11. Clear the CKP pattern with the HDS.
12. Do the PCM idle learn procedure (see page 11-359).
13. Do the CKP pattern learn procedure (see page 11-5).
14. Test-drive the vehicle for several minutes in the range of these recorded freeze data parameters:
 - ENGINE SPEED
 - VSS
15. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0344 indicated?

YES—Check for poor connections or loose terminals at the CKP sensor and the PCM, then go to step 1.

NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

PGM-FI System

DTC Troubleshooting (cont'd)

DTC P0562: Charging System Low Voltage

NOTE:

- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- If any high current load accessories are installed, this DTC can be set.
- If DTC P16BB and/or P16BC is stored at the same time as DTC P0562, troubleshoot DTC P16BB and/or P16BC first, then recheck for DTC P0562.

1. Turn the ignition switch ON (II).

2. Clear the DTC with the HDS.

3. Start the engine.

4. Check under these conditions:

- A/C on
- Temperature control at maximum cool
- Blower fan at maximum speed
- Headlights on high beam
- Rear window defogger on

5. Hold the engine speed at 2,000 rpm (in Park or neutral) for 1 minute.

6. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0562 indicated?

YES—Replace the alternator (see page 4-36), then go to step 7.

NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the alternator and the under-hood fuse/relay box, and check the battery performance (see page 22-81). ■

7. Turn the ignition switch ON (II).

8. Reset the PCM with the HDS.

9. Do the PCM idle learn procedure (see page 11-359).

10. Start the engine.

11. Check under these conditions:

- A/C on
- Temperature control at maximum cool
- Blower fan at maximum speed
- Headlights on high beam
- Rear window defogger on

12. Hold the engine speed at 2,000 rpm (in Park or neutral) for 1 minute.

13. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0562 indicated?

YES—Check for poor connections or loose terminals at the alternator and the under-hood fuse/relay box, then go to step 1.

NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■



DTC P0563: PCM Power Source Circuit Unexpected Voltage

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch OFF.
4. Wait 10 seconds.
5. Turn the ignition switch ON (II).
6. Check for Temporary DTCs or DTCs with the HDS.

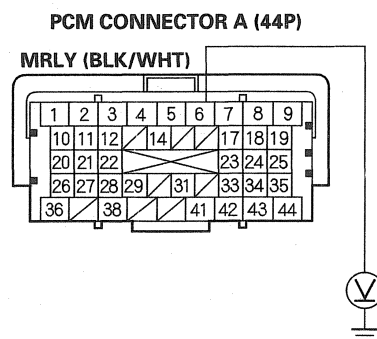
Is DTC P0563 indicated?

YES—Go to step 7.

NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at PGM-FI main relay 1 (FI MAIN), the No. 46 ACGS (15 A) fuse in the under-hood fuse/relay box, and the PCM. ■

7. Turn the ignition switch OFF.
8. Jump the SCS line with the HDS.
9. Disconnect PCM connector A (44P).

10. Measure voltage between PCM connector terminal A6 and body ground.



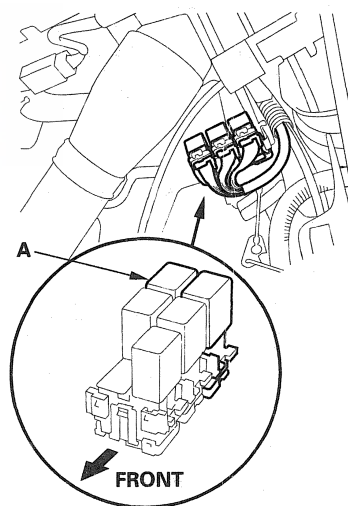
Terminal side of female terminals

Is there battery voltage?

YES—Go to step 14.

NO—Go to step 11.

11. Remove PGM-FI main relay 1 (FI MAIN) (A).

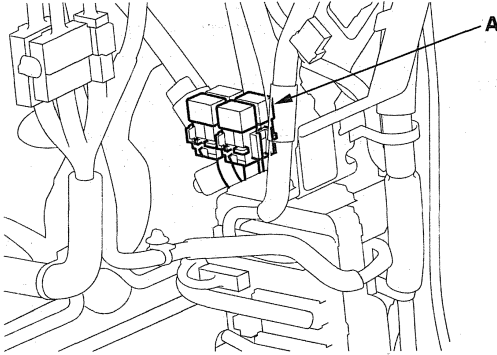


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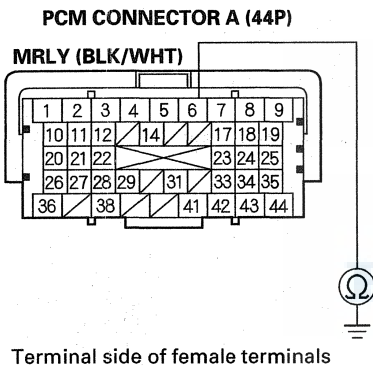
PGM-FI System

DTC Troubleshooting (cont'd)

12. Remove ignition coil relay (A).



13. Check for continuity between PCM connector terminal A6 and body ground.



Is there continuity?

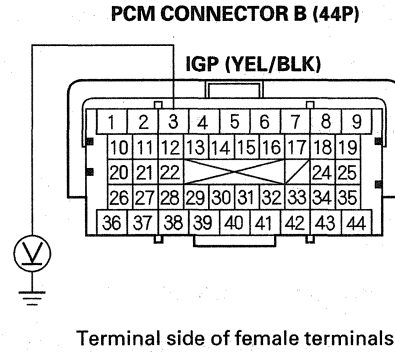
YES—Repair short in the wire between the PCM (A6) and the PGM-FI main relay 1 (FI MAIN), then go to step 20.

NO—Go to step 19.

14. Reconnect PCM connector A (44P).

15. Disconnect PCM connector B (44P).

16. Measure voltage between PCM connector terminal B3 and body ground.

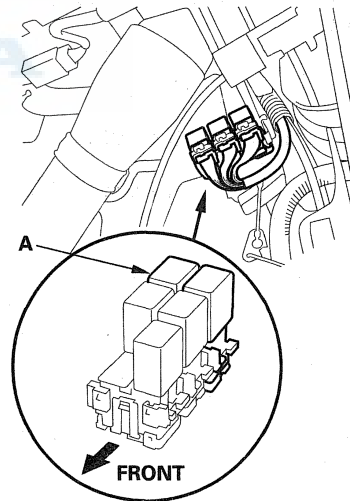


Is there battery voltage?

YES—Go to step 17.

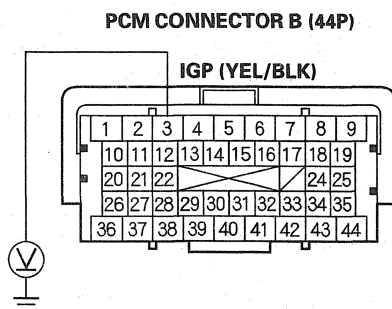
NO—Go to step 28.

17. Remove PGM-FI main relay 1 (FI MAIN) (A).





18. Measure voltage between PCM connector terminal B3 and body ground.



Terminal side of female terminals

Is there battery voltage?

YES—Repair short to power in the wire between the PCM (B3) and the PGM-FI main relay 1 (FI MAIN), then go to step 20.

NO—Go to step 19.

19. Test PGM-FI main relay 1 (FI MAIN) (see page 22-82).

Is PGM-FI main relay 1 (FI MAIN) OK?

YES—Go to step 29.

NO—Replace PGM-FI main relay 1 (FI MAIN), then go to step 20.

20. Reconnect all connectors.
21. Turn the ignition switch ON (II).
22. Reset the PCM with the HDS.
23. Do the PCM idle learn procedure (see page 11-359).
24. Turn the ignition switch OFF.
25. Wait 10 seconds.
26. Turn the ignition switch ON (II).

27. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0563 indicated?

YES—Check for poor connections or loose terminals at PGM-FI main relay 1 (FI MAIN) and the PCM, then go to step 1.

NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

28. Turn the ignition switch OFF.

29. Reconnect all connectors.

30. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).

31. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0563 indicated?

YES—Check for poor connections or loose terminals at the PGM-FI main relay 1 (FI MAIN) and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1.

NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-230). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

PGM-FI System

DTC Troubleshooting (cont'd)

DTC P0602: PCM Programming Error

NOTE:

- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- This DTC is indicated when a PCM update is not completed.
- Do not turn the ignition switch OFF while updating the PCM. If you turn the ignition switch OFF before completion, the PCM can be damaged.

1. Do the PCM update procedure (see page 11-7).
2. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0602 indicated?

YES—Replace the original PCM (see page 11-230). ■

NO—The update is complete. ■

DTC P0603: PCM Internal Control Module Keep Alive Memory (KAM) Error

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—Go to step 4.

NO—Intermittent failure, the system is OK at this time. ■

4. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).
5. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0603 indicated?

YES—If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1.

NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-230). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■



DTC P0630: VIN Not Programmed or Mismatch

NOTE:

- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- This DTC is stored only when the PCM does not have the VIN information of the vehicle. Use the HDS to input the missing VIN information.

1. Turn the ignition switch ON (II).
2. Check the VIN with the HDS.

Does the HDS show the vehicle's VIN?

YES—Go to step 5.

NO—Go to step 3.

3. Input the VIN to the PCM with the HDS.

Does the screen show COMPLETE?

YES—Go to step 5.

NO—Go to step 4.

4. Check for DTCs with the HDS.

Is DTC P0603 indicated?

YES—Go to the DTC P0603 troubleshooting. ■

NO—Go to step 9.

5. Clear the DTC with the HDS.
6. Turn the ignition switch OFF.
7. Turn the ignition switch ON (II), and wait 5 seconds.

8. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0630 indicated?

YES—Go to step 9.

NO—Intermittent failure, the system is OK at this time. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

9. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).

10. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0630 indicated?

YES—If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1.

NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-230). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

PGM-FI System

DTC Troubleshooting (cont'd)

DTC P0641: Sensor Reference Voltage A Malfunction

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0641 indicated?

YES—Go to step 4.

NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the PCM and these connectors: ■

- MAP sensor
- APP sensor
- Front/rear A/F sensor (Sensor 1)
- IMT actuator (J35Z1 engine)
- EGR valve
- FTP sensor
- Input shaft (mainshaft) speed sensor
- Output shaft (countershaft) speed sensor
- EOP sensor (J35Z1 engine)
- TP sensor

4. Turn the ignition switch OFF.
5. Disconnect the MAP sensor 3P connector.
6. Turn the ignition switch ON (II).
7. Clear the DTC with the HDS.
8. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0641 indicated?

YES—Go to step 9.

NO—Replace the MAP sensor (see page 11-227), then go to step 63.

9. Turn the ignition switch OFF.
10. Disconnect the APP sensor 6P connector.

11. Turn the ignition switch ON (II).
12. Clear the DTC with the HDS.
13. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0641 indicated?

YES—Go to step 14.

NO—Replace the APP sensor (see page 11-275), then go to step 63.

14. Turn the ignition switch OFF.
15. Disconnect the front A/F sensor (Bank 2, Sensor 1) 8P connector.
16. Turn the ignition switch ON (II).
17. Clear the DTC with the HDS.
18. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0641 indicated?

YES—Go to step 19.

NO—Replace the front A/F sensor (Bank 2, Sensor 1) (see page 11-224), then go to step 63.

19. Turn the ignition switch OFF.
20. Disconnect the rear A/F sensor (Bank 1, Sensor 1) 8P connector.
21. Turn the ignition switch ON (II).
22. Clear the DTC with the HDS.
23. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0641 indicated?

YES—

- J35A9 engine: Go to step 29.
- J35Z1 engine: Go to step 24.

NO—Replace the rear A/F sensor (Bank 1, Sensor 1) (see page 11-224), then go to step 63.



24. Turn the ignition switch OFF.
25. Disconnect the IMT actuator 5P connector.
26. Turn the ignition switch ON (II).
27. Clear the DTC with the HDS.
28. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0641 indicated?

YES—Go to step 29.

NO—Replace the IMT actuator (see page 11-405), then go to step 63.

29. Turn the ignition switch OFF.
30. Disconnect the EGR valve 6P connector.
31. Turn the ignition switch ON (II).
32. Clear the DTC with the HDS.
33. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0641 indicated?

YES—Go to step 34.

NO—Replace the EGR valve (see page 11-429), then go to step 63.

34. Turn the ignition switch OFF.
35. Disconnect the FTP sensor 3P connector.
36. Turn the ignition switch ON (II).
37. Clear the DTC with the HDS.
38. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0641 indicated?

YES—Go to step 39.

NO—Replace the FTP sensor (see page 11-461), then go to step 63.

39. Turn the ignition switch OFF.
40. Disconnect the input shaft (mainshaft) speed sensor 3P connector.
41. Turn the ignition switch ON (II).
42. Clear the DTC with the HDS.
43. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0641 indicated?

YES—Go to step 44.

NO—Replace the input shaft (mainshaft) speed sensor (see page 14-209), then go to step 63.

44. Turn the ignition switch OFF.
45. Disconnect the output shaft (countershaft) speed sensor 3P connector.
46. Turn the ignition switch ON (II).
47. Clear the DTC with the HDS.
48. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0641 indicated?

YES—

- J35A9 engine: Go to step 54.
- J35Z1 engine: Go to step 49

NO—Replace the output shaft (countershaft) speed sensor (see page 14-209), then go to step 63.

(cont'd)

PGM-FI System

DTC Troubleshooting (cont'd)

49. Turn the ignition switch OFF.
50. Disconnect the EOP sensor 3P connector.
51. Turn the ignition switch ON (II).
52. Clear the DTC with the HDS.
53. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0641 indicated?

YES—Go to step 54.

NO—Replace the EOP sensor (see page 11-304), then go to step 63.

54. Turn the ignition switch OFF.
55. Disconnect the TP sensor 6P connector.
56. Turn the ignition switch ON (II).
57. Clear the DTC with the HDS.
58. Check for Temporary DTCs or DTCs with the HDS.

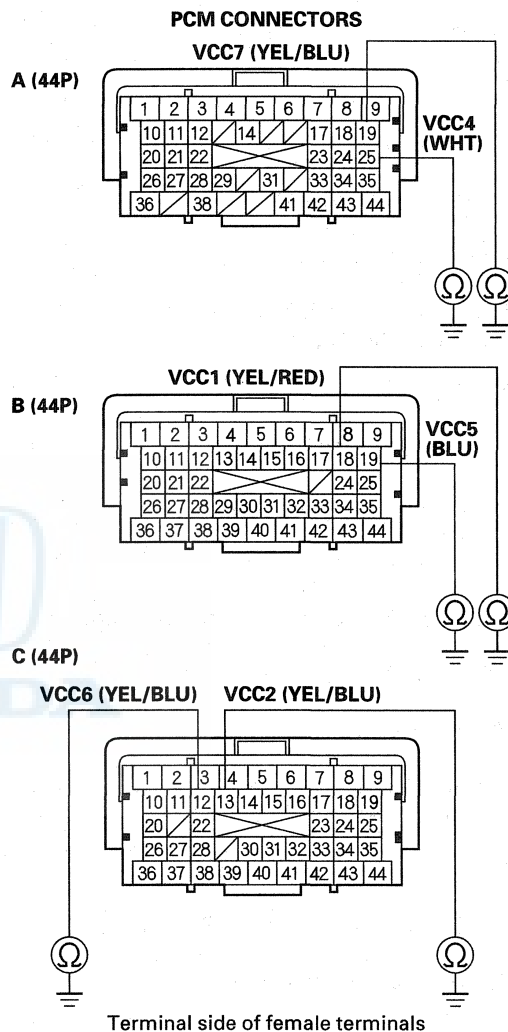
Is DTC P0641 indicated?

YES—Go to step 59.

NO—Replace the throttle body (see page 11-408), then go to step 63.

59. Turn the ignition switch OFF.
60. Jump the SCS line with the HDS.
61. Disconnect PCM connectors A (44P), B (44P), and C (44P).

62. Check for continuity between body ground and PCM connector terminals A19, A25, B18, B19, C12, and C13 individually.



Is there continuity?

YES—Repair short in the wire between the PCM (A19, A25, B18, B19, C12, or C13) and each sensor, then go to step 63.

NO—Go to step 69.



63. Turn the ignition switch OFF.
64. Reconnect all connectors.
65. Turn the ignition switch ON (II).
66. Reset the PCM with the HDS.
67. Do the PCM idle learn procedure (see page 11-359).
68. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0641 indicated?

YES—Check for poor connections or loose terminals at the PCM and these connectors:

- MAP sensor
- APP sensor
- Front/rear A/F sensor (Sensor 1)
- IMT actuator (J35Z1 engine)
- EGR valve
- FTP sensor
- Input shaft (mainshaft) speed sensor
- Output shaft (countershaft) speed sensor
- EOP sensor (J35Z1 engine)
- TP sensor

After checking the above, go to step 1.

NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

69. Reconnect all connectors.
70. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).
71. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0641 indicated?

YES—Check for poor connections or loose terminals at the PCM and these connectors:

- MAP sensor
- APP sensor
- Front/rear A/F sensor (Sensor 1)
- IMT actuator (J35Z1 engine)
- EGR valve
- FTP sensor
- Input shaft (mainshaft) speed sensor
- Output shaft (countershaft) speed sensor
- EOP sensor (J35Z1 engine)
- TP sensor

If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1.

NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-230). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

PGM-FI System

DTC Troubleshooting (cont'd)

DTC P0685: PCM Power Control Circuit/ Internal Circuit Malfunction

NOTE:

- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- If the problem doesn't return after you clear the DTC, or if this DTC is stored intermittently, check for loose terminals at the IGP line connectors before replacing the PCM.

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine, then let it idle for 30 seconds.
4. Turn the ignition switch OFF.
5. Start the engine, then let it idle for 30 seconds.
6. Turn the ignition switch OFF.
7. Turn the ignition switch ON (II).
8. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0685 indicated?

YES—Go to step 9.

NO—Intermittent failure, the system is OK at this time. ■

9. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).
10. Start the engine, then let it idle for 30 seconds.
11. Turn the ignition switch OFF.
12. Start the engine, then let it idle for 30 seconds.
13. Turn the ignition switch OFF.
14. Turn the ignition switch ON (II).

15. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0685 indicated?

YES—If the PCM was updated, substitute a known-good PCM (see page 11-8), then go to step 10. If the PCM was substituted, go to step 1.

NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-230). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■



DTC P0700: A/T Control System Malfunction

NOTE:

- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- This DTC is stored when there is a problem in the A/T control system. Check for A/T DTCs with the HDS, and go to the indicated DTC's troubleshooting.

DTC P1109: BARO Sensor Circuit Out of Range High

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Reset the PCM with the HDS.
2. Start the engine.
3. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P1109 indicated?

YES—Go to step 4.

NO—Intermittent failure, the system is OK at this time. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

4. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).
5. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P1109 indicated?

YES—If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1.

NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-230). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

PGM-FI System

DTC Troubleshooting (cont'd)

DTC P1116: ECT Sensor 1 Circuit Range/Performance Problem

NOTE:

- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- If DTC P0111 is stored at the same time as DTC P1116, troubleshoot DTC P0111 first, then recheck for DTC P1116.

1. Check for poor connections or loose terminals at ECT sensor 1 and ECT sensor 2.

Are the connections and terminals OK?

YES—Go to step 2.

NO—Repair the connectors or terminals, then go to step 27.

2. Turn the ignition switch ON (II).

3. Check for Temporary DTCs or DTCs with the HDS.

Are DTC P1116 and P2183 indicated at the same time?

YES—Go to step 15.

NO—Go to step 4.

4. Start the engine, and let it idle 10 minutes.

5. Check ECT SENSOR 1 in the DATA LIST with the HDS.

Is about 131 °F (55 °C) or less indicated?

YES—Replace ECT sensor 1 (see page 11-226), then go to step 27.

NO—Go to step 6.

6. Turn the ignition switch OFF.

7. Drain the coolant (see page 10-6).

8. Remove ECT sensor 1 (see page 11-226).

9. Allow ECT sensor 1 to cool to ambient temperature.

10. Note the ambient temperature.

11. Connect ECT sensor 1 to its 2P connector, but do not install it on the engine.

12. Turn the ignition switch ON (II).

13. Note the value of ECT SENSOR 1 quickly in the DATA LIST with the HDS.

14. Compare the value of ECT SENSOR 1 and the ambient temperature.

Does the value of ECT SENSOR 1 differ 5.4 °F (3 °C) or more?

YES—Replace ECT sensor 1 (see page 11-226), then go to step 27.

NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at ECT sensor 1, ECT sensor 2, and the PCM. ■

15. Start the engine, and let it idle 10 minutes.

16. Check ECT SENSOR 1 in the DATA LIST with the HDS.

Is about 131 °F (55 °C) or less indicated?

YES—Replace ECT sensor 1 (see page 11-226), then go to step 27.

NO—Go to step 17.

17. Let the engine idle 10 minutes.

18. Check ECT SENSOR 2 in the DATA LIST with the HDS.

Is about 154 °F (68 °C) or less indicated?

YES—Replace ECT sensor 2 (see page 11-226), then go to step 27.

NO—Go to step 19.



19. Turn the ignition switch OFF.
20. Drain the coolant (see page 10-6).
21. Remove ECT sensor 1 (see page 11-226), and ECT sensor 2 (see page 11-226).
22. Allow the sensors to cool to ambient temperature.
23. Note the ambient temperature.
24. Connect ECT sensor 1 and ECT sensor 2 to their 2P connectors, but do not install them on the engine.
25. Note the value of ECT SENSOR 1 and ECT SENSOR 2 quickly in the DATA LIST with the HDS.
26. Compare the value of ECT SENSOR 1 and the ambient temperature, and the value of ECT SENSOR 2 and the ambient temperature individually.

Does one of the sensor differ more than 5.4 °F (3 °C) from the ambient temperature?

YES—Replace the sensor, that differed more than 5.4 °F (3 °C) from the ambient temperature, then go to step 27.

NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at ECT sensor 1, ECT sensor 2, and the PCM. ■

27. Turn the ignition switch ON (II).
28. Reset the PCM with the HDS.
29. Do the PCM idle learn procedure (see page 11-359).
30. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P1116 indicated?

YES—Check for poor connections or loose terminals at ECT sensor 1, ECT sensor 2, and the PCM, then go to step 1.

NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

PGM-FI System

DTC Troubleshooting (cont'd)

DTC P1128: MAP Sensor Signal Lower Than Expected

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Inspect the air cleaner element (see page 11-402).

Is it OK?

YES—Go to step 2.

NO—Clean or replace the air cleaner element (see page 11-402).

2. Turn the ignition switch ON (II).
3. Check the MAP SENSOR in the DATA LIST with the HDS.

Is there less than 54.1 kPa (16.0 in.Hg, 406 mmHg) or 1.61 V held for more than 5 seconds?

YES—Go to step 8.

NO—Go to step 4.

4. Clear the DTC with the HDS.
5. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.
6. Test-drive under these conditions:

- Engine coolant temperature (ECT SENSOR 1) above 158 °F (70 °C)
- Engine speed between 1,200 and 5,500 rpm
- Transmission in D position
- Vehicle speed accelerated from 16—31 mph (25—50 km/h) under half throttle

7. Monitor the OBD STATUS for DTC P1128 in the DTCs MENU with the HDS.

Does the screen indicate FAILED?

YES—Go to step 8.

NO—If the screen indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the MAP sensor and the PCM. If the screen indicates NOT COMPLETED, go to step 5 and recheck.

8. Turn the ignition switch OFF.

9. Replace the MAP sensor (see page 11-227).

10. Turn the ignition switch ON (II).

11. Reset the PCM with the HDS.

12. Do the PCM idle learn procedure (see page 11-359).

13. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.

14. Test-drive under these conditions:

- Engine coolant temperature (ECT SENSOR 1) above 158 °F (70 °C)
- Engine speed between 1,200 and 5,500 rpm
- Transmission in D position
- Vehicle speed accelerated from 16—31 mph (25—50 km/h) under half throttle

15. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P1128 indicated?

YES—Check for poor connections or loose terminals at the MAP sensor and the PCM, then go to step 1.

NO—Go to step 16.

16. Monitor the OBD STATUS for DTC P1128 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 15, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the MAP sensor and the PCM, then go to step 1. If the screen indicates NOT COMPLETED, go to step 13.



DTC P1129: MAP Sensor Signal Higher than Expected

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Check for vacuum leaks at these parts:

- PCV valve
- PCV hose
- EVAP canister purge valve
- Throttle body
- Intake manifold
- Brake booster
- Brake booster hose

Are there any vacuum leaks?

YES—Repair or replace parts with vacuum leaks, then go to step 9.

NO—Go to step 2.

2. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.

3. Check the MAP SENSOR in the DATA LIST with the HDS.

Is there more than 36.9 kPa (11.0 in.Hg, 277 mmHg) or 1.14 V held for more than 5 seconds?

YES—Go to step 7.

NO—Go to step 4.

4. Clear the DTC with the HDS.

5. Test-drive under these conditions:

- Engine coolant temperature (ECT SENSOR 1) above 158 °F (70 °C)
- Engine speed between 1,200 and 5,500 rpm
- Transmission in D position
- Drive 10 seconds at 55—75 mph (88—120 km/h)
- Vehicle speed decelerated from more than 55 mph (88 km/h) with the throttle fully closed for at least 2 seconds

6. Monitor the OBD STATUS for DTC P1129 in the DTCs MENU with the HDS.

Does the screen indicate FAILED?

YES—Go to step 7.

NO—If the screen indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the MAP sensor and the PCM. If the screen indicates NOT COMPLETED, go to step 5 and recheck.

7. Turn the ignition switch OFF.

8. Replace the MAP sensor (see page 11-227).

9. Turn the ignition switch ON (II).

10. Reset the PCM with the HDS.

11. Do the PCM idle learn procedure (see page 11-359).

12. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.

13. Test-drive under these conditions:

- Engine coolant temperature (ECT SENSOR 1) above 158 °F (70 °C)
- Engine speed between 1,200 and 5,500 rpm
- Transmission in D position
- Drive 10 seconds at 55—75 mph (88—120 km/h)
- Vehicle speed decelerated from more than 55 mph (88 km/h) with the throttle fully closed for at least 2 seconds

14. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P1129 indicated?

YES—Check for poor connections or loose terminals at the MAP sensor and the PCM, then go to step 1.

NO—Go to step 15.

(cont'd)

PGM-FI System

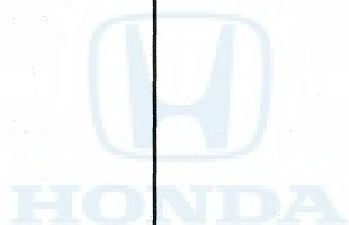
DTC Troubleshooting (cont'd)

15. Monitor the OBD STATUS for DTC P1129 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 14, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the MAP sensor and the PCM, then go to step 1. If the screen indicates NOT COMPLETED, go to step 12.





DTC P1172: Rear A/F Sensor (Bank 1, Sensor 1) Circuit Out of Range High

DTC P1174: Front A/F Sensor (Bank 2, Sensor 1) Circuit Out of Range High

NOTE:

- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- Information marked with an asterisk (*) applies to the front bank (Bank 2).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.
4. Monitor the OBD STATUS for P1172 and/or P1174* in the DTCs MENU with the HDS.

Does the screen indicate FAILED?

YES—Go to step 5.

NO—If the screen indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM. If the screen indicates EXECUTING, keep driving until a result comes on. If the screen indicates OUT OF CONDITION, go to step 3 and recheck.

5. Turn the ignition switch OFF.
6. Replace the A/F sensor (Sensor 1) (see page 11-224).
7. Turn the ignition switch ON (II).
8. Reset the PCM with the HDS.
9. Do the PCM idle learn procedure (see page 11-359).
10. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.

11. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P1172 and/or P1174 indicated?*

YES—Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM, then go to step 1.

NO—Go to step 12.

12. Monitor the OBD STATUS for DTC P1172 and/or P1174* in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 11, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM, then go to step 1. If the screen indicates EXECUTING, keep idling until a result comes on. If the screen indicates OUT OF CONDITION, go to step 10.

PGM-FI System

DTC Troubleshooting (cont'd)

DTC P1297: ELD Circuit Low Voltage

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch ON (II).
2. Check the ELD in the DATA LIST with the HDS.

Is 72 A or more indicated?

YES—Go to step 3.

NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the ELD and the PCM. ■

3. Turn the ignition switch OFF.
4. Disconnect the ELD 3P connector.
5. Turn the ignition switch ON (II).
6. Check the ELD in the DATA LIST with the HDS.

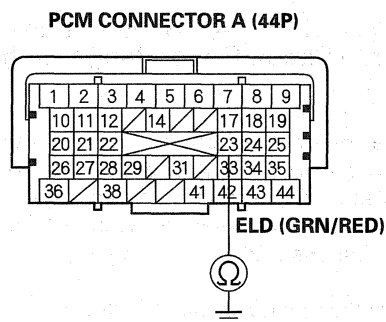
Is 72 A or more indicated?

YES—Go to step 7.

NO—Go to step 11.

7. Turn the ignition switch OFF.
8. Jump the SCS line with the HDS.
9. Disconnect PCM connector A (44P).

10. Check for continuity between PCM connector terminal A23 and body ground.



Terminal side of female terminals

Is there continuity?

YES—Repair short in the wire between the PCM (A23) and the ELD, then go to step 13.

NO—Go to step 19.

11. Turn the ignition switch OFF.
12. Replace the under-hood fuse/relay box (see page 22-79).
13. Reconnect all connectors.
14. Turn the ignition switch ON (II).
15. Reset the PCM with the HDS.
16. Do the PCM idle learn procedure (see page 11-359).
17. Start the engine.
18. Turn on the headlights.



19. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P1297 indicated?

YES—Check for poor connections or loose terminals at the ELD and the PCM, then go to step 1.

NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

20. Reconnect all connectors.

21. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).

22. Start the engine.

23. Turn on the headlights.

24. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P1297 indicated?

YES—Check for poor connections or loose terminals at the ELD and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then go to step 22. If the PCM was substituted, go to step 1.

NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-230). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

PGM-FI System

DTC Troubleshooting (cont'd)

DTC P1298: ELD Circuit High Voltage

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Start the engine, and let it idle.
2. Check the ELD in the DATA LIST with the HDS.

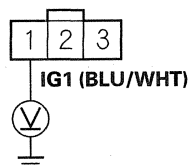
Is 0.2 A or less indicated?

YES—Go to step 3.

NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the ELD and the PCM. ■

3. Turn the ignition switch OFF.
4. Disconnect the ELD 3P connector.
5. Turn the ignition switch ON (II).
6. Measure voltage between ELD 3P connector terminal No. 1 and body ground.

ELD 3P CONNECTOR



Wire side of female terminals

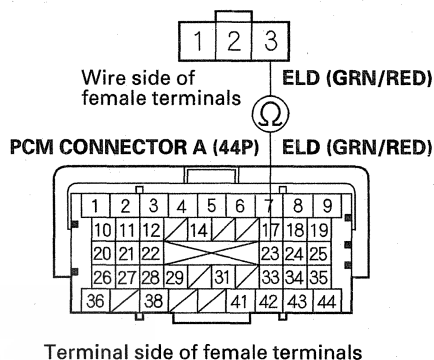
Is there battery voltage?

YES—Go to step 7.

NO—Repair open in the wire between the No. 9 LAF (A/F SENSOR) (15 A) fuse in the auxiliary under-hood fuse box and the ELD, then go to step 13.

7. Turn the ignition switch OFF.
8. Jump the SCS line with the HDS.
9. Disconnect PCM connector A (44P).
10. Check for continuity between PCM connector terminal A23 and ELD 3P connector terminal No. 3.

ELD 3P CONNECTOR



Is there continuity?

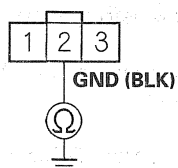
YES—Go to step 11.

NO—Repair open in the wire between the PCM (A23) and the ELD, then go to step 13.



11. Check for continuity between ELD 3P connector terminal No. 2 and body ground.

ELD 3P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Go to step 12.

NO—Repair open in the wire between the ELD and G201, then go to step 13.

12. Replace the under-hood fuse/relay box (see page 22-79).
13. Reconnect all connectors.
14. Turn the ignition switch ON (II).
15. Reset the PCM with the HDS.
16. Do the PCM idle learn procedure (see page 11-359).
17. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P1298 indicated?

YES—Go to step 18.

NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

18. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).

19. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P1298 indicated?

YES—Check for poor connections or loose terminals at the ELD and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1.

NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-230). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

PGM-FI System

DTC Troubleshooting (cont'd)

DTC P1549: Charging System High Voltage

NOTE:

- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- If a high voltage battery (24 V, etc.) is connected to the vehicle, this DTC can be stored.

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine.
4. Check under these conditions:
 - A/C off
 - Headlights off
 - Rear window defogger off
5. Hold the engine speed at 2,000 rpm (in Park or neutral) 1 minute.
6. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P1549 indicated?

YES—Replace the alternator (see page 4-36), then go to step 7.

NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the alternator and the under-hood fuse/relay box. ■

7. Turn the ignition switch ON (II).
8. Reset the PCM with the HDS.
9. Do the PCM idle learn procedure (see page 11-359).

10. Start the engine.

11. Check under these conditions:

- A/C off
- Headlights off
- Rear window defogger off

12. Hold the engine speed at 2,000 rpm (in Park or neutral) 1 minute.

13. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P1549 indicated?

YES—Check for poor connections or loose terminals at the alternator and the under-hood fuse/relay box, then go to step 1.

NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■



DTC P16BB: Alternator B Terminal Circuit Low Voltage

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine.
4. Check under these conditions:
 - A/C on
 - Temperature control at maximum cool
 - Blower fan at maximum speed
 - Headlights on high beam
 - Rear window defogger on
5. Hold the engine speed at 2,000 rpm (in Park or neutral) 1 minute.
6. Check for Temporary DTCs or DTCs with the HDS.
7. Check for poor connections or loose terminals at the alternator and the under-hood fuse/relay box (+B line).

Is DTC P16BB indicated?

YES—Go to step 7.

NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the alternator and the under-hood fuse/relay box, and check the battery performance (see page 22-81). ■

Are the connections and terminals OK?

YES—Go to step 8.

NO—Repair the connectors or terminals, then go to step 9.

8. Check for an open in the wire between the alternator and under-hood fuse/relay box at the starter subharness.

Is the harness OK?

YES—Replace the alternator (see page 4-36), then go to step 9.

NO—Repair open in the wire between the alternator and the under-hood fuse/relay box, then go to step 9.

9. Turn the ignition switch ON (II).
10. Reset the PCM with the HDS.
11. Do the PCM idle learn procedure (see page 11-359).
12. Start the engine.
13. Check under these conditions:
 - A/C on
 - Temperature control at maximum cool
 - Blower fan at maximum speed
 - Headlights on high beam
 - Rear window defogger off
14. Hold the engine speed at 2,000 rpm (in Park or neutral) 1 minute.
15. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P16BB indicated?

YES—Check for poor connections or loose terminals at the alternator and the under-hood fuse/relay box, then go to step 1.

NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

PGM-FI System

DTC Troubleshooting (cont'd)

DTC P16BC: Alternator FR Terminal Circuit/ IGP Circuit Low Voltage

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Check for poor connections or loose terminals at the alternator 4P connector.

Are the connections and terminals OK?

YES—Go to step 2.

NO—Repair the connections or terminals, then go to step 19.

2. Check the alternator mounting surfaces for corrosion.

Are the mounting surfaces corroded?

YES—Remove the alternator (see page 4-36). Clean all mounting surfaces, then reinstall the alternator, and go to step 20.

NO—Go to step 3.

3. Turn the ignition switch ON (II).
4. Clear the DTC with the HDS.
5. Start the engine.
6. Check under these conditions:
 - A/C on
 - Temperature control at maximum cool
 - Blower fan at maximum speed
 - Headlights on high beam
 - Rear window defogger on
7. Hold the engine speed at 2,000 rpm (in Park or neutral) 1 minute.

8. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P16BC indicated?

YES—Go to step 9.

NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the alternator. ■

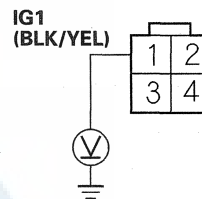
9. Turn the ignition switch OFF.

10. Disconnect the alternator 4P connector.

11. Turn the ignition switch ON (III).

12. Measure voltage between alternator 4P connector terminal No. 1 and body ground.

ALTERNATOR 4P CONNECTOR



Wire side of female terminals

Is there battery voltage?

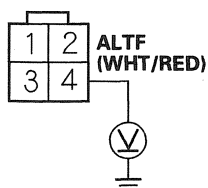
YES—Go to step 13.

NO—Repair open in the wire between the alternator (IG1 line) and the No. 6 FI-ECU (15 A) fuse in the driver's under-dash fuse/relay box, then go to step 19.



13. Measure voltage between alternator 4P connector terminal No. 4 and body ground.

ALTERNATOR 4P CONNECTOR



Wire side of female terminals

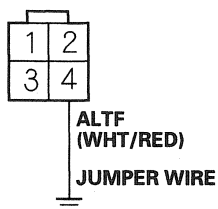
Is there about 5 V?

YES—Replace the alternator (see page 4-36), then go to step 19.

NO—Go to step 14.

14. Turn the ignition switch OFF.
15. Jump the SCS line with the HDS.
16. Disconnect PCM connector C (44P).
17. Connect alternator 4P connector terminal No. 4 to body ground with a jumper wire.

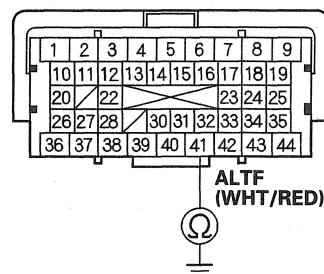
ALTERNATOR 4P CONNECTOR



Wire side of female terminals

18. Check for continuity between PCM connector terminal C41 and body ground.

PCM CONNECTOR C (44P)



Terminal side of female terminals

Is there continuity?

YES—Go to step 27.

NO—Repair open in the wire between the PCM (C41) and the alternator, then go to step 19.

19. Reconnect all connectors.
20. Turn the ignition switch ON (II).
21. Reset the PCM with the HDS.
22. Do the PCM idle learn procedure (see page 11-359).
23. Start the engine.
24. Check under these conditions:
- A/C on
 - Temperature control at maximum cool
 - Blower fan at maximum speed
 - Headlights on high beam
 - Rear window defogger on
25. Hold the engine speed at 2,000 rpm (in Park or neutral) 1 minute.

(cont'd)

PGM-FI System

DTC Troubleshooting (cont'd)

26. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P16BC indicated?

YES—Check for poor connections or loose terminals at the alternator and the PCM, then go to step 1.

NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

27. Reconnect all connectors.

28. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).

29. Start the engine.

30. Check under these conditions:

- A/C on
- Temperature control at maximum cool
- Blower fan at maximum speed
- Headlights on high beam
- Rear window defogger on

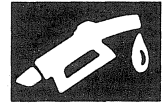
31. Hold the engine speed at 2,000 rpm (in Park or neutral) 1 minute.

32. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P16BC indicated?

YES—Check for poor connections or loose terminals at the alternator and the PCM, then go to step 1. If the PCM was updated, substitute a known-good PCM (see page 11-8), then go to step 29. If the PCM was substituted, go to step 1.

NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-230). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■



DTC P2183: ECT Sensor 2 Circuit Range/Performance Problem

NOTE:

- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- If DTC P0111 is stored at the same time as DTC P2183, troubleshoot DTC P0111 first, then recheck for DTC P2183.

1. Check for poor connections or loose terminals at ECT sensor 1 and ECT sensor 2.

Are the connections and terminals OK?

YES—Go to step 2.

NO—Repair the connectors or terminals, then go to step 27.

2. Turn the ignition switch ON (II).

3. Check for Temporary DTCs or DTCs with the HDS.

Are DTC P1116 and P2183 indicated at the same time?

YES—Go to step 15.

NO—Go to step 4.

4. Start the engine, and let it idle 10 minutes.

5. Check ECT SENSOR 2 in the DATA LIST with the HDS.

Is about 154 °F (68 °C) or less indicated?

YES—Replace ECT sensor 2 (see page 11-226), then go to step 27.

NO—Go to step 6.

6. Turn the ignition switch OFF.

7. Drain the coolant (see page 10-6).

8. Remove ECT sensor 2 (see page 11-226).

9. Allow ECT sensor 2 to cool to ambient temperature.

10. Note the ambient temperature.

11. Connect ECT sensor 2 to its 2P connector, but do not install it on the engine.

12. Turn the ignition switch ON (II).

13. Note the value of ECT SENSOR 2 quickly in the DATA LIST with the HDS.

14. Compare the value of ECT SENSOR 2 to the ambient temperature.

Does ECT SENSOR 2 differ 5.4 °F (3 °C) or more?

YES—Replace ECT sensor 2 (see page 11-226), then go to step 27.

NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at ECT sensor 1, ECT sensor 2, and the PCM. ■

15. Start the engine, and let it idle 10 minutes.

16. Check ECT SENSOR 1 in the DATA LIST with the HDS.

Is about 131 °F (55 °C) or less indicated?

YES—Replace ECT sensor 1 (see page 11-226), then go to step 27.

NO—Go to step 17.

17. Let the engine idle 10 minutes.

18. Check ECT SENSOR 2 in the DATA LIST with the HDS.

Is about 154 °F (68 °C) or less indicated?

YES—Replace ECT sensor 2 (see page 11-226), then go to step 27.

NO—Go to step 19.

(cont'd)

DTC Troubleshooting (cont'd)

19. Turn the ignition switch OFF.
20. Drain the coolant (see page 10-6).
21. Remove ECT sensor 1 (see page 11-226), and ECT sensor 2 (see page 11-226).
22. Allow the sensors to cool to ambient temperature.
23. Note the ambient temperature.
24. Connect ECT sensor 1 to its 2P connector, and ECT sensor 2 to its 2P connector, but do not install them on the engine.
25. Note the value of ECT SENSOR 1 and ECT SENSOR 2 quickly in the DATA LIST with the HDS.
26. Compare the value of ECT SENSOR 1 and the ambient temperature, and the value of ECT SENSOR 2 and the ambient temperature individually.

Does one of the sensor differ more than 5.4 °F (3 °C) from the ambient temperature?

YES—Replace the sensor that differed more than 5.4 °F (3 °C) from the ambient temperature, then go to step 27.

NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at ECT sensor 1, ECT sensor 2, and the PCM. ■

27. Turn the ignition switch ON (II).
28. Reset the PCM with the HDS.
29. Do the PCM idle learn procedure (see page 11-359).
30. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P2183 indicated?

YES—Check for poor connections or loose terminals at ECT sensor 1, ECT sensor 2, and the PCM, then go to step 1.

NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■



DTC P2184: ECT Sensor 2 Circuit Low Voltage

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch ON (II).
2. Check ECT SENSOR 2 in the DATA LIST with the HDS.

Is about 180 °C (356 °F) or more, or 0.08 V or less indicated?

YES—Go to step 3.

NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at ECT sensor 2 and the PCM. ■

3. Turn the ignition switch OFF.
4. Disconnect the ECT sensor 2 2P connector.
5. Turn the ignition switch ON (II).
6. Check ECT SENSOR 2 in the DATA LIST with the HDS.

Is about 180 °C (356 °F) or more, or 0.08 V or less indicated?

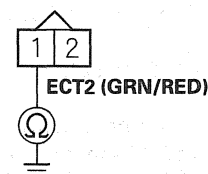
YES—Go to step 7.

NO—Go to step 11.

7. Turn the ignition switch OFF.
8. Jump the SCS line with the HDS.
9. Disconnect PCM connector C (44P).

10. Check for continuity between ECT sensor 2 2P connector terminal No. 1 and body ground.

ECT SENSOR 2 2P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair short in the wire between ECT sensor 2 and the PCM (C36), then go to step 13.

NO—Go to step 18.

11. Turn the ignition switch OFF.
12. Replace ECT sensor 2 (see page 11-226).
13. Reconnect all connectors.
14. Turn the ignition switch ON (II).
15. Reset the PCM with the HDS.
16. Do the PCM idle learn procedure (see page 11-359).
17. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P2184 indicated?

YES—Check for poor connections or loose terminals at ECT sensor 2 and the PCM, then go to step 1.

NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

(cont'd)

PGM-FI System

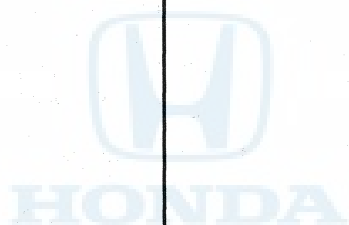
DTC Troubleshooting (cont'd)

18. Reconnect all connectors.
19. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).
20. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P2184 indicated?

YES—Check for poor connections or loose terminals at ECT sensor 2 and the PCM, then go to step 1. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1.

NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-230). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■





DTC P2185: ECT Sensor 2 Circuit High Voltage

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch ON (II).
2. Check ECT SENSOR 2 in the DATA LIST with the HDS.

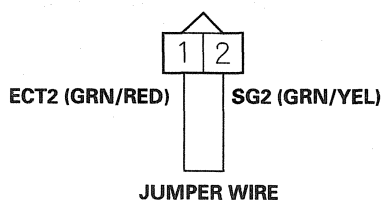
Is about -40°F (-40°C) or less, or 4.92 V or more indicated?

YES—Go to step 3.

NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at ECT sensor 2 and the PCM. ■

3. Turn the ignition switch OFF.
4. Disconnect ECT sensor 2 2P connector.
5. Connect ECT sensor 2 2P connector terminals No. 1 and No. 2 with a jumper wire.

ECT SENSOR 2 2P CONNECTOR



Wire side of female terminals

6. Turn the ignition switch ON (II).
7. Check ECT SENSOR 2 in the DATA LIST with the HDS.

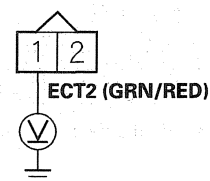
Is about -40°F (-40°C) or less, or 4.92 V or more indicated?

YES—Go to step 8.

NO—Go to step 20.

8. Turn the ignition switch OFF.
9. Remove the jumper wire from ECT sensor 2 2P connector.
10. Turn the ignition switch ON (II).
11. Measure voltage between ECT sensor 2 2P connector terminal No. 1 and body ground.

ECT SENSOR 2 2P CONNECTOR



Wire side of female terminals

Is there about 5 V?

YES—Go to step 12.

NO—Go to step 16.

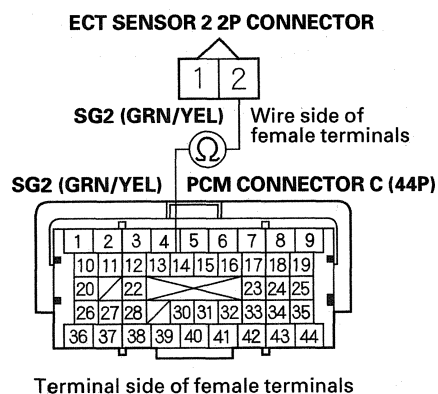
12. Turn the ignition switch OFF.
13. Jump the SCS line with the HDS.
14. Disconnect PCM connector C (44P).

(cont'd)

PGM-FI System

DTC Troubleshooting (cont'd)

15. Check for continuity between PCM connector terminal C14 and ECT sensor 2 2P connector terminal No. 2.



Is there continuity?

YES—Go to step 27.

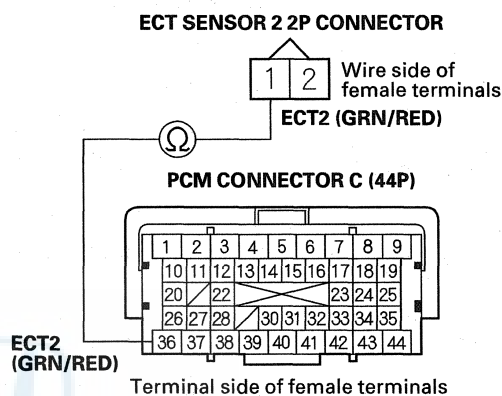
NO—Repair open in the wire between the PCM (C14) and ECT sensor 2, then go to step 22.

16. Turn the ignition switch OFF.

17. Jump the SCS line with the HDS.

18. Disconnect PCM connector C (44P).

19. Check for continuity between PCM connector terminal C36 and ECT sensor 2 2P connector terminal No. 1.



Is there continuity?

YES—Go to step 27.

NO—Repair open in the wire between the PCM (C36) and ECT sensor 2, then go to step 22.



20. Turn the ignition switch OFF.
21. Replace ECT sensor 2 (see page 11-226).
22. Reconnect all connectors.
23. Turn the ignition switch ON (II).
24. Reset the PCM with the HDS.
25. Do the PCM idle learn procedure (see page 11-359).
26. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P2185 indicated?

YES—Check for poor connections or loose terminals at ECT sensor 2 and the PCM, then go to step 1.

NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

27. Reconnect all connectors.
28. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).
29. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P2185 indicated?

YES—Check for poor connections or loose terminals at ECT sensor 2 and the PCM, then go to step 1. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1.

NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-230). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

PGM-FI System

DTC Troubleshooting (cont'd)

DTC P2195: Rear A/F Sensor (Bank 1, Sensor 1) Signal Stuck Lean

DTC P2197: Rear A/F Sensor (Bank 2, Sensor 1) Signal Stuck Lean

NOTE:

- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- Information marked with an asterisk (*) applies to the front bank (Bank 2).
- If the vehicle was out of fuel and the engine stalled before this DTC was stored, refuel and clear the DTC with the HDS.
- If DTC P2101, P2118, P2135, P2138, P2176, or a combination of P2122 and P2127, P2122, and P2138 or P2127 and P2138 is stored at the same time, troubleshoot them first, then recheck for DTC P2195 and/or P2197*.

1. Check the installation of the A/F sensor (Sensor 1).

Is the A/F sensor loose or disconnected from the exhaust pipe?

YES—Go to step 6.

NO—Go to step 2.

2. Turn the ignition switch ON (II).
3. Clear the DTC with the HDS.
4. Start the engine, and let it idle for 2 minutes.
5. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P2195 and/or P2197 indicated?*

YES—Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM, then go to step 13.

NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

6. Turn the ignition switch OFF.
7. Reinstall the A/F sensor (Sensor 1) (see page 11-224).
8. Turn the ignition switch ON (II).
9. Reset the PCM with the HDS.
10. Do the PCM idle learn procedure (see page 11-359).
11. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P2195 and/or P2197 indicated?*

YES—Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM, then go to step 1.

NO—Go to step 12.

12. Monitor the OBD STATUS for DTC P2195 and/or P2197* in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 11, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM, then go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

13. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).
14. Start the engine, and let it idle for 2 minutes.



15. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P2195 and/or P2197 indicated?*

YES—Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then go to step 14. If the PCM was substituted, go to step 1.

NO—Go to step 16.

16. Monitor the OBD STATUS for DTC P2195 and/or P2197* in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-230). If any other Temporary DTCs or DTCs were indicated in step 15, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then go to step 14. If the PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

PGM-FI System

DTC Troubleshooting (cont'd)

DTC P2227: BARO Sensor Circuit Range/Performance Problem

NOTE:

- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- If DTC P0107, P0108, P1128, and/or P1129 are stored at the same time as DTC P2227, troubleshoot those DTCs first, then recheck for DTC P2227.

1. Turn the ignition switch ON (II), and wait 2 seconds.
2. Check the BARO SENSOR in the DATA LIST with the HDS.

Is about 101 kPa (29.9 in.Hg, 760 mmHg), or about 2.9 V at sea level indicated?

YES—Go to step 3.

NO—Go to step 7.

3. Clear the DTC with the HDS.
4. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.
5. Test-drive under these conditions:
 - Engine coolant temperature (ECT SENSOR 1) above 158 °F (70 °C)
 - Transmission in D position
 - REL TP SENSOR between 14 deg and 28 deg for 3 seconds
6. Monitor the OBD STATUS for DTC P2227 in the DTCs MENU with the HDS.

Does the screen indicate FAILED?

YES—Go to step 7.

NO—If the screen indicates PASSED, intermittent failure, the system is OK at this time. If the screen indicates NOT COMPLETED, go to step 4 and recheck.

7. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).
8. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.
9. Test-drive under these conditions:
 - Engine coolant temperature (ECT SENSOR 1) above 158 °F (70 °C)
 - Transmission in D position
 - REL TP SENSOR between 14 deg and 28 deg for 3 seconds

10. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P2227 indicated?

YES—Check for poor connections or loose terminals at the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then go to step 8. If the PCM was substituted, go to step 1.

NO—Go to step 11.

11. Monitor the OBD STATUS for DTC P2227 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-230). If any other Temporary DTCs or DTCs were indicated in step 10, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then go to step 8. If the PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, go to step 8.



DTC P2228: BARO Sensor Circuit Low Voltage

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch ON (II).
2. Check the BARO SENSOR in the DATA LIST with the HDS.

Is about 53 kPa (15.6 in.Hg, 397 mmHg), or 1.58 V or less indicated?

YES—Go to step 3.

NO—Intermittent failure, the system is OK at this time. ■

3. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).
4. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P2228 indicated?

YES—Check for poor connections or loose terminals at the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1.

NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-230). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

DTC P2229: BARO Sensor Circuit High Voltage

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch ON (II).
2. Check the BARO SENSOR in the DATA LIST with the HDS.

Is about 160 kPa (47.2 in.Hg, 1,200 mmHg), or 4.49 V or more indicated?

YES—Go to step 3.

NO—Intermittent failure, the system is OK at this time. ■

3. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).
4. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P2229 indicated?

YES—Check for poor connections or loose terminals at the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1.

NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-230). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

PGM-FI System

DTC Troubleshooting (cont'd)

DTC P2237: Rear A/F Sensor (Bank 1, Sensor 1) IP Circuit High Voltage

DTC P2240: Front A/F Sensor (Bank 2, Sensor 1) IP Circuit High Voltage

NOTE:

- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- Information marked with an asterisk (*) applies to the front bank (Bank 2).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle 2 minutes.
4. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P2237 and/or P2240 indicated?*

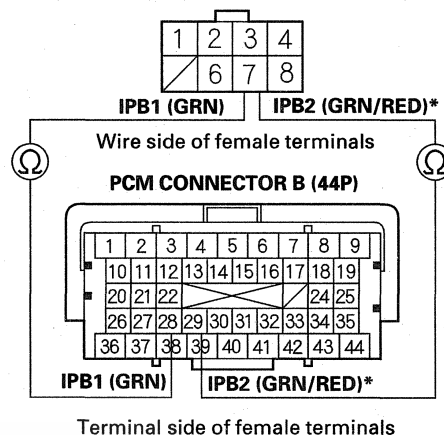
YES—Go to step 5.

NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM. ■

5. Turn the ignition switch OFF.
6. Jump the SCS line with the HDS.
7. Disconnect the A/F sensor (Sensor 1) 8P connector.
8. Disconnect PCM connector B (44P).

9. Check for continuity between A/F sensor (Sensor 1) 8P connector terminal No. 7 and PCM connector terminal B28 (B29)*.

A/F SENSOR (SENSOR 1) 8P CONNECTOR



Is there continuity?

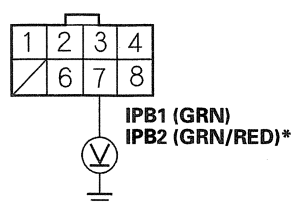
YES—Go to step 10.

NO—Repair open in the wire between the PCM (B28 (B29)*) and the A/F sensor (Sensor 1), then go to step 14.



10. Reconnect PCM connector B (44P).
11. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle 2 minutes.
12. Measure voltage between A/F sensor (Sensor 1) 8P connector terminal No. 7 and body ground.

A/F SENSOR (SENSOR 1) 8P CONNECTOR



Wire side of female terminals

Is there about 0.2 V or less?

YES—Go to step 20.

NO—Go to step 13.

13. Replace the A/F sensor (Sensor 1) (see page 11-224).
14. Reconnect all connectors.
15. Turn the ignition switch ON (II).
16. Reset the PCM with the HDS.
17. Do the PCM idle learn procedure (see page 11-359).

18. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P2237 and/or P2240 indicated?*

YES—Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM, then go to step 1.

NO—Go to step 19.

19. Monitor the OBD STATUS for DTC P2237 and/or P2240* in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 18, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM, then go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

(cont'd)

PGM-FI System

DTC Troubleshooting (cont'd)

20. Turn the ignition switch OFF.
21. Reconnect all connectors.
22. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).
23. Start the engine, and let it idle.
24. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P2237 and/or P2240 indicated?*

YES—Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then go to step 23. If the PCM was substituted, go to step 1.

NO—Go to step 25.

25. Monitor the OBD STATUS for DTC P2237 and/or P2240* in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-230). If any other Temporary DTCs or DTCs were indicated in step 24, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then go to step 23. If the PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.



DTC P2238: Rear A/F Sensor (Bank 1, Sensor 1) IP Circuit Low Voltage

DTC P2241: Front A/F Sensor (Bank 2, Sensor 1) IP Circuit Low Voltage

NOTE:

- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- Information marked with an asterisk (*) applies to the front bank (Bank 2).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle 2 minutes.
4. Check for Temporary DTCs or DTCs with the HDS.

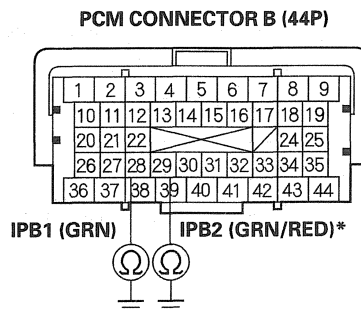
Is DTC P2238 and/or P2241 indicated?*

YES—Go to step 5.

NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM. ■

5. Turn the ignition switch OFF.
6. Jump the SCS line with the HDS.
7. Disconnect the A/F sensor (Sensor 1) 8P connector.
8. Disconnect PCM connector B (44P).

9. Check for continuity between PCM connector terminal B28 (B29)* and body ground.



Terminal side of female terminals

Is there continuity?

YES—Repair short in the wire between the PCM (B28 (B29)*) and the A/F sensor (Sensor 1), then go to step 14.

NO—Go to step 10.

10. Reconnect PCM connector B (44P).
11. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle 2 minutes.

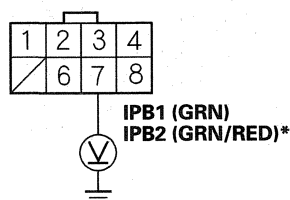
(cont'd)

PGM-FI System

DTC Troubleshooting (cont'd)

12. Measure voltage between A/F sensor (Sensor 1) 8P connector terminal No. 7 and body ground.

A/F SENSOR (SENSOR 1) 8P CONNECTOR



Wire side of female terminals

Is there about 0.2 V or less?

YES—Go to step 20.

NO—Go to step 13.

13. Replace the A/F sensor (Sensor 1) (see page 11-224).
14. Reconnect all connectors.
15. Turn the ignition switch ON (II).
16. Reset the PCM with the HDS.
17. Do the PCM idle learn procedure (see page 11-359).

18. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P2238 and/or P2241 indicated?*

YES—Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM, then go to step 1.

NO—Go to step 19.

19. Monitor the OBD STATUS for DTC P2238 and/or P2241* in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 18, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM, then go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.



20. Turn the ignition switch OFF.
21. Reconnect all connectors.
22. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).
23. Start the engine, and let it idle.
24. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P2238 and/or P2241 indicated?*

YES—Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then go to step 23. If the PCM was substituted, go to step 1.

NO—Go to step 25.

25. Monitor the OBD STATUS for DTC P2238 and/or P2241* in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-230). If any other Temporary DTCs or DTCs were indicated in step 24, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then go to step 23. If the PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

PGM-FI System

DTC Troubleshooting (cont'd)

DTC P2243: Rear A/F Sensor (Bank 1, Sensor 1) VCENT Circuit High Voltage

DTC P2247: Front A/F Sensor (Bank 2, Sensor 1) VCENT Circuit High Voltage

NOTE:

- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- Information marked with an asterisk (*) applies to the front bank (Bank 2).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle 2 minutes.
4. Check for Temporary DTCs or DTCs with the HDS.

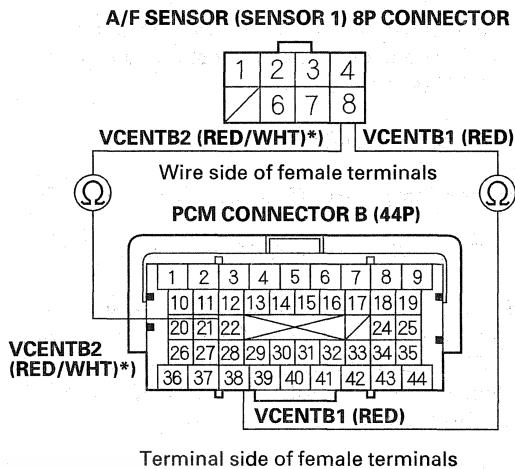
Is DTC P2243 and/or P2247 indicated?*

YES—Go to step 5.

NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM. ■

5. Turn the ignition switch OFF.
6. Jump the SCS line with the HDS.
7. Disconnect the A/F sensor (Sensor 1) 8P connector.
8. Disconnect PCM connector B (44P).

9. Check for continuity between A/F sensor (Sensor 1) 8P connector terminal No. 8 and PCM connector terminal B38 (B22)*.



Is there continuity?

YES—Go to step 10.

NO—Repair open in the wire between the PCM (B38 (B22)*) and the A/F sensor (Sensor 1), then go to step 14.

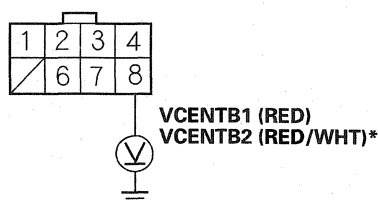


10. Reconnect PCM connector B (44P).

11. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle 2 minutes.

12. Measure voltage between A/F sensor (Sensor 1) 8P connector terminal No. 8 and body ground.

A/F SENSOR (SENSOR 1) 8P CONNECTOR



Wire side of female terminals

Is there about 0.2 V or less?

YES—Go to step 20.

NO—Go to step 13.

13. Replace the A/F sensor (Sensor 1) (see page 11-224).

14. Reconnect all connectors.

15. Turn the ignition switch ON (II).

16. Reset the PCM with the HDS.

17. Do the PCM idle learn procedure (see page 11-359).

18. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P2243 and/or P2247 indicated?*

YES—Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM, then go to step 1.

NO—Go to step 19.

19. Monitor the OBD STATUS for DTC P2243 and/or P2247* in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 18, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM, then go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

(cont'd)

PGM-FI System

DTC Troubleshooting (cont'd)

20. Turn the ignition switch OFF.
21. Reconnect all connectors.
22. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).
23. Start the engine, and let it idle.
24. Check for Temporary DTCs or DTCs with the HDS.

If DTC P2243 and/or P2247 indicated?*

YES—Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then go to step 23. If the PCM was substituted, go to step 1.

NO—Go to step 25.

25. Monitor the OBD STATUS for DTC P2252 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-230). If any other Temporary DTCs or DTCs were indicated in step 24, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then go to step 23. If the PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.



DTC P2245: Rear A/F Sensor (Bank 1, Sensor 1) VCENT Circuit Low Voltage

DTC P2249: Front A/F Sensor (Bank 2, Sensor 1) VCENT Circuit Low Voltage

NOTE:

- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- Information marked with an asterisk (*) applies to the front bank (Bank 2).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle 2 minutes.
4. Check for Temporary DTCs or DTCs with the HDS.

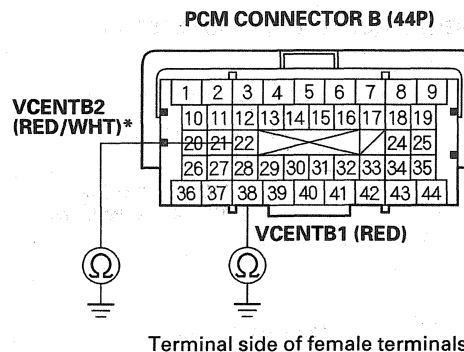
Is DTC P2245 and/or P2249 indicated?*

YES—Go to step 5.

NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM. ■

5. Turn the ignition switch OFF.
6. Jump the SCS line with the HDS.
7. Disconnect the A/F sensor (Sensor 1) 8P connector.
8. Disconnect PCM connector B (44P).

9. Check for continuity between PCM connector terminal B38 (B22)* and body ground.



Is there continuity?

YES—Repair short in the wire between the PCM (B38 (B22)*) and the A/F sensor (Sensor 1), then go to step 14.

NO—Go to step 10.

10. Reconnect PCM connector B (44P).
11. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle 2 minutes.

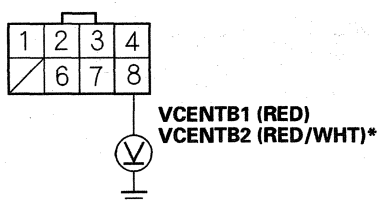
(cont'd)

PGM-FI System

DTC Troubleshooting (cont'd)

12. Measure voltage between A/F sensor (Sensor 1) 8P connector terminal No. 8 and body ground.

A/F SENSOR (SENSOR 1) 8P CONNECTOR



Wire side of female terminals

Is there about 0.2 V or less?

YES—Go to step 20.

NO—Go to step 13.

13. Replace the A/F sensor (Sensor 1) (see page 11-224).
14. Reconnect all connectors.
15. Turn the ignition switch ON (II).
16. Reset the PCM with the HDS.
17. Do the PCM idle learn procedure (see page 11-359).

18. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P2245 and/or P2249 indicated?*

YES—Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM, then go to step 1.

NO—Go to step 19.

19. Monitor the OBD STATUS for DTC P2245 and/or P2249* in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 18, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM, then go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.



20. Turn the ignition switch OFF.
21. Reconnect all connectors.
22. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).
23. Start the engine, and let it idle.
24. Check for Temporary DTCs or DTCs with the HDS.

If DTC P2245 and/or P2249 indicated?*

YES—Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then go to step 23. If the PCM was substituted, go to step 1.

NO—Go to step 25.

25. Monitor the OBD STATUS for DTC P2245 and/or P2249* in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-230). If any other Temporary DTCs or DTCs were indicated in step 24, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then go to step 23. If the PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

PGM-FI System

DTC Troubleshooting (cont'd)

DTC P2251: Rear A/F Sensor (Bank 1, Sensor 1) VS Circuit High Voltage

DTC P2254: Front A/F Sensor (Bank 2, Sensor 1) VS Circuit High Voltage

NOTE:

- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- If DTC P2251 and/or P2254* is stored at the same time as DTC P0134 and/or P0154*, troubleshoot DTC P2251 and/or P2254* first, then recheck for P0134 and/or P0154*.
- Information marked with an asterisk (*) applies to the front bank (Bank 2).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle 2 minutes.
4. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P2251 and/or P2254 indicated?*

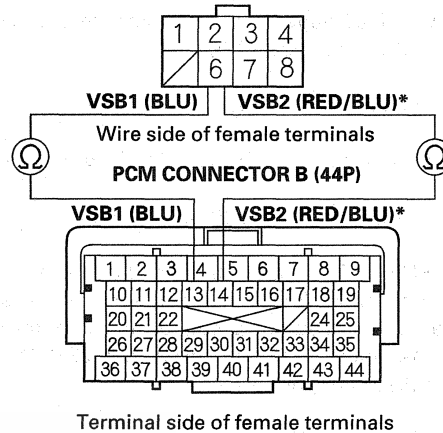
YES—Go to step 5.

NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM. ■

5. Turn the ignition switch OFF.
6. Jump the SCS line with the HDS.
7. Disconnect the A/F sensor (Sensor 1) 8P connector.
8. Disconnect PCM connector B (44P).

9. Check for continuity between A/F sensor (Sensor 1) 8P connector terminal No. 6 and PCM connector terminal B13 (B14)*.

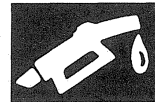
A/F SENSOR (SENSOR 1) 8P CONNECTOR



Is there continuity?

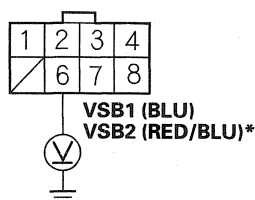
YES—Go to step 10.

NO—Repair open in the wire between the PCM (B13 (B14)*) and the A/F sensor (Sensor 1), then go to step 14.



10. Reconnect PCM connector B (44P).
11. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle 2 minutes.
12. Measure voltage between A/F sensor (Sensor 1) 8P connector terminal No. 6 and body ground.

A/F SENSOR (SENSOR 1) 8P CONNECTOR



Wire side of female terminals

Is there about 0.2 V or less?

YES—Go to step 20.

NO—Go to step 13.

13. Replace the A/F sensor (Sensor 1) (see page 11-224).
14. Reconnect all connectors.
15. Turn the ignition switch ON (II).
16. Reset the PCM with the HDS.
17. Do the PCM idle learn procedure (see page 11-359).

18. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P2251 and/or P2254 indicated?*

YES—Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM, then go to step 1.

NO—Go to step 19.

19. Monitor the OBD STATUS for DTC P2251 and/or P2254* in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 18, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM, then go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

(cont'd)

PGM-FI System

DTC Troubleshooting (cont'd)

20. Turn the ignition switch OFF.
21. Reconnect all connectors.
22. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).
23. Start the engine, and let it idle.
24. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P2251 and/or P2254 indicated?*

YES—Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then go to step 23. If the PCM was substituted, go to step 1.

NO—Go to step 25.

25. Monitor the OBD STATUS for DTC P2251 and/or P2254* in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-230). If any other Temporary DTCs or DTCs were indicated in step 24, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then go to step 23. If the PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.



DTC P2252: Rear A/F Sensor (Bank 1, Sensor 1) VS Circuit Low Voltage

DTC P2255: Front A/F Sensor (Bank 2, Sensor 1) VS Circuit Low Voltage

NOTE:

- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- Information marked with an asterisk (*) applies to the front bank (Bank 2).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle 2 minutes.
4. Check for Temporary DTCs or DTCs with the HDS.

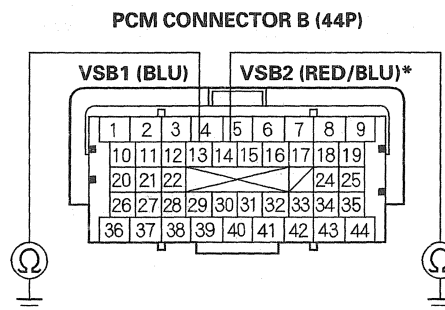
Is DTC P2252 and/or P2255 indicated?*

YES—Go to step 5.

NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM. ■

5. Turn the ignition switch OFF.
6. Jump the SCS line with the HDS.
7. Disconnect the A/F sensor (Sensor 1) 8P connector.
8. Disconnect PCM connector B (44P).

9. Check for continuity between PCM connector terminal B13 (B14)* and body ground.



Terminal side of female terminals

Is there continuity?

YES—Repair short in the wire between the PCM (B13 (B14)*) and the A/F sensor (Sensor 1), then go to step 14.

NO—Go to step 10.

10. Reconnect PCM connector B (44P).
11. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle 2 minutes.

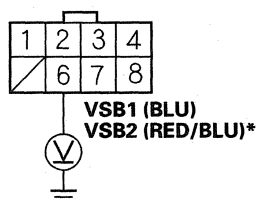
(cont'd)

PGM-FI System

DTC Troubleshooting (cont'd)

12. Measure voltage between A/F sensor (Sensor 1) 8P connector terminal No. 6 and body ground.

A/F SENSOR (SENSOR 1) 8P CONNECTOR



Wire side of female terminals

Is there about 0.2 V or less?

YES—Go to step 20.

NO—Go to step 13.

13. Replace the A/F sensor (Sensor 1) (see page 11-224).
14. Reconnect all connectors.
15. Turn the ignition switch ON (II).
16. Reset the PCM with the HDS.
17. Do the PCM idle learn procedure (see page 11-359).
18. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P2252 and/or P2255 indicated?*

YES—Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM, then go to step 1.

NO—Go to step 19.

19. Monitor the OBD STATUS for DTC P2252 and/or P2255* in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 18, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM, then go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

20. Turn the ignition switch OFF.
21. Reconnect all connectors.
22. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).
23. Start the engine, and let it idle for 2 minutes.
24. Check for Temporary DTCs or DTCs with the HDS.

If DTC P2252 and/or P2255 indicated?*

YES—Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then go to step 23. If the PCM was substituted, go to step 1.

NO—Go to step 25.



25. Monitor the OBD STATUS for DTC P2252 and/or P2255* in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-230). If any other Temporary DTCs or DTCs were indicated in step 24, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then go to step 23. If the PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.



PGM-FI System

DTC Troubleshooting (cont'd)

DTC P2270: Rear Secondary HO2S (Bank 1, Sensor 2) Circuit Signal Stuck Lean

DTC P2271: Rear Secondary HO2S (Bank 1, Sensor 2) Circuit Signal Stuck Rich

DTC P2272: Front Secondary HO2S (Bank 2, Sensor 2) Circuit Signal Stuck Lean

DTC P2273: Front Secondary HO2S (Bank 2, Sensor 2) Circuit Signal Stuck Rich

NOTE:

- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- Information marked with an asterisk (*) applies to the front bank (Bank 2).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine, and let it idle without load (in Park or neutral) until the radiator fan comes on.
4. Test-drive under these conditions:
 - Engine coolant temperature (ECT SENSOR 1) above 158 °F (70 °C)
 - Vehicle speed above 35 mph (56 km/h)
 - Drive 30 seconds or more
5. Monitor the OBD STATUS for DTC P2270, P2271, P2272*, and/or P2273* in the DTCs MENU with the HDS.

Does the screen indicate FAILED?

YES—Go to step 6.

NO—If the screen indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the secondary HO2S (Sensor 2) and the PCM. If the screen indicates EXECUTING, keep driving until a result comes on. If the screen indicates OUT OF CONDITION, go to step 3 and recheck.

6. Turn the ignition switch OFF.
7. Replace the secondary HO2S (Sensor 2) (see page 11-225).

8. Turn the ignition switch ON (II).
9. Reset the PCM with the HDS.
10. Do the PCM idle learn procedure (see page 11-359).
11. Start the engine, and let it idle without load (in Park or neutral) until the radiator fan comes on.
12. Test-drive under these conditions:
 - Engine coolant temperature (ECT SENSOR 1) above 158 °F (70 °C)
 - Vehicle speed above 35 mph (56 km/h)
 - Drive 30 seconds or more

13. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P2270, P2271, P2272, and/or P2273* indicated?*

YES—Check for poor connections or loose terminals at the secondary HO2S (Sensor 2) and the PCM, then go to step 1.

NO—Go to step 14.

14. Monitor the OBD STATUS for DTC P2270, P2271, P2272*, and/or P2273* in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 13, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the secondary HO2S (Sensor 2) and the PCM, then go to step 1. If the screen indicates EXECUTING, keep driving until a result comes on. If the screen indicates OUT OF CONDITION, go to step 11.



DTC P2610: PCM Ignition Off Internal Timer Malfunction

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P2610 indicated?

YES—Go to step 4.

NO—Intermittent failure, the system is OK at this time. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTCs troubleshooting. ■

4. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).
5. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P2610 indicated?

YES—If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1.

NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-230). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

PGM-FI System

DTC Troubleshooting (cont'd)

DTC P2627: Rear A/F Sensor (Bank 1, Sensor 1) LABEL Circuit Low Voltage

DTC P2630: Front A/F Sensor (Bank 2, Sensor 1) LABEL Circuit Low Voltage

NOTE:

- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- Information marked with an asterisk (*) applies to the front bank (Bank 2).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle 2 minutes.
4. Check for Temporary DTCs or DTCs with the HDS.

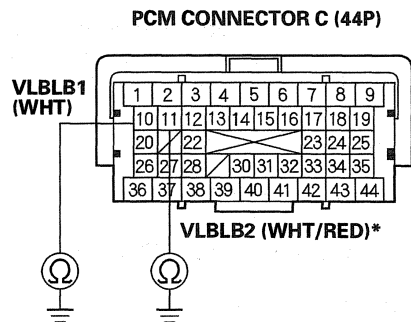
Is DTC P2627 and/or P2630 indicated?*

YES—Go to step 5.

NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM. ■

5. Turn the ignition switch OFF.
6. Jump the SCS line with the HDS.
7. Disconnect PCM connector C (44P).

8. Check for continuity between PCM connector terminal C10 (C11)* and body ground.



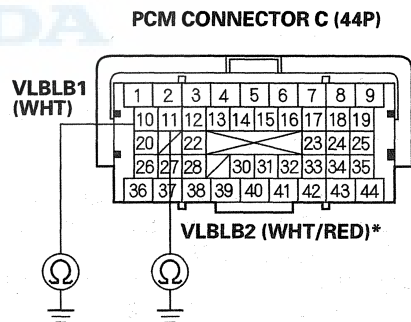
Terminal side of female terminals

Is there continuity?

YES—Go to step 9.

NO—Go to step 17.

9. Disconnect the A/F sensor (Sensor 1) 8P connector.
10. Check for continuity between PCM connector terminal C10 (C11)* and body ground.



Terminal side of female terminals

Is there continuity?

YES—Repair short in the wire between the PCM (C10 (C11)*) and the A/F sensor (Sensor 1), then go to step 12.

NO—Go to step 11.



11. Replace the A/F sensor (Sensor 1) (see page 11-224).
12. Reconnect all connectors.
13. Turn the ignition switch ON (II).
14. Reset the PCM with the HDS.
15. Do the PCM idle learn procedure (see page 11-359).
16. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P2627 and/or P2630 indicated?*

YES—Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM, then go to step 1.

NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

17. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).
18. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P2627 and/or P2630 indicated?*

YES—Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1.

NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-230). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

PGM-FI System

DTC Troubleshooting (cont'd)

DTC P2628: Rear A/F Sensor (Bank 1, Sensor 1) LABEL Circuit High Voltage

DTC P2631: Front A/F Sensor (Bank 2, Sensor 1) LABEL Circuit High Voltage

NOTE:

- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- Information marked with an asterisk (*) applies to the front bank (Bank 2).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle 2 minutes.
4. Check for Temporary DTCs or DTCs with the HDS.

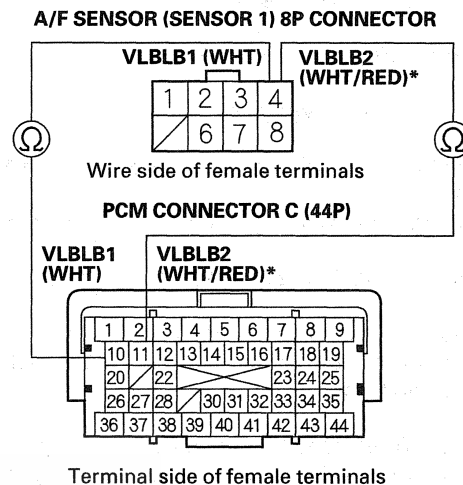
Is DTC P2628 and/or P2631 indicated?*

YES—Go to step 5.

NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM. ■

5. Turn the ignition switch OFF.
6. Jump the SCS line with the HDS.
7. Disconnect the A/F sensor (Sensor 1) 8P connector.
8. Disconnect PCM connector C (44P).

9. Check for continuity between A/F sensor (Sensor 1) 8P connector terminal No. 4 and PCM connector terminal C10 (C11)*.



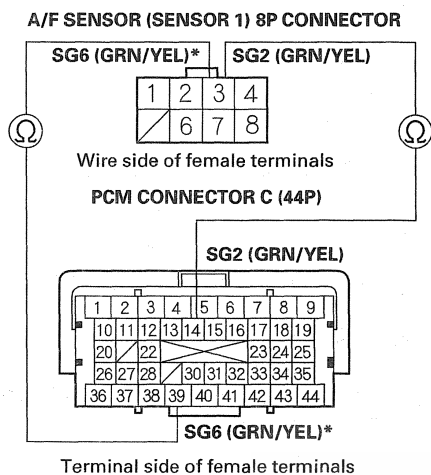
Is there continuity?

YES—Go to step 10.

NO—Repair open in the wire between the PCM (C10 (C11)*) and the A/F sensor (Sensor 1), then go to step 15.



10. Check for continuity between A/F sensor (Sensor 1) 8P connector terminal No. 3 and PCM connector terminal C14 (C39)*.

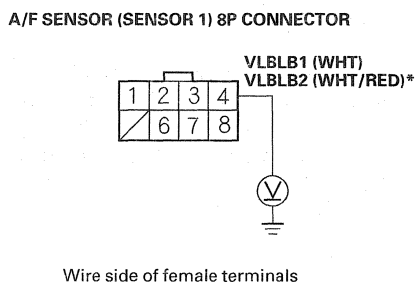


Is there continuity?

YES—Go to step 11.

NO—Repair open in the wire between the PCM (C14 (C39)*) and the A/F sensor (Sensor 1), then go to step 15.

11. Reconnect PCM connector C (44P).
12. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle 2 minutes.
13. Measure voltage between A/F sensor (Sensor 1) 8P connector terminal No. 4 and body ground.



Is there about 5 V?

YES—Go to step 14.

NO—Go to step 20.

14. Replace the A/F sensor (Sensor 1) (see page 11-224).

15. Reconnect all connectors.

16. Turn the ignition switch ON (II).

17. Reset the PCM with the HDS.

18. Do the PCM idle learn procedure (see page 11-359).

19. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P2628 and/or P2631* indicated?

YES—Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM, then go to step 1.

NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

20. Turn the ignition switch OFF.

21. Reconnect all connectors.

22. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).

23. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P2628 and/or P2631* indicated?

YES—Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1.

NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-230). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

PGM-FI System

DTC Troubleshooting (cont'd)

DTC P2A00: Rear A/F Sensor (Bank 1, Sensor 1) Circuit Range/Performance Problem

DTC P2A03: Front A/F Sensor (Bank 2, Sensor 1) Circuit Range/Performance Problem

NOTE:

- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- Information marked with an asterisk (*) applies to the front bank (Bank 2).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.
4. Test-drive under these conditions:
 - Engine coolant temperature (ECT SENSOR 1) above 158 °F (70 °C)
 - Transmission in D position
 - Vehicle speed between 22—55 mph (40—88 km/h) for 5 minutes, then drive at a steady speed between 55—75 mph (88—120 km/h) for 10 seconds.
5. Monitor the OBD STATUS for DTC P2A00 and/or P2A03* in the DTCs MENU with the HDS.

Does the screen indicate FAILED?

YES—Go to step 6.

NO—If the screen indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM. If it is EXECUTING, keep driving until a result comes on. If the screen indicates OUT OF CONDITION, go to step 3 and recheck.

6. Turn the ignition switch OFF.
7. Replace the A/F sensor (Sensor 1) (see page 11-224).
8. Turn the ignition switch ON (II).
9. Reset the PCM with the HDS.
10. Do the PCM idle learn procedure (see page 11-359).
11. Test-drive under these conditions:
 - Engine coolant temperature (ECT SENSOR 1) above 158 °F (70 °C)
 - Transmission in D position
 - Vehicle speed between 22—55 mph (40—88 km/h) for 5 minutes, then drive at a steady speed between 55—75 mph (88—120 km/h) for 10 seconds.
12. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P2A00 and/or P2A03 indicated?*

YES—Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM, then go to step 1.

NO—Go to step 13.
13. Monitor the OBD STATUS for DTC P2A00 and/or P2A03* in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 12, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM, then go to step 1. If the screen indicates EXECUTING, keep driving until a result comes on. If the screen indicates OUT OF CONDITION, go to step 11.



DTC U0073: F-CAN Malfunction (BUS-OFF)

DTC U0155: F-CAN Malfunction (PCM-Gauge Control Module)

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

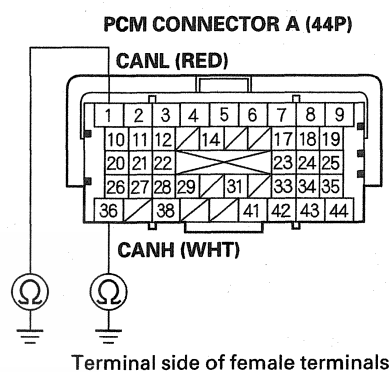
Is DTC U0073 and/or U0155 indicated?

YES—Go to step 4.

NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the gauge control module, the VSA modulator-control unit, the navigation unit, the engine mount control unit, the VTM-4 control unit, the TPMS control unit, and the PCM. ■

4. Turn the ignition switch OFF.
5. Jump the SCS line with the HDS.
6. Disconnect PCM connector A (44P).
7. Remove the gauge control module (see page 22-102).
8. Disconnect the gauge control module connector A (20P).
9. Disconnect navigation unit connector A (20P) (if equipped) (see page 22-508).
10. Disconnect the engine mount control unit 20P connector (if equipped) (see page 11-347).

11. Disconnect the TPMS control unit connector B (20P) (see page 18-82).
12. Disconnect the VTM-4 control unit connector A (22P) (if equipped) (see page 15-48).
13. Disconnect the VSA modulator-control unit 47P connector (see page 19-100).
14. Check for continuity between PCM connector terminals A1 and A36 and body ground individually.



Is there continuity?

YES—Repair short in the wire between the gauge control module, the VSA modulator-control unit, the navigation unit, the engine mount control unit, the VTM-4 control unit, the TPMS control unit, the engine mount control unit, and the PCM (A36 (A1)), then go to step 19.

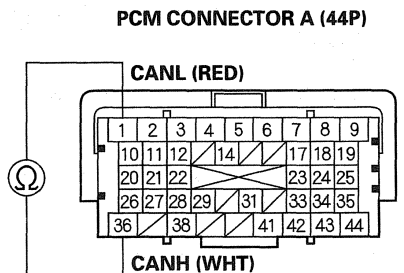
NO—Go to step 15.

(cont'd)

PGM-FI System

DTC Troubleshooting (cont'd)

15. Check for continuity between PCM connector terminals A1 and A36.



Terminal side of female terminals

Is there continuity?

YES—Repair short in the wire between PCM connector terminals A1 (CANL line) and A36 (CANH line), then go to step 19.

NO—Go to step 16.

16. Check for continuity between PCM connector terminal A36 and these connector terminals:

Connector	Terminal
Gauge control module A (20P)	No. 11 (WHT)
VSA modulator-control unit 47P	No. 14 (WHT)
VTM-4 control unit A (22P)	No. 11 (WHT)
TPMS control unit B (20P)	No. 19 (WHT)
Engine mount control unit 20P	No. 5 (WHT)
Navigation Unit 20P	No. 8 (WHT)

Is there continuity between the PCM terminal and each of the terminals in the chart?

YES—Go to step 17.

NO—Repair open in the wire between the PCM (A36) and the appropriate connector, then go to step 19.

17. Check for continuity between PCM connector terminal A1 and these connector terminals:

Connector	Terminal
Gauge control module A (20P)	No. 1 (RED)
VSA modulator-control unit 47P	No. 30 (RED)
VTM-4 control unit A (22P)	No. 22 (RED)
TPMS control unit B (20P)	No. 10 (RED)
Engine mount control unit 20P	No. 17 (RED)
Navigation Unit 20P	No. 8 (WHT)

Is there continuity between the PCM terminal and each of the terminals in the chart?

YES—Go to step 18.

NO—Repair open in the wire between the PCM (A1) and the appropriate connector, then go to step 19.



18. Referring to the chart below, select the row that most closely represents the combination of DTCs retrieved from the PGM-FI, VSA, VTM-4, and TPMS systems. Then check the connections at the control module indicated in the last column. If all the connections are OK, substitute the control module. After substituting the control module, check for DTCs with the HDS.

PGM-FI	VSA	VTM-4	TPMS	Control module
U0073 U0155	86	41-1 41-2	85	Gauge control module
U0073 U0114 U0122 U0155	68 86	41-1 41-2	85	PCM
U0073 U0122 U0155	68 86	41-1 41-2	85	VSA modulator-control unit
U0073 U0114 U0155	68 86	41-1 41-2	85	VTM-4 control unit
U0073 U0155	68 86	41-1 41-2	85	TPMS control unit
U0073 U1101	68 86	41-1 41-2	85	Engine mount control unit

Are the DTCs still indicated?

YES—Substitute the remaining control modules, one at time, until the DTCs are no longer present, then replace the control module that made the DTCs go away. After replacing the faulty control module, go to step 19.

NO—Replace the faulty control module, then go to step 19.

19. Reconnect all connectors.
20. Turn the ignition switch ON (II).
21. Reset the PCM with the HDS.
22. Do the PCM idle learn procedure (see page 11-359).
23. Check for Temporary DTCs or DTCs with the HDS.

If DTC U0073 and/or U0155 indicated?

YES—Check for poor connections or loose terminals at the gauge control module, the VSA modulator-control unit, the VTM-4 control unit, the TPMS control unit, the engine mount control unit, and the PCM, then go to step 1.

NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

PGM-FI System

DTC Troubleshooting (cont'd)

DTC U0114: F-CAN Malfunction (PCM-VTM-4 Control Unit)

NOTE:

- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- If DTC U0073 is stored at the same time as DTC U0114, troubleshoot DTC U0073 first, then recheck for DTC U0114.
- Information marked with an asterisk (*) applies to the CANL line.

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Check for Temporary DTCs or DTCs with the HDS.

Is DTC U0114 indicated?

YES—Go to step 4.

NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the VTM-4 control unit and the PCM. ■

4. Check for a VTM-4 system DTCs in the DTCs MENU with the HDS.

Is VTM-4 DTC 41 indicated?

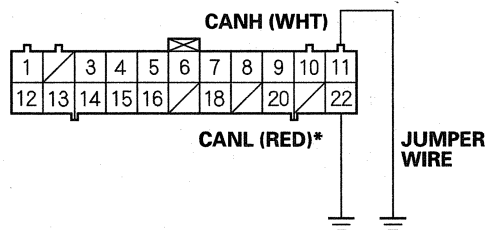
YES—Go to step 5.

NO—Go to step 11.

5. Turn the ignition switch OFF.
6. Jump the SCS line with the HDS.
7. Disconnect PCM connector A (44P).
8. Disconnect VTM-4 control unit connector A (22P) (see page 15-48).

9. Connect VTM-4 control unit 22P connector terminals A11 and A22* to body ground with a jumper wire.

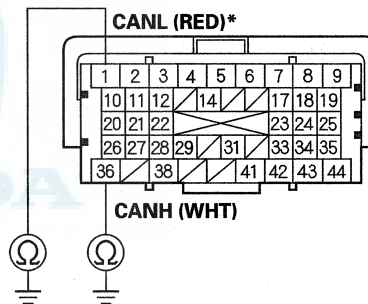
VTM-4 CONTROL UNIT CONNECTOR A (22P)



Wire side of female terminals

10. Check for continuity between PCM connector terminal A36 and A1* and body ground individually.

PCM CONNECTOR A (44P)



Terminal side of female terminals

Is there continuity?

YES—Substitute a known-good VTM-4 control unit (see page 15-48), then go to step 20 and recheck. If DTC U0114 is not indicated, replace the original VTM-4 control unit (see page 15-48), then go to step 20.

NO—Repair open in the wire between the VTM-4 control unit (A11 (A22) *) and the PCM (A36 (A1) *), then go to step 20.



11. Check for poor connections at the VTM-4 control unit connectors A (20P) and B (12P).

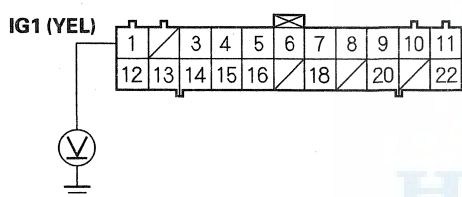
Are the connections OK?

YES—Go to step 9.

NO—Repair the connections, then go to step 20.

12. Turn the ignition switch OFF.
13. If not already done, disconnect VTM-4 control unit connector A (22P) (see page 15-48).
14. Turn the ignition switch ON (II).
15. Measure voltage between VTM-4 control unit 22P connector terminal A1 and body ground.

VTM-4 CONTROL UNIT CONNECTOR A (22P)



Wire side of female terminals

Is there battery voltage?

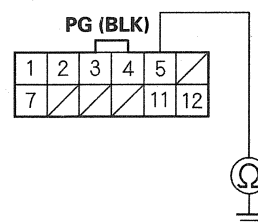
YES—Go to step 16.

NO—Check the No. 11 VTM-4 (7.5 A) fuse in the driver's under-dash fuse/relay box. If the fuse is OK, repair open in the wire between the No. 11 VTM-4 (7.5 A) fuse and the VTM-4 control unit, then go to step 19.

16. Turn the ignition switch OFF.
17. Disconnect VTM-4 control unit connector B (12P) (see page 15-48).

18. Check for continuity between VTM-4 control unit 12P connector terminal B5 and body ground.

VTM-4 CONTROL UNIT CONNECTOR B (12P)



Wire side of female terminals

Is there continuity?

YES—Substitute a known-good VTM-4 control unit (see page 15-48), then go to step 20 and recheck. If DTC U0114 is not indicated, replace the original VTM-4 control unit (see page 15-48), then go to step 20.

NO—Repair open in the wire between the VTM-4 control unit and G602, then go to step 20.

19. Turn the ignition switch OFF.
20. Reconnect all connectors.
21. Turn the ignition switch ON (II).
22. Reset the PCM with the HDS.
23. Do the PCM idle learn procedure (see page 11-359).
24. Check for Temporary DTCs or DTCs with the HDS.

Is DTC U0114 indicated?

YES—Check for poor connections or loose terminals at the VTM-4 control unit and the PCM, then go to step 1.

NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

PGM-FI System

DTC Troubleshooting (cont'd)

DTC U0122: F-CAN Malfunction (PCM-VSA Modulator-Control Unit)

NOTE:

- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- If DTC U0073 is stored at the same time as DTC U0122, troubleshoot DTC U0073 first, then recheck for DTC U0122.
- Information marked with an asterisk (*) applies to the CANL line.

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Check for Temporary DTCs or DTCs with the HDS.

Is DTC U0122 indicated?

YES—Go to step 4.

NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the VSA modulator-control unit and the PCM. ■

4. Check for a VSA system DTCs in the DTCs MENU with the HDS.

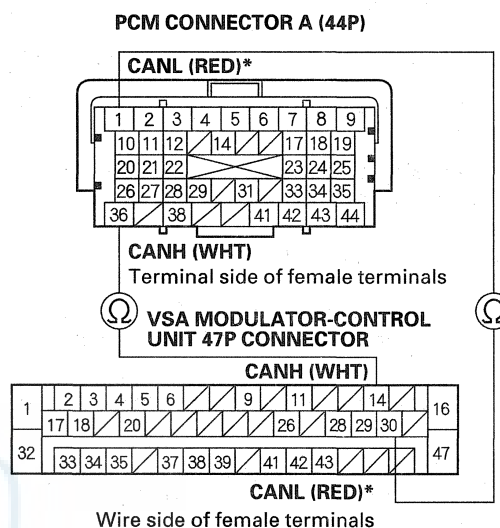
Is VSA DTC 86 indicated?

YES—Go to step 5.

NO—Go to step 10.

5. Turn the ignition switch OFF.
6. Jump the SCS line with the HDS.
7. Disconnect PCM connector A (44P).
8. Disconnect the VSA modulator-control unit 47P connector (see page 19-100).

9. Check for continuity between PCM connector terminal A36 and VSA modulator-control unit 47P connector terminals No. 14, and between PCM connector terminal A1* and VSA modulator-control unit 47P connector terminal No. 30*.



Is there continuity?

YES—Substitute a known-good VSA modulator-control unit (see page 19-100), then go to step 15 and recheck. If DTC U0122 is not indicated, replace the original VSA modulator-control unit (see page 19-100), then go to step 17.

NO—Repair open in the wire between the VSA modulator-control unit (No. 14 (No. 30)*) and the PCM (A36 (A1)*), then go to step 17.

10. Check for poor connections at the left engine compartment wire harness/dashboard wire harness 18P connector and the VSA modulator-control unit 47P connector.

Are the connections OK?

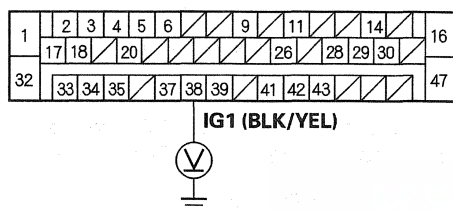
YES—Go to step 11.

NO—Repair the connections, then go step 17.



11. Turn the ignition switch OFF.
12. If not already done, disconnect the VSA modulator-control unit 47P connector (see page 19-100).
13. Turn the ignition switch ON (II).
14. Measure voltage between VSA modulator-control unit 47P connector terminal No. 38 and body ground.

VSA MODULATOR-CONTROL UNIT 47P CONNECTOR



Wire side of female terminals

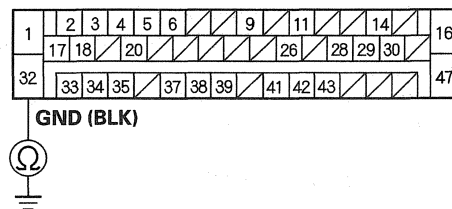
Is there battery voltage?

YES—Go to step 15.

NO—Check the No. 6 FI-ECU (15 A) fuse in the driver's under-dash fuse relay box. If the fuse is OK, repair open in the wire between the No. 6 FI-ECU (15 A) fuse and the VSA modulator-control unit, then go to step 16.

15. Check for continuity between VSA modulator-control unit 47P connector terminal No. 32 and body ground.

VSA MODULATOR-CONTROL UNIT 47P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Substitute a known-good VSA modulator-control unit (see page 19-100), then go to step 17 and recheck. If DTC U0122 is not indicated, replace the original VSA modulator-control unit (see page 19-100), then go to step 17.

NO—Repair open in the wire between the VSA modulator-control unit and G302, then go to step 17.

16. Turn the ignition switch OFF.
17. Reconnect all connectors.
18. Turn the ignition switch ON (II).
19. Clear the DTC with the HDS.
20. Do the PCM idle learn procedure (see page 11-359).
21. Check for Temporary DTCs or DTCs with the HDS.

Is DTC U0122 indicated?

YES—Check for poor connections or loose terminals at the VSA modulator-control unit and the PCM, then go to step 1.

NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

PGM-FI System

DTC Troubleshooting (cont'd)

DTC U1101: F-CAN Malfunction (PCM-ACM Unit)

NOTE:

- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- If DTC U0073 is stored at the same time as DTC U1101, troubleshoot DTC U0073 first, then recheck for DTC U1101.
- Information marked with an asterisk (*) applies to the CANL line.

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Check for Temporary DTCs or DTCs with the HDS.

Is DTC U1101 indicated?

YES—Go to step 4.

NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the engine mount control unit and the PCM. ■

4. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P15AB indicated?

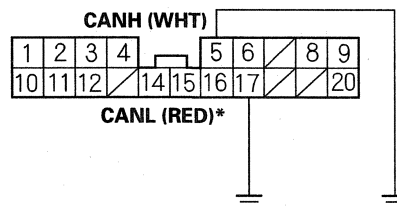
YES—Go to step 5.

NO—Go to step 8.

5. Turn the ignition switch OFF.
6. Jump the SCS line with the HDS.
7. Disconnect PCM connector A (44P).
8. Disconnect the engine mount control unit 20P connector (see page 11-347).

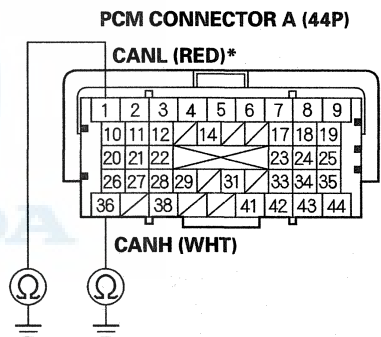
9. Connect engine mount control unit 20P connector terminals No. 5 and No. 17 * to body ground with a jumper wire.

ENGINE MOUNT CONTROL UNIT 20P CONNECTOR



Wire side of female terminals

10. Check for continuity between PCM connector terminal A36 and A1 * and body ground individually.



Terminal side of female terminals

Is there continuity?

YES—Substitute a known-good engine mount control unit (see page 11-347), then go to step 20 and recheck. If DTC U1101 is not indicated, replace the original engine mount control unit (see page 11-347), then go to step 19.

NO—Repair open in the wire between the engine mount control unit (No. 5 (No. 17) *) and the PCM (A36 (A1) *), then go to step 19.



11. Check for poor connections at the engine mount control unit 20P connector.

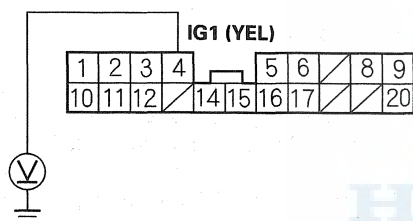
Are the connections OK?

YES—Go to step 12.

NO—Repair the connections, then go to step 19.

12. Turn the ignition switch OFF.
13. If not already done, disconnect the engine mount control unit 20P connector (see page 11-347).
14. Turn the ignition switch ON (II).
15. Measure voltage between engine mount control unit 20P connector terminal No. 4 and body ground.

ENGINE MOUNT CONTROL UNIT 20P CONNECTOR



Wire side of female terminals

Is there battery voltage?

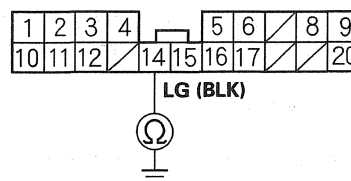
YES—Go to step 16.

NO—Check the No. 9 BACK UP LIGHT INSTRUMENT LIGHT (10 A) fuse in the driver's under-dash fuse/relay box. If the fuse is OK, repair open in the wire between the No. 9 BACK UP LIGHT, INSTRUMENT LIGHT (10 A) fuse and the engine mount control unit, then go to step 18.

16. Turn the ignition switch OFF.

17. Check for continuity between engine mount control unit 20P connector terminal No. 14 and body ground.

ENGINE MOUNT CONTROL UNIT 20P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Substitute a known-good engine mount control unit (see page 11-347), then go to step 18 and recheck. If DTC U1101 is not indicated, replace the original engine mount control unit (see page 11-347), then go to step 19.

NO—Repair open in the wire between the engine mount control unit and G503, then go to step 19.

18. Turn the ignition switch OFF.
19. Reconnect all connectors.
20. Turn the ignition switch ON (II).
21. Reset the PCM with the HDS.
22. Do the PCM idle learn procedure (see page 11-359).
23. Check for Temporary DTCs or DTCs with the HDS.

Is DTC U1101 indicated?

YES—Check for poor connections or loose terminals at the engine mount control unit and the PCM, then go to step 1.

NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

PGM-FI System

MIL Circuit Troubleshooting

1. Turn the ignition switch ON (II).

2. Do the gauge self-diagnostic procedure (see page 22-90).

Does the MIL indicator flash?

YES—Go to step 3.

NO—Substitute a known-good gauge control module, and recheck. If the MIL circuit is OK, replace the original gauge control module. ■

3. Turn the ignition switch OFF.

4. Turn the ignition switch ON (II), and watch the MIL.

Does the MIL stay off?

YES—Go to step 17.

NO—Go to step 5.

5. Turn the ignition switch OFF.

6. Turn the ignition switch ON (II), wait 20 seconds, and watch the MIL.

Does the MIL stay on or flash more than 5 times?

YES—Go to step 7.

NO—The MIL circuit is OK. ■

7. Turn the ignition switch OFF.

8. Connect the HDS (see page 11-3).

9. Turn the ignition switch ON (II), and read the HDS.

Does the HDS communicate with the PCM?

YES—Go to step 10.

NO—Go to "DLC Circuit Troubleshooting" (see page 11-218). ■

10. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—Go to the indicated DTC's troubleshooting. ■

NO—Go to step 11.

11. Check the MIL in the DATA LIST with the HDS.

Does it indicate ON?

YES—Go to step 12.

NO—Substitute a known-good gauge control module, and recheck. If the MIL circuit is OK, replace the original gauge control module. ■

12. Check the SCS in the DATA LIST with the HDS.

Is a short indicated?

YES—Go to step 13.

NO—Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM (see page 11-230). ■

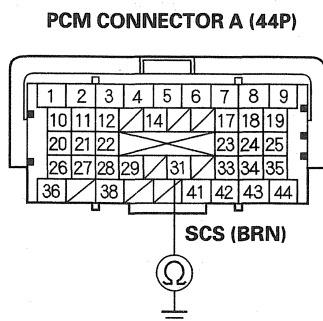
13. Turn the ignition switch OFF.

14. Jump the SCS line with the HDS.

15. Disconnect PCM connector A (44P), then disconnect the HDS.



16. Check for continuity between PCM connector terminal A31 and body ground.



Is there continuity?

YES—Repair short in the wire between the PCM (A31) and the DLC. ■

NO—Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM (see page 11-230). ■

17. Try to start the engine.

Does the engine start and idle smoothly?

YES—Go to step 18.

NO—Go to step 22.

18. Turn the ignition switch OFF.

19. Connect the HDS (see page 11-3).

20. Turn the ignition switch ON (II), and read the HDS.

Does the HDS communicate with the PCM?

YES—Go to step 21.

NO—Go to “DLC Circuit Troubleshooting” (see page 11-218).

21. Check for Temporary DTCs or DTCs with the HDS.

Is DTC U0073 and/or U0155 indicated?

YES—Go to the indicated DTC troubleshooting. ■

NO—Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM (see page 11-230). ■

22. Turn the ignition switch OFF.

23. Inspect the No. 42 IG1 MAIN (50 A) fuse in the under-hood fuse/relay box.

Is the fuse OK?

YES—Repair open in the wire between the No. 42 IG1 MAIN (50 A) fuse and the ignition switch. If the wire is OK, go to step 24.

NO—Repair short in the wire between No. 42 IG1 MAIN (50 A) fuse and the ignition switch. Also replace the No. 42 IG1 MAIN (50 A) fuse. ■

24. Inspect the No. 46 ACGS (15 A) fuse in the under-hood fuse/relay box.

Is the fuse OK?

YES—Go to step 31.

NO—Go to step 25.

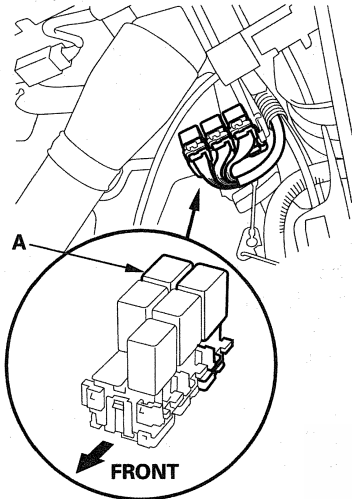
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PGM-FI System

MIL Circuit Troubleshooting (cont'd)

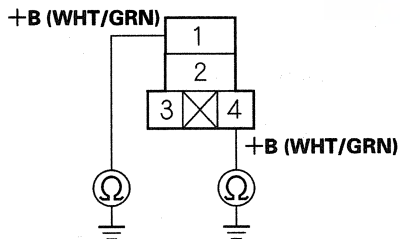
25. Remove the blown No. 46 ACGS (15 A) fuse from the under-hood fuse/relay box.

26. Remove PGM-FI main relay 1 (FI MAIN) (A).



27. Check for continuity between body ground and PGM-FI main relay 1 (FI MAIN) 4P connector terminals No. 1 and No. 4 individually.

PGM-FI MAIN RELAY 1 (FI MAIN) 4P CONNECTOR



Wire side of female terminals

Is there continuity?

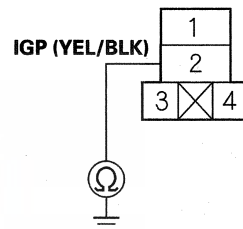
YES—Repair short in the wire between the No. 46 ACGS (15 A), PGM-FI main relay 1 (FI MAIN), and DLC terminal No. 16. Also replace the No. 46 ACGS (15 A) fuse. ■

NO—Go to step 28.

28. Disconnect each of the components or connectors below, one at a time, and check for continuity between PGM-FI main relay 1 (FI MAIN) 4P connector terminal No. 2 and body ground.

- PGM-FI main relay 2 (FUEL PUMP)
- PCM connector B (44P)
- Each injector 2P connector
- Camshaft position (CMP) sensor 3P connector
- Crankshaft position (CKP) sensor A/B 6P connector
- Electronic throttle control system (ETCS) control relay
- 7.5 A fuse in the auxiliary under-dash fuse holder

PGM-FI MAIN RELAY 1 (FI MAIN) 4P CONNECTOR



Wire side of female terminals

Does continuity go away when one of the above components is disconnected?

YES—Replace the component that made the short to body ground go away when disconnected. If the item is the PCM, update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM (see page 11-230).

Also replace the No. 46 ACGS (15 A) fuse. ■

NO—Go to step 29.

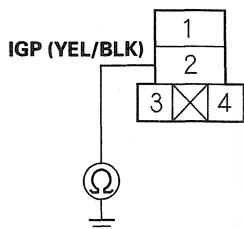


29. Disconnect the connectors of all these components.

- PGM-FI main relay 2 (FUEL PUMP)
- PCM connector B (44P)
- Injectors
- Camshaft position (CMP) sensor
- Crankshaft position (CKP) sensor A/B
- Electronic throttle control system (ETCS) control relay
- 7.5 A fuse in the auxiliary under-dash fuse holder

30. Check for continuity between PGM-FI main relay 1 (FI MAIN) 4P connector terminal No. 2 and body ground.

PGM-FI MAIN RELAY 1 (FI MAIN) 4P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair short in the wire between the PGM-FI main relay 1 (FI MAIN) and each item. Also replace the No. 46 ACGS (15 A) fuse. ■

NO—Replace PGM-FI main relay 1 (FI MAIN). Also replace the No. 46 ACGS (15 A) fuse. ■

31. Inspect the No. 1 FUEL PUMP (15 A) fuse in the driver's under-dash fuse/relay box.

Is the fuse OK?

YES—Go to step 43.

NO—Go to step 32.

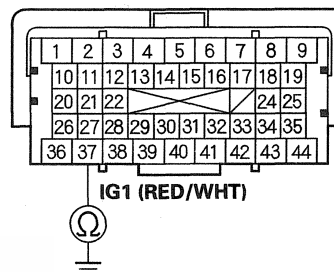
32. Remove the blown No. 1 IG FUEL PUMP (15 A) fuse in the driver's under-dash fuse/relay box.

33. Jump the SCS line with the HDS.

34. Disconnect PCM connector B (44P).

35. Check for continuity between PCM connector terminal B37 and body ground.

PCM CONNECTOR B (44P)



Terminal side of female terminals

Is there continuity?

YES—Go to step 36.

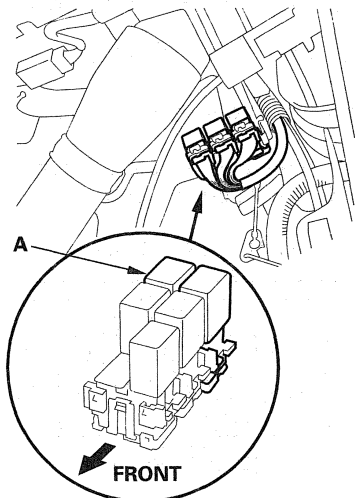
NO—Replace the No. 1 FUEL PUMP (15 A) fuse, and update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM (see page 11-230). ■

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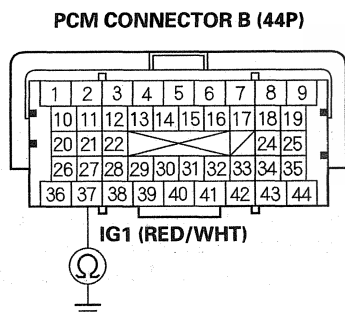
PGM-FI System

MIL Circuit Troubleshooting (cont'd)

36. Remove PGM-FI main relay 2 (FUEL PUMP) (A).



37. Check for continuity between PCM connector terminal B37 and body ground.



Terminal side of female terminals

Is there continuity?

YES—Repair short in the wire between the No. 1 FUEL PUMP (15 A) fuse and the PCM (B37), PGM-FI main relay 2 (FUEL PUMP), the immobilizer control unit receiver, or the SRS unit. Also replace the No. 1 FUEL PUMP (15 A) fuse. ■

NO—Go to step 38.

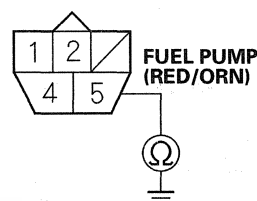
38. Remove the driver's side second row seat (see page 20-115).

39. Remove the access panel from the floor.

40. Disconnect the fuel pump 5P connector.

41. Check for continuity between fuel pump 5P connector terminal No. 5 and body ground.

FUEL PUMP 5P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair short in the wire between the fuel pump and PGM-FI main relay 2 (FUEL PUMP). Also replace the No. 1 FUEL PUMP (15 A) fuse. ■

NO—Go to step 42.



42. Test PGM-FI main relay 2 (FUEL PUMP).

Is PGM-FI main relay 2 (FUEL PUMP) OK?

YES—Check the fuel pump, and replace it if necessary (see page 11-387). Also replace the No. 1 FUEL PUMP (15 A) fuse. ■

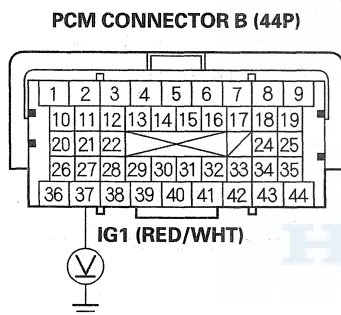
NO—Replace PGM-FI main relay 2 (FUEL PUMP). Also replace the No. 1 FUEL PUMP (15 A) fuse. ■

43. Jump the SCS line with the HDS.

44. Disconnect PCM connectors A (44P) and B (44P).

45. Turn the ignition switch ON (II).

46. Measure voltage between PCM connector terminal B37 and body ground.

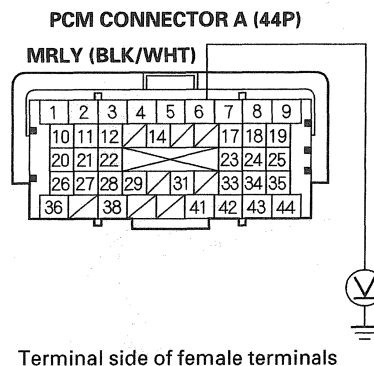


Is there battery voltage?

YES—Go to step 47.

NO—Repair open in the wire between the No. 1 FUEL PUMP (15 A) fuse and the PCM (B37). ■

47. Measure voltage between PCM connector terminal A6 and body ground.



Is there battery voltage?

YES—Go to step 53.

NO—Go to step 48.

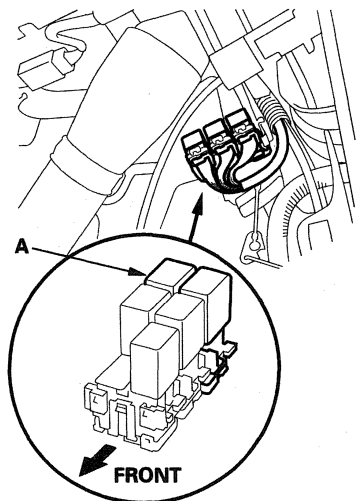
48. Turn the ignition switch OFF.

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PGM-FI System

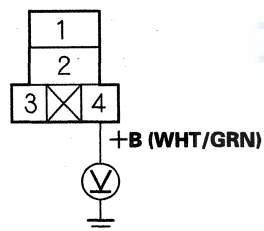
MIL Circuit Troubleshooting (cont'd)

49. Remove PGM-FI main relay 1 (FI MAIN) (A).



50. Measure voltage between PGM-FI main relay 1 (FI MAIN) 4P connector terminal No. 4 and body ground.

PGM-FI MAIN RELAY 1 (FI MAIN) 4P CONNECTOR



Wire side of female terminals

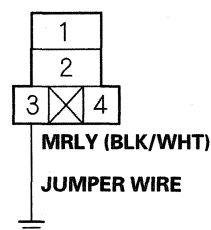
Is there battery voltage?

YES—Go to step 51.

NO—Repair open in the wire between the No. 46 ACGS (15 A) fuse and PGM-FI main relay 1 (FI MAIN). ■

51. Connect PGM-FI main relay 1 (FI MAIN) 4P connector terminal No. 3 to body ground with a jumper wire.

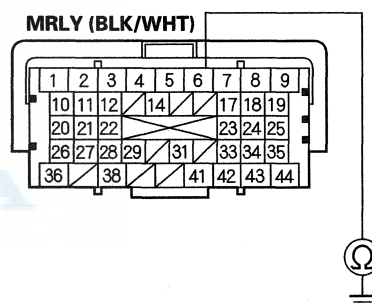
PGM-FI MAIN RELAY 1 (FI MAIN) 4P CONNECTOR



Wire side of female terminals

52. Check for continuity between PCM connector terminal A6 and body ground.

PCM CONNECTOR A (44P)



Terminal side of female terminals

Is there continuity?

YES—Test PGM-FI main relay 1 (FI MAIN) (see page 22-82). If the relay is faulty, replace it. If the relay is OK, update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM (see page 11-230). ■

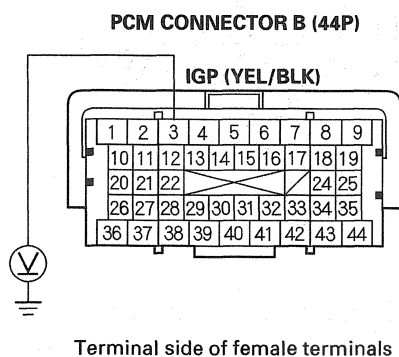
NO—Repair open in the wire between PGM-FI main relay 1 (FI MAIN) and the PCM (A6). ■



53. Reconnect PCM connector A (44P).

54. Turn the ignition switch ON (II).

55. Measure voltage between PCM connector terminal B3 and body ground.



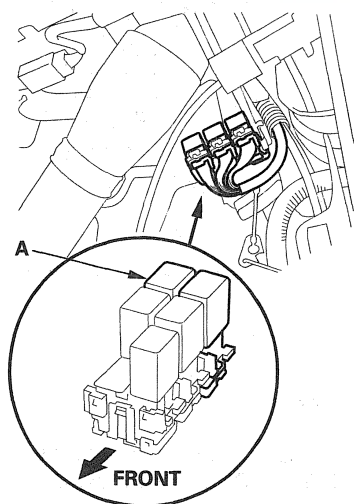
Is there battery voltage?

YES—Go to step 63.

NO—Go to step 56.

56. Turn the ignition switch OFF.

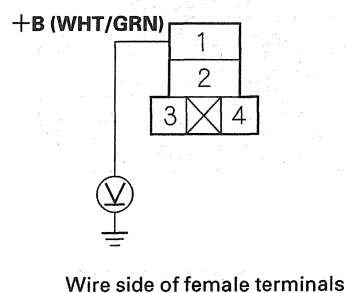
57. Remove PGM-FI main relay 1 (FI MAIN) (A).



58. Turn the ignition switch ON (II).

59. Measure voltage between PGM-FI main relay 1 (FI MAIN) 4P connector terminal No. 1 and body ground.

PGM-FI MAIN RELAY 1 (FI MAIN) 4P CONNECTOR



Is there battery voltage?

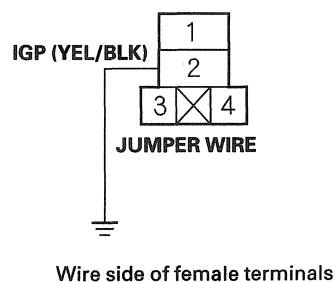
YES—Go to step 60.

NO—Repair open in the wire between the No. 8 ACGS (15 A) fuse and PGM-FI main relay 1 (FI MAIN). ■

60. Turn the ignition switch OFF.

61. Connect PGM-FI main relay 1 (FI MAIN) 4P connector terminal No. 2 to body ground with a jumper wire.

PGM-FI MAIN RELAY 1 (FI MAIN) 4P CONNECTOR

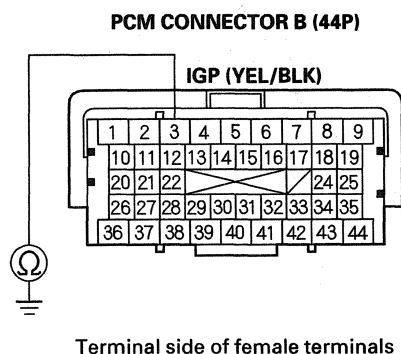


(cont'd)

PGM-FI System

MIL Circuit Troubleshooting (cont'd)

62. Check for continuity between PCM connector terminal B3 and body ground.



Is there continuity?

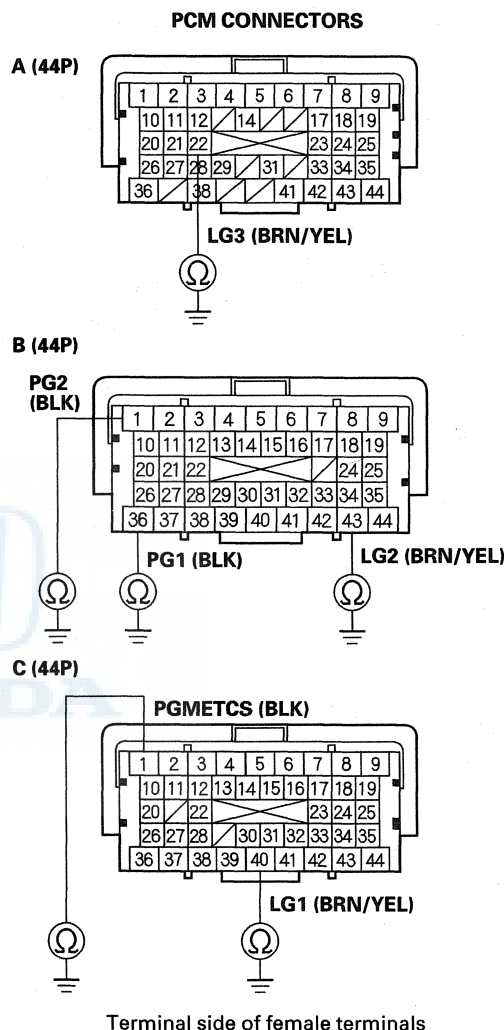
YES—Test PGM-FI main relay 1 (FI MAIN) (see page 22-82). If the relay is faulty, replace it. If the relay is OK, update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8). If the symptom/indication goes away with a known-good PCM, replace the original PCM (see page 11-230).

NO—Repair open in the wire between PGM-FI main relay 1 (FI MAIN) and the PCM (B3). ■

63. Turn the ignition switch OFF.

64. Disconnect PCM connectors A (44P), B (44P), and C (44P).

65. Check for continuity between body ground and PCM connector terminals A22, B1, B36, B43, C1, and C40 individually.



Is there continuity?

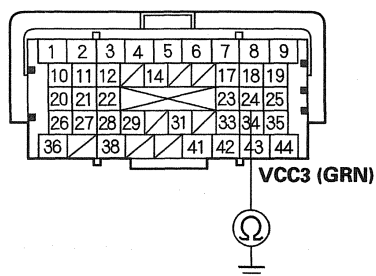
YES—Go to step 66.

NO—Repair open in the wire(s) between PCM (A22, B1, B36, B43, C1, C40) and body ground (G101). ■



66. Disconnect the APP sensor 6P connector.
67. Check for continuity between PCM connector terminal A24 and body ground.

PCM CONNECTOR A (44P)



Terminal side of female terminals

Is there continuity?

YES—Repair short in the wire between the PCM (A24) and the APP sensor. ■

NO—Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM (see page 11-230). ■

PGM-FI System

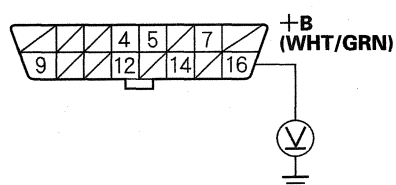
DLC Circuit Troubleshooting

NOTE:

- If the PCM does not communicate with the HDS, do this troubleshooting procedure.
- Check that MIL circuit is normal, then do this troubleshooting.

1. Measure voltage between DLC terminal No. 16 and body ground.

DATA LINK CONNECTOR (DLC)



Terminal side of female terminals

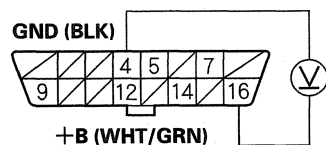
Is there battery voltage?

YES—Go to step 2.

NO—Repair open in the wire between DLC terminal No. 16 and the No. 46 ACGS (15 A) fuse in the under-hood fuse/relay box. ■

2. Measure voltage between DLC terminals No. 4 and No. 16.

DATA LINK CONNECTOR (DLC)



Terminal side of female terminals

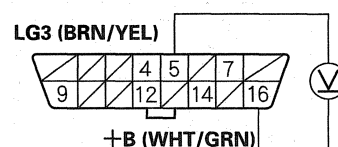
Is there battery voltage?

YES—Go to step 3.

NO—Repair open in the wire between DLC terminal No. 4 and body ground (G401). ■

3. Measure voltage between DLC terminals No. 5 and No. 16.

DATA LINK CONNECTOR (DLC)



Terminal side of female terminals

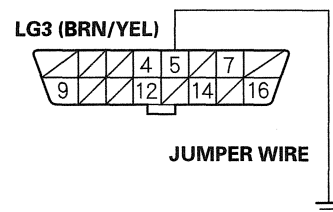
Is there battery voltage?

YES—Go to step 8.

NO—Go to step 4.

4. Jump the SCS line with the HDS.
5. Disconnect PCM connector A (44P).
6. Connect the DLC terminal No. 5 to body ground with a jumper wire.

DATA LINK CONNECTOR (DLC)

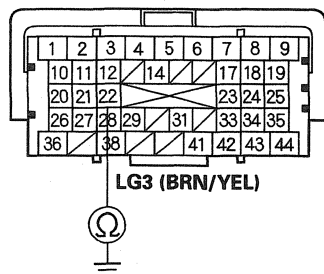


Terminal side of female terminals



7. Check for continuity between PCM connector terminal A22 and body ground.

PCM CONNECTOR A (44P)



Terminal side of female terminals

Is there continuity?

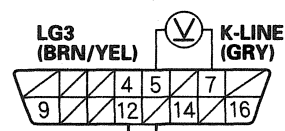
YES—Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM (see page 11-230). ■

NO—Repair open in the wire between the PCM (A22) and DLC terminal No. 5. After repairing the wire, check for Temporary DTCs or DTCs with the HDS and go to the indicated DTC's troubleshooting. ■

8. Turn the ignition switch ON (II).

9. Measure voltage between DLC terminals No. 5 and No. 7.

DATA LINK CONNECTOR (DLC)



Terminal side of female terminals

Is there 8.5 V or more?

YES—Go to step 16.

NO—Go to step 10.

10. Turn the ignition switch OFF.

11. Jump the SCS line with the HDS.

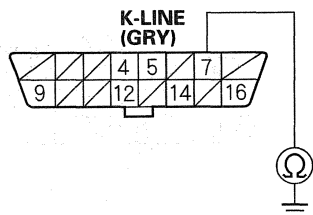
(cont'd)

PGM-FI System

DLC Circuit Troubleshooting (cont'd)

12. Disconnect PCM connector A (44P).
13. Check for continuity between DLC terminal No. 7 and body ground.

DATA LINK CONNECTOR (DLC)



Terminal side of female terminals

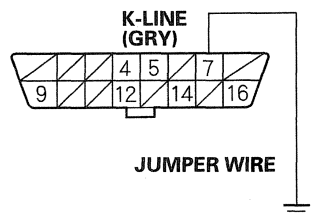
Is there continuity?

YES—Repair short to ground in the wire between DLC terminal No. 7 and the PCM (A43). After repairing the wire, check for a DTC with the HDS, and go to the indicated DTC's troubleshooting. ■

NO—Go to step 14.

14. Connect the DLC terminal No. 7 to body ground with a jumper wire.

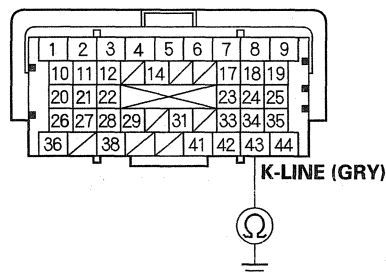
DATA LINK CONNECTOR (DLC)



Terminal side of female terminals

15. Check for continuity between PCM connector terminal A43 and body ground.

PCM CONNECTOR A (44P)



Terminal side of female terminals

Is there continuity?

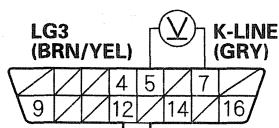
YES—Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM (see page 11-230). ■

NO—Repair open in the wire between DLC terminal No. 7 and the PCM (A43). After repairing the wire, check for a DTC with the HDS, and go to the DTC troubleshooting. ■



16. Turn the ignition switch OFF.
17. Jump the SCS line with the HDS.
18. Disconnect PCM connector A (44P).
19. Turn the ignition switch ON (II).
20. Measure voltage between DLC terminals No. 5 and No. 7.

DATA LINK CONNECTOR (DLC)



Terminal side of female terminals

Is there 0 V?

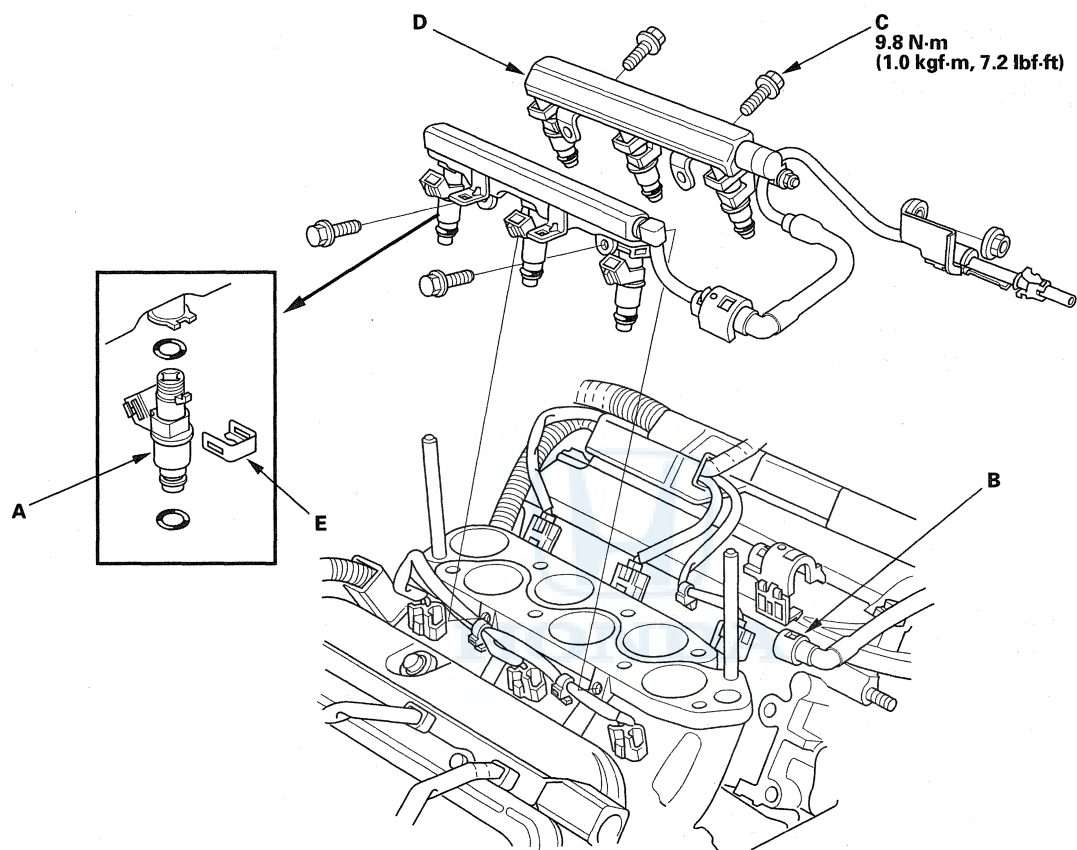
YES—Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM (see page 11-230). ■

NO—Repair short to power in the wire between DLC terminal No. 7 and the PCM (A43). After repairing the wire, check for Temporary DTCs or DTCs with the HDS. If any Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

PGM-FI System

Injector Replacement

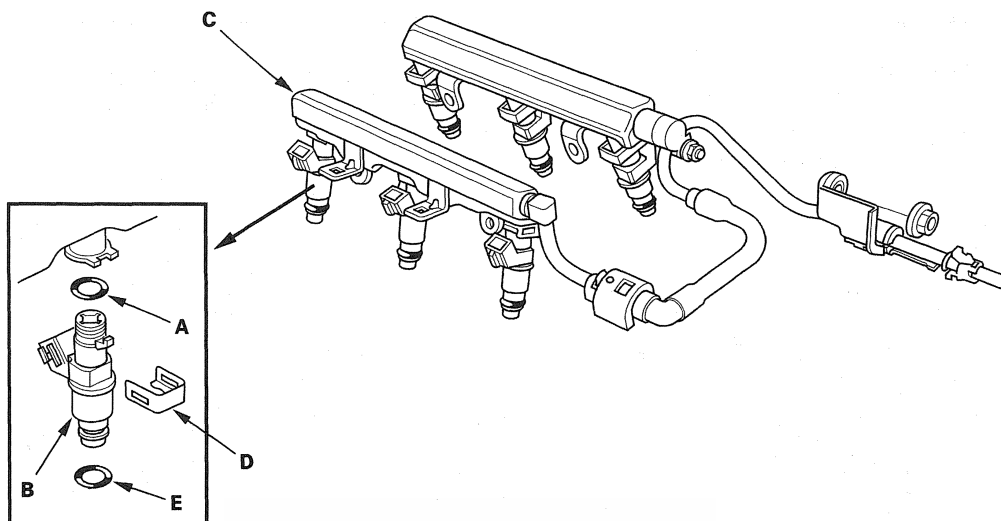
1. Relieve fuel pressure (see page 11-372).
2. Remove the intake manifold (see page 9-4).
3. Disconnect the connectors from the injectors (A).



4. Disconnect the quick-connect fitting (B) (see page 11-380).
5. Remove the fuel rail mounting bolts (C) from the fuel rail (D).
6. Remove the injector clip (E) from the fuel rail.
7. Remove the injectors from the rails.



8. Coat the new O-ring (A) with clean engine oil, and insert the injectors (B) into the fuel rail (C).



9. Install the injector clip (D).
10. Coat the new injector O-ring (E) with clean engine oil.
11. Install the injector/fuel rail assembly into the injector base.
12. Install the fuel rail mounting bolts.
13. Install the connectors on the injectors.
14. Connect the quick-connect fitting (see page 11-381).
15. Turn the ignition switch ON (II), but do not operate the starter. After the fuel pump runs for about 2 seconds, the fuel pressure in the fuel line rises. Repeat this two or three times, then check for fuel leakage.
16. Install the intake manifold (see page 9-6).

PGM-FI System

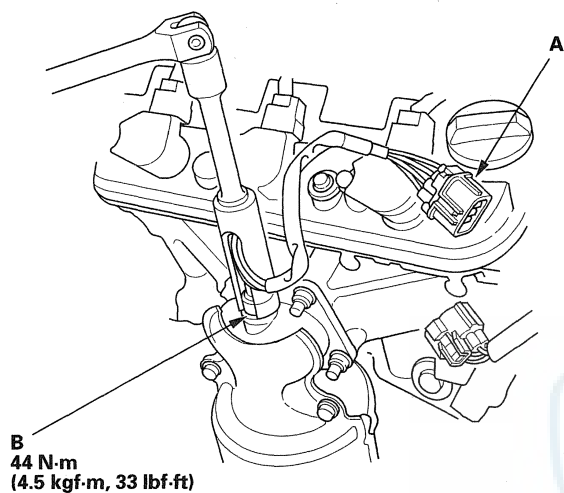
A/F Sensor Replacement

Special Tools Required

O2 sensor wrench, Snap-on S6176, or equivalent, commercially available

Front Bank (Bank 2)

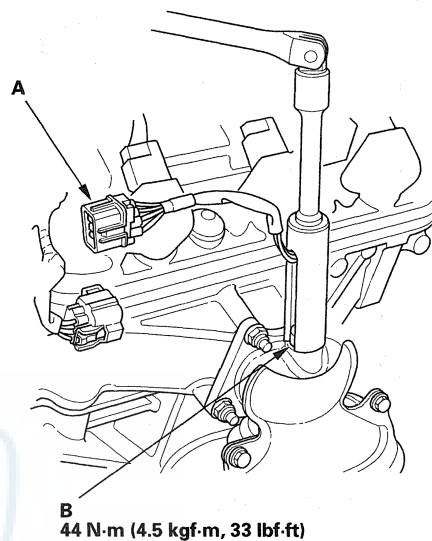
1. Disconnect the front A/F sensor 8P connector (A), then remove the front A/F sensor (B).



2. Install the parts in the reverse order of removal.

Rear Bank (Bank 1)

1. Remove the engine cover (see step 1 on page 4-19).
2. Disconnect the rear A/F sensor 8P connector (A), then remove the rear A/F sensor (B).



3. Install the parts in the reverse order of removal.



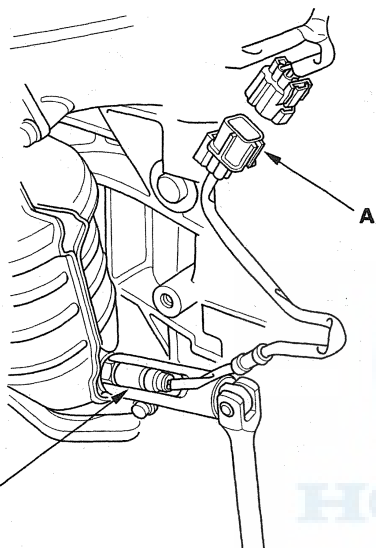
Secondary HO2S Replacement

Special Tools Required

O2 sensor wrench, Snap-on S6176, or equivalent, commercially available

Front Bank (Bank 2)

1. Remove the splash shield.
2. Disconnect the front secondary HO2S 4P connector (A), then remove the front secondary HO2S (B).

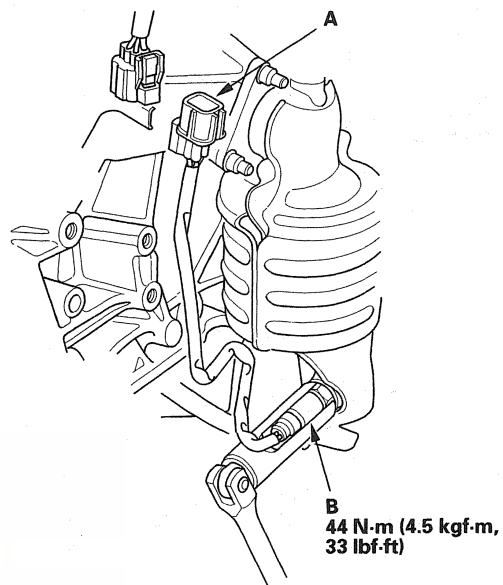


B
44 N·m (4.5 kgf·m, 33 lbf·ft)

3. Install the parts in the reverse order of removal.

Rear Bank (Bank 1)

1. Disconnect the rear secondary HO2S 4P connector (A), then remove the rear secondary HO2S (B).



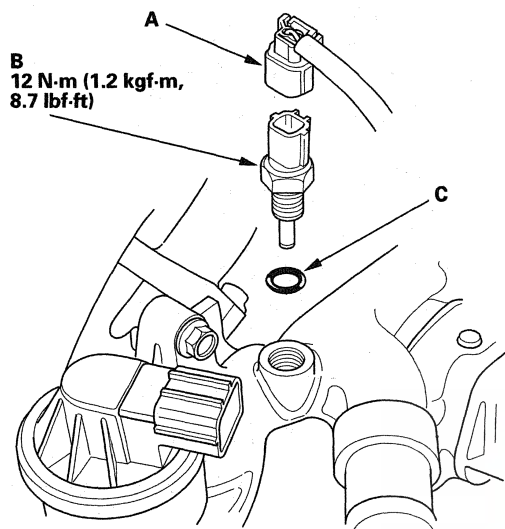
B
44 N·m (4.5 kgf·m,
33 lbf·ft)

2. Install the parts in the reverse order of removal.

PGM-FI System

ECT Sensor 1 Replacement

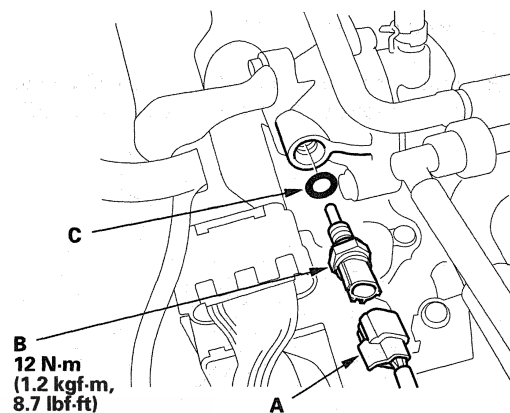
1. Drain the engine coolant (see page 10-6).
2. Remove engine cover (see step 1 on page 4-19).
3. Disconnect the ECT sensor 1 2P connector (A).



4. Remove ECT sensor 1 (B).
5. Install the parts in the reverse order of removal with a new O-ring (C), then refill the radiator with engine coolant (see page 10-6), and bleed air from the cooling system with the heater valve open.

ECT Sensor 2 Replacement

1. Drain the engine coolant (see page 10-6).
2. Remove the engine cover (see step 1 on page 4-19).
3. Disconnect the ECT sensor 2 2P connector (A).

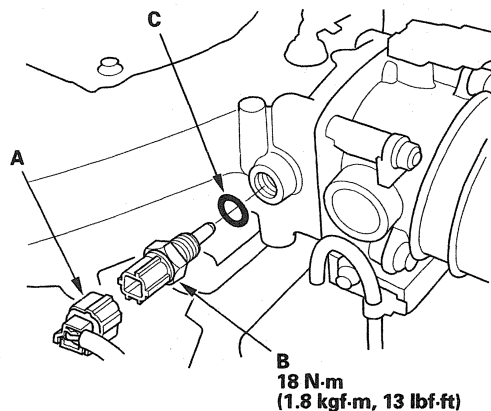


4. Remove ECT sensor 2 (B).
5. Install the parts in the reverse order of removal with a new O-ring (C), then refill the radiator with engine coolant (see page 10-6), and bleed air from the cooling system with the heater valve open.



IAT Sensor Replacement

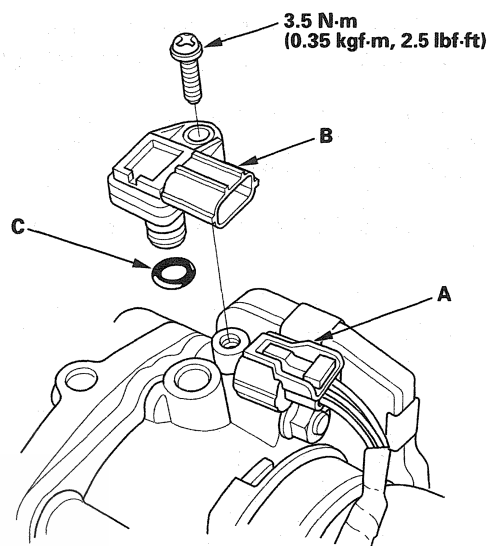
1. Remove the engine cover (see step 1 on page 4-19).
2. Disconnect the IAT sensor 2P connector (A).



3. Remove the IAT sensor (B).
4. Install the parts in the reverse order of removal with a new O-ring (C).

MAP Sensor Replacement

1. Remove the engine cover (see step 1 on page 4-19).
2. Disconnect the MAP sensor 3P connector (A).

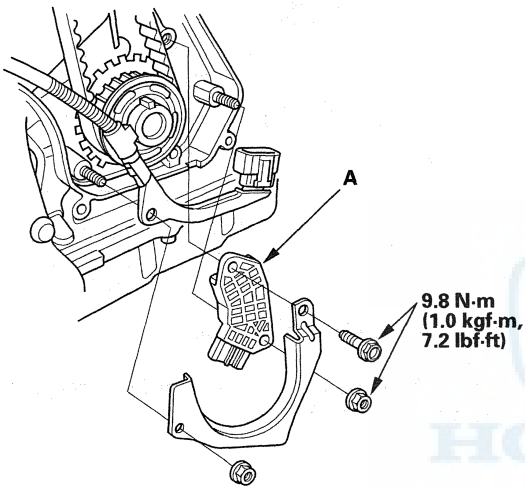


3. Remove the MAP sensor (B).
4. Install the parts in the reverse order of removal with a new O-ring (C).

PGM-FI System

CKP Sensor Replacement

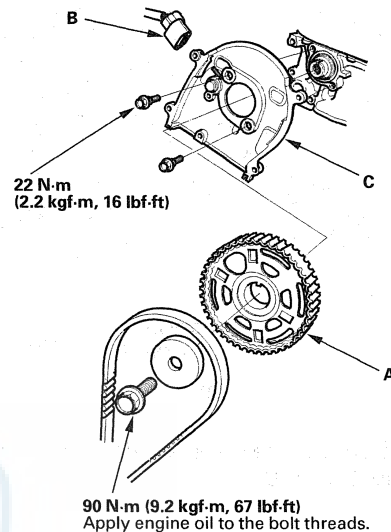
1. Move the auto-tensioner to remove tension from the drive belt, then remove the belt; J35A9 engine (see page 4-32), J35Z1 engine (see page 4-32).
2. Remove the crankshaft pulley; J35A9 engine (see page 6-11), J35Z1 engine (see page 6-68).
3. Remove the upper and lower front covers from the engine; J35A9 engine (see step 9 on page 6-14), J35Z1 engine (see step 9 on page 6-71).
4. Remove the CKP sensor (A) from the oil pump.



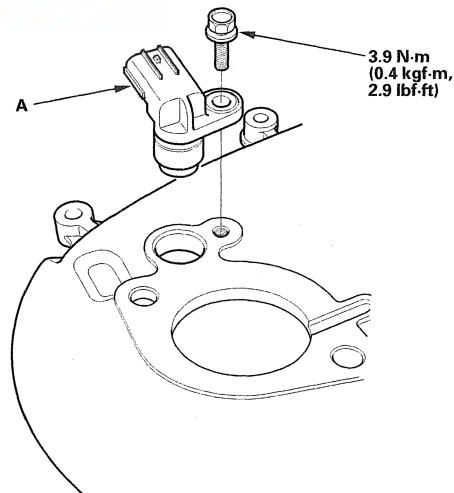
5. Install the parts in the reverse order of removal.
6. Do the CKP pattern clear/CKP pattern learn procedure (see page 11-5).

CMP Sensor Replacement

1. Remove the timing belt; J35A9 engine (see page 6-13), J35Z1 engine (see page 6-70).
2. Remove the front camshaft pulley (CMP sensor pulse plate) (A).



3. Disconnect the CMP sensor connector (B), then remove the back cover (C).
4. Remove the CMP sensor (A) from the back cover.

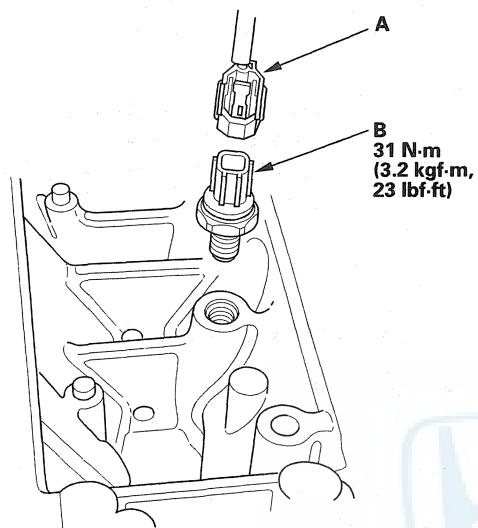


5. Install the parts in the reverse order of removal. Install the timing belt; J35A9 engine (see page 6-16), J35Z1 engine (see page 6-72).
6. Do the CKP pattern clear/CKP pattern learn procedure (see page 11-5).



Knock Sensor Replacement

1. Remove the intake manifold (see page 9-4).
2. Remove the fuel rails and the injector base.
3. Disconnect the knock sensor 1P connector (A), then remove the knock sensor (B).



4. Install the parts in the reverse order of removal.

PGM-FI System

PCM Replacement

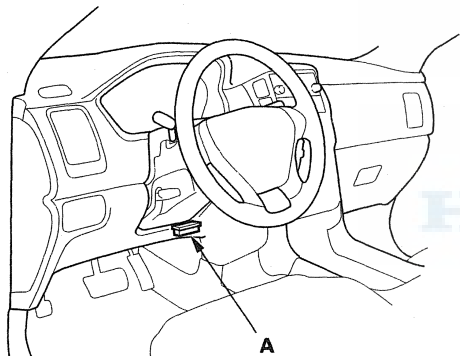
Special Tools Required

- Honda diagnostic system (HDS) tablet tester
- Honda interface module (HIM) and an iN workstation with HDS and CM update software
- HDS pocket tester
- GNA-600 and an iN workstation with HDS and CM update software

NOTE:

- Make sure the HDS is loaded with the latest software version.
- If you are replacing the PCM after substituting a known-good PCM, reinstall the original PCM, then do this procedure.
- During the procedure, if any READ DATA, WRITE DATA, or other data checks fail, note the failure, then continue.

1. Connect the HDS to the data link connector (DLC) (A) located under the driver's side of the dashboard.



2. Turn the ignition switch ON (II).
3. Make sure the HDS communicates with the PCM. If it doesn't, go to the DLC circuit troubleshooting (see page 11-218). If you are returning from DLC circuit troubleshooting, skip steps 4 through 7, 16 through 18, and 21 through 22, and do the following procedures after replacing the PCM;
 - Replace the engine oil (see page 8-8) and the engine oil filter (see page 8-9).
 - Clean the throttle body (see page 11-407).
4. Select the PGM-FI system with the HDS.
5. Select the INSPECTION MENU with the HDS.

6. Select the ETCS TEST, then select the TP POSITION CHECK, and follow the screen prompts.

NOTE: If the TP POSITION CHECK indicates FAILED, continue with this procedure.

7. Select the REPLACE PCM MENU, then READ DATA and follow the screen prompts.

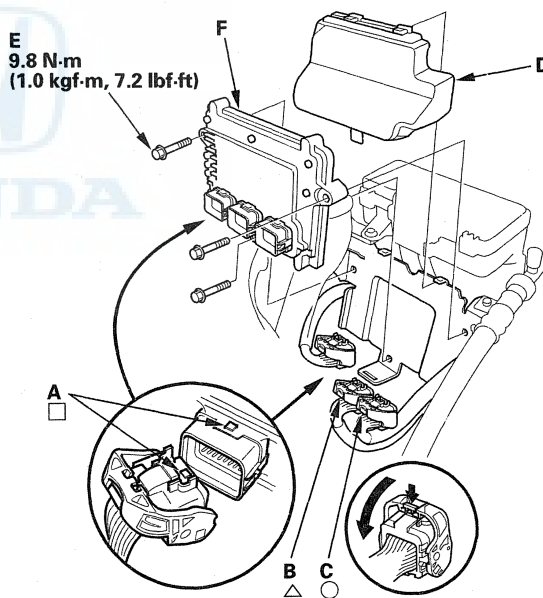
NOTE:

- Doing this step copies (READS) the engine oil life data from the original PCM so you can later download (WRITES) it into the new PCM.
- If READ DATA indicates FAILED, continue with this procedure.

8. Turn the ignition switch OFF.

9. Jump the SCS line with the HDS.

10. Remove the cover (D).



11. Disconnect the PCM connectors A, B, and C.

NOTE: The PCM connectors A, B, and C have symbols (A=□, B=△, C=○) embossed on them for identification.

12. Remove the bolts (E), then remove the PCM (F).



13. Install the parts in the reverse order of removal.

14. Turn the ignition switch ON (II).

15. Manually input the VIN to the PCM with the HDS.

NOTE: DTC P0630 "VIN Not Programmed or Mismatch" may be stored because the VIN has not been programmed into the PCM; ignore it, and continue this procedure.

16. If the READ DATA (engine oil life) failed in step 7, go to step 19. Otherwise, go to step 17.

17. Select the PGM-FI system with the HDS.

18. Select the REPLACE PCM MENU, then WRITE DATA and follow the screen prompts.

NOTE: If the WRITE DATA indicates FAILED, continue with this procedure.

19. Select IMMOBI system with the HDS.

20. Enter the immobilizer code with the PCM replacement procedure in the HDS; it allows you to start the engine.

21. If the TP POSITION CHECK failed in step 6 clean the throttle body (see page 11-407), then go to step 22.

22. If the READ DATA failed in step 7 or the WRITE DATA failed in step 18, replace the engine oil (see page 8-8) and engine oil filter (see page 8-9), then go to step 23.

23. Select PGM-FI system and reset the PCM with the HDS.

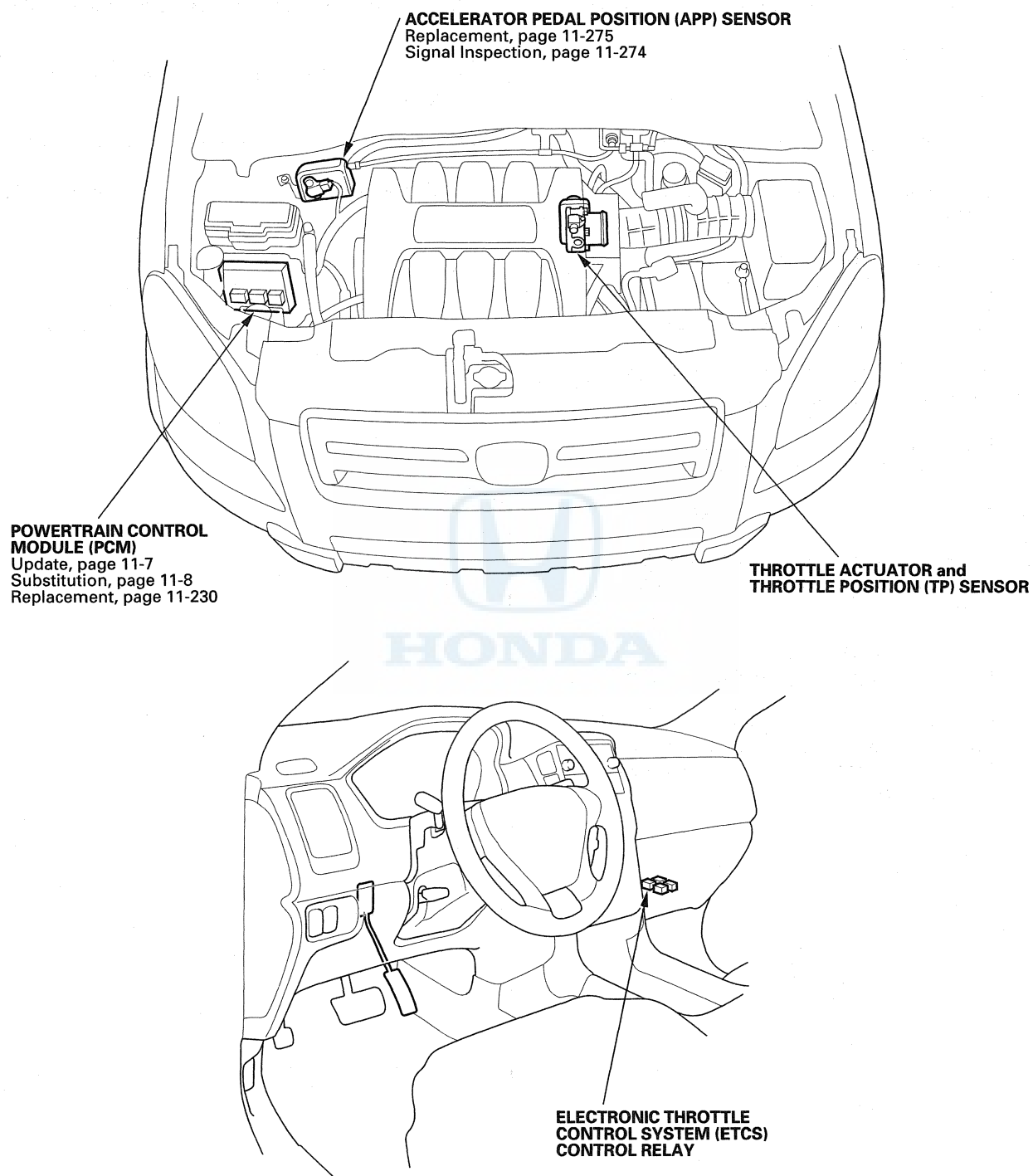
24. Update the PCM if it does not have the latest software (see page 11-7).

25. Do the PCM idle learn procedure (see page 11-359).

26. Do the CKP pattern learn procedure (see page 11-5).

Electronic Throttle Control System

Component Location Index





DTC Troubleshooting

DTC P0122: TP Sensor A Circuit Low Voltage

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Check TP SENSOR A in the DATA LIST with the HDS.

Is there about 0.3 V or less?

YES—Go to step 4.

NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the throttle body and the PCM. ■

4. Check for Temporary DTCs or DTCs with the HDS.

Are DTC P0122 and P0222 indicated at the same time?

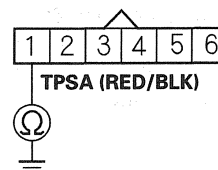
YES—Go to step 10.

NO—Go to step 5.

5. Turn the ignition switch OFF.
6. Disconnect the throttle body 6P connector.
7. Jump the SCS line with the HDS.
8. Disconnect PCM connector B (44P).

9. Check for continuity between throttle body 6P connector terminal No. 1 and body ground.

THROTTLE BODY 6P CONNECTOR



Wire side of female terminals

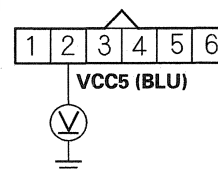
Is there continuity?

YES—Repair short in the wire between the throttle body and the PCM (B17), then go to step 18.

NO—Go to step 23.

10. Measure voltage between throttle body 6P connector terminal No. 2 and body ground.

THROTTLE BODY 6P CONNECTOR



Wire side of female terminals

Is there about 5 V?

YES—Go to step 16.

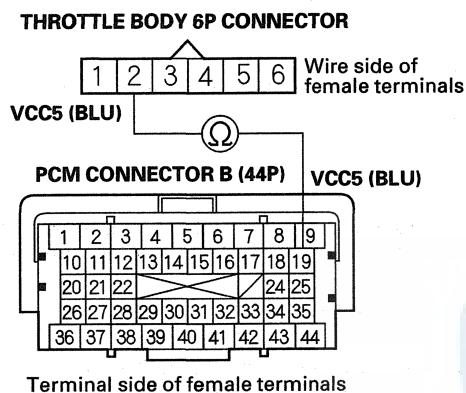
NO—Go to step 11.

(cont'd)

Electronic Throttle Control System

DTC Troubleshooting (cont'd)

11. Turn the ignition switch OFF.
12. Jump the SCS line with the HDS.
13. Disconnect PCM connector B (44P).
14. Disconnect the throttle body 6P connector.
15. Check for continuity between PCM connector terminal B19 and throttle body 6P connector terminal No. 2.



Is there continuity?

YES—Go to step 23.

NO—Repair open in the wire between the throttle body and the PCM (B19), then go to step 18.

16. Turn the ignition switch OFF.
17. Replace the throttle body (see page 11-408).
18. Reconnect all connectors.
19. Turn the ignition switch ON (II).
20. Reset the PCM with the HDS.
21. Do the PCM idle learn procedure (see page 11-359).
22. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0122 indicated?

YES—Check for poor connections or loose terminals at the throttle body and the PCM, then go to step 1.

NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

23. Reconnect all connectors.
24. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).
25. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0122 indicated?

YES—Check for poor connections or loose terminals at TP sensor A and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1.

NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-230). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■



DTC P0123: TP Sensor A Circuit High Voltage

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Check TP SENSOR A in the DATA LIST with the HDS.

Is there about 4.8 V or more?

YES—Go to step 4.

NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the throttle body and the PCM. ■

4. Check for Temporary DTCs or DTCs with the HDS.

Are DTC P0123 and P0223 indicated at the same time?

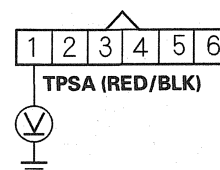
YES—Go to step 13.

NO—Go to step 5.

5. Turn the ignition switch OFF.
6. Disconnect the throttle body 6P connector.
7. Turn the ignition switch ON (II).

8. Measure voltage between throttle body 6P connector terminal No. 1 and body ground.

THROTTLE BODY 6P CONNECTOR



Wire side of female terminals

Is there about 5 V?

YES—Go to step 18.

NO—Go to step 9.

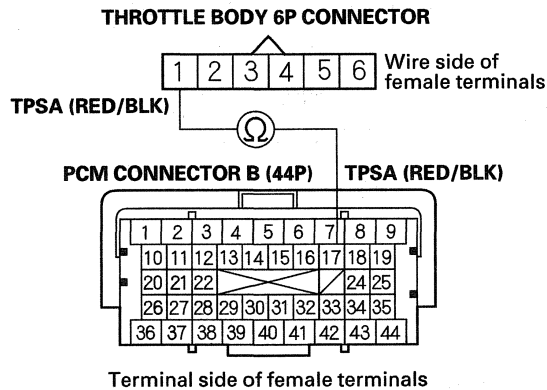
9. Turn the ignition switch OFF.
10. Jump the SCS line with the HDS.
11. Disconnect PCM connector B (44P).

(cont'd)

Electronic Throttle Control System

DTC Troubleshooting (cont'd)

12. Check for continuity between PCM connector terminal B17 and throttle body 6P connector terminal No. 1.



Is there continuity?

YES—Go to step 25.

NO—Repair open in the wire between the throttle body and the PCM (B17), then go to step 20.

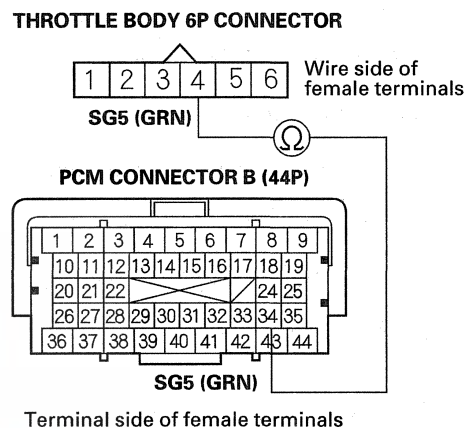
13. Turn the ignition switch OFF.

14. Disconnect the throttle body 6P connector.

15. Jump the SCS line with the HDS.

16. Disconnect PCM connector B (44P).

17. Check for continuity between PCM connector terminal B34 and throttle body 6P connector terminal No. 4.



Is there continuity?

YES—Go to step 25.

NO—Repair open in the wire between the throttle body and the PCM (B34), then go to step 20.



18. Turn the ignition switch OFF.
19. Replace the throttle body (see page 11-408).
20. Reconnect all connectors.
21. Turn the ignition switch ON (II).
22. Reset the PCM with the HDS.
23. Do the PCM idle learn procedure (see page 11-359).
24. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0123 indicated?

YES—Check for poor connections or loose terminals at the throttle body and the PCM, then go to step 1.

NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

25. Reconnect all connectors.
26. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).
27. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0123 indicated?

YES—Check for poor connections or loose terminals at TP sensor A and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1.

NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-230). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

Electronic Throttle Control System

DTC Troubleshooting (cont'd)

DTC P0222: TP Sensor B Circuit Low Voltage

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Check TP SENSOR B in the DATA LIST with the HDS.

Is there about 0.3 V or less?

YES—Go to step 4.

NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the throttle body and the PCM. ■

4. Check for Temporary DTCs or DTCs with the HDS.

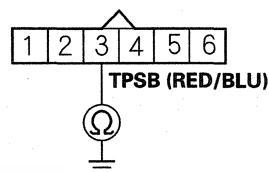
Are DTC P0122 and P0222 indicated at the same time?

YES—Go to step 10.

NO—Go to step 5.

5. Turn the ignition switch OFF.
6. Disconnect the throttle body 6P connector.
7. Jump the SCS line with the HDS.
8. Disconnect PCM connector B (44P).
9. Check for continuity between throttle body 6P connector terminal No. 3 and body ground.

THROTTLE BODY 6P CONNECTOR



Wire side of female terminals

Is there continuity?

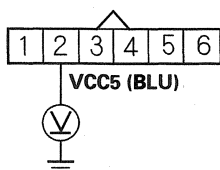
YES—Repair short in the wire between the throttle body and the PCM (B12), then go to step 18.

NO—Go to step 23.



10. Measure voltage between throttle body 6P connector terminal No. 2 and body ground.

THROTTLE BODY 6P CONNECTOR



Wire side of female terminals

Is there about 5 V?

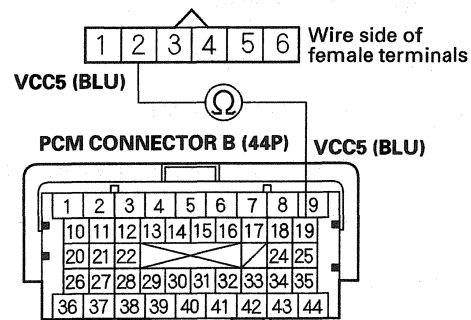
YES—Go to step 16.

NO—Go to step 11.

11. Turn the ignition switch OFF.
12. Jump the SCS line with the HDS.
13. Disconnect PCM connector B (44P).
14. Disconnect the throttle body 6P connector.

15. Check for continuity between PCM connector terminal B19 and throttle body 6P connector terminal No. 2.

THROTTLE BODY 6P CONNECTOR



Terminal side of female terminals

Is there continuity?

YES—Go to step 23.

NO—Repair open in the wire between the throttle body and the PCM (B19), then go to step 18.

(cont'd)

Electronic Throttle Control System

DTC Troubleshooting (cont'd)

16. Turn the ignition switch OFF.
17. Replace the throttle body (see page 11-408).
18. Reconnect all connectors.
19. Turn the ignition switch ON (II).
20. Reset the PCM with the HDS.
21. Do the PCM idle learn procedure (see page 11-359).
22. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0222 indicated?

YES—Check for poor connections or loose terminals at the throttle body and the PCM, then go to step 1.

NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

23. Reconnect all connectors.
24. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).
25. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0222 indicated?

YES—Check for poor connections or loose terminals at TP sensor B and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1.

NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-230). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■



DTC P0223: TP Sensor B Circuit High Voltage

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Check TP SENSOR B in the DATA LIST with the HDS.

Is there about 4.8 V or more?

YES—Go to step 4.

NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the throttle body and the PCM. ■

4. Check for Temporary DTCs or DTCs with the HDS.

Are DTC P0123 and P0223 indicated at the same time?

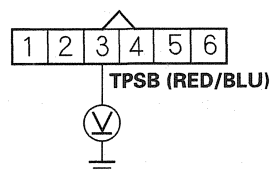
YES—Go to step 13.

NO—Go to step 5.

5. Turn the ignition switch OFF.
6. Disconnect the throttle body 6P connector.
7. Turn the ignition switch ON (II).

8. Measure voltage between throttle body 6P connector terminal No. 3 and body ground.

THROTTLE BODY 6P CONNECTOR



Wire side of female terminals

Is there about 5 V?

YES—Go to step 18.

NO—Go to step 9.

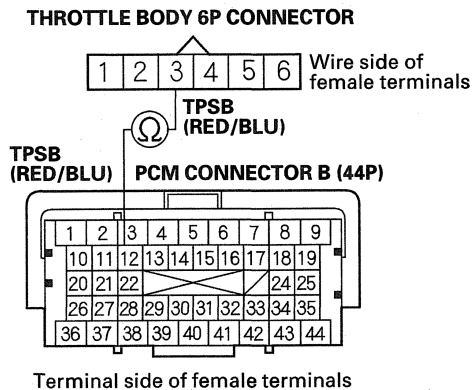
9. Turn the ignition switch OFF.
10. Jump the SCS line with the HDS.
11. Disconnect PCM connector B (44P).

(cont'd)

Electronic Throttle Control System

DTC Troubleshooting (cont'd)

12. Check for continuity between PCM connector terminal B12 and throttle body 6P connector terminal No. 3.



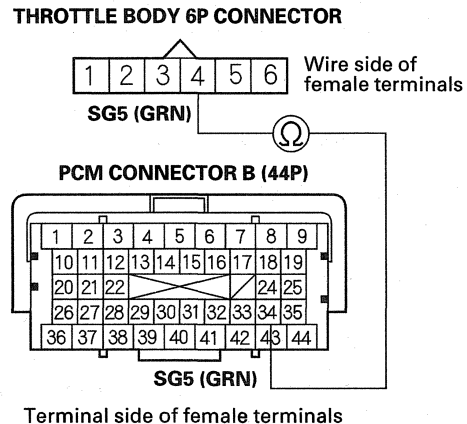
Is there continuity?

YES—Go to step 25.

NO—Repair open in the wire between the throttle body and the PCM (B12), then go to step 20.

13. Turn the ignition switch OFF.
14. Disconnect the throttle body 6P connector.
15. Jump the SCS line with the HDS.
16. Disconnect PCM connector B (44P).

17. Check for continuity between PCM connector terminal B34 and throttle body 6P connector terminal No. 4.



Is there continuity?

YES—Go to step 25.

NO—Repair open in the wire between the throttle body and the PCM (B34), then go to step 20.



18. Turn the ignition switch OFF.
19. Replace the throttle body (see page 11-408).
20. Reconnect all connectors.
21. Turn the ignition switch ON (II).
22. Reset the PCM with the HDS.
23. Do the PCM idle learn procedure (see page 11-359).
24. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0223 indicated?

YES—Check for poor connections or loose terminals at the throttle body and the PCM, then go to step 1.

NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

25. Reconnect all connectors.
26. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).
27. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0223 indicated?

YES—Check for poor connections or loose terminals at TP sensor B and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1.

NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-230). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

Electronic Throttle Control System

DTC Troubleshooting (cont'd)

DTC P0607: Lost Communication with ETCS

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0607 indicated?

YES—Go to step 4.

NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the throttle body and the PCM. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

4. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).
5. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0607 indicated?

YES—If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1.

NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-230). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

DTC P061F: ETCS Malfunction

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch OFF.
4. Turn the ignition switch ON (II).
5. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P061F indicated?

YES—Go to step 6.

NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the throttle body, and the PCM. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

6. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).
7. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P061F indicated?

YES—If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1.

NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-230). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■



DTC P1658: ETCS Control Relay ON Malfunction

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

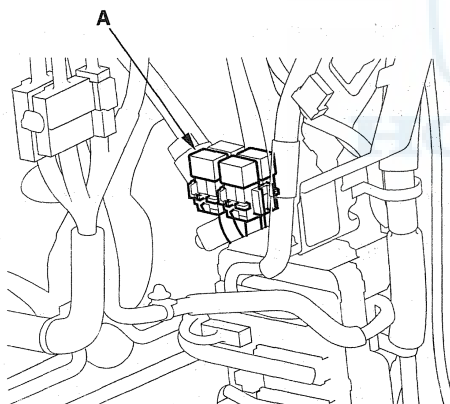
1. Turn the ignition switch ON (II).
2. Do the ETCS TEST in the INSPECTION MENU with the HDS.

Is the RELAY circuit OK?

YES—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the ETCS control relay and the PCM. ■

NO—Go to step 3.

3. Turn the ignition switch OFF.
4. Remove the ETCS control relay (A).



5. Test the ETCS control relay (see page 22-82).

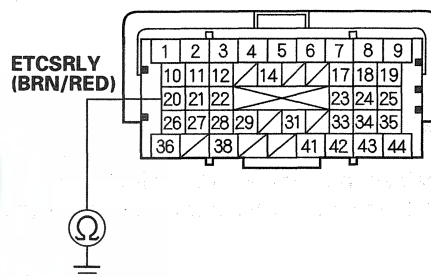
Is the ETCS control relay OK?

YES—Go to step 6.

NO—Replace the ETCS control relay, then go to step 13.

6. Jump the SCS line with the HDS.
7. Disconnect PCM connector A (44P).
8. Check for continuity between PCM connector terminal A20 and body ground.

PCM CONNECTOR A (44P)



Terminal side of female terminals

Is there continuity?

YES—Repair short in the wire between the PCM (A20) and the ETCS control relay, then go to step 13.

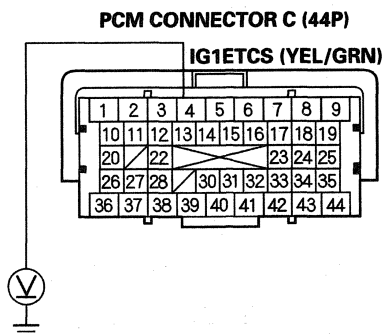
NO—Go to step 9.

(cont'd)

Electronic Throttle Control System

DTC Troubleshooting (cont'd)

9. Disconnect PCM connector C (44P).
10. Turn the ignition switch ON (II).
11. Measure voltage between PCM connector terminal C4 and body ground.



Terminal side of female terminals

Is there battery voltage?

YES—Repair short to power in the wire between the PCM (C4) and the ETCS control relay, then go to step 12.

NO—Go to step 18.

12. Turn the ignition switch OFF.
13. Reconnect all connectors.
14. Turn the ignition switch ON (II).
15. Reset the PCM with the HDS.
16. Do the PCM idle learn procedure (see page 11-359).
17. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P1658 indicated?

YES—Check for poor connections or loose terminals at the ETCS control relay and the PCM, then go to step 1.

NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

18. Turn the ignition switch OFF.
19. Reconnect all connectors.
20. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).
21. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P1658 indicated?

YES—Check for poor connections or loose terminals at the ETCS control relay and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1.

NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-230). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■



DTC P1659: ETCS Control Relay OFF Malfunction

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P1659 indicated?

YES—Go to step 4.

NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the ETCS control relay and the PCM. ■

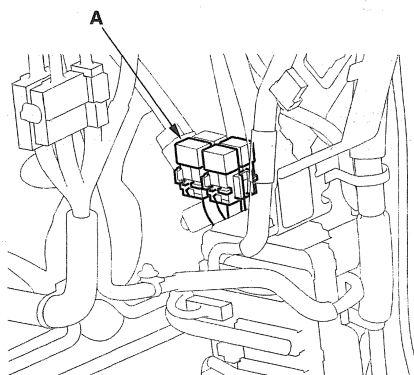
4. Turn the ignition switch OFF.
5. Check the No. 7 DBW (THROTTLE ACTUATOR CONTROL) (15 A) fuse in the auxiliary under-hood fuse box.

Is the fuse OK?

YES—Go to step 6.

NO—Remove the blown fuse, then go to step 20.

6. Remove the ETCS control relay (A).



7. Test the ETCS control relay (see page 22-82).

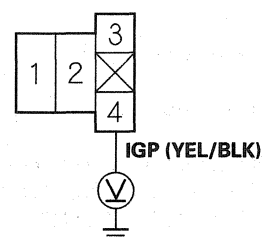
Is the ETCS control relay OK?

YES—Go to step 8.

NO—Replace the ETCS control relay, then go to step 26.

8. Turn the ignition switch ON (II).
9. Measure voltage between ETCS control relay 4P connector terminal No. 4 and body ground.

ETCS CONTROL RELAY 4P CONNECTOR



Terminal side of female terminals

Is there battery voltage?

YES—Go to step 10.

NO—Repair open in the wire between PGM-FI main relay 1 (FI MAIN) and the ETCS control relay, then go to step 25.

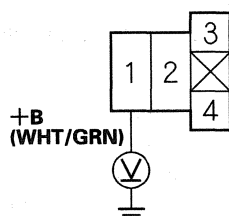
(cont'd)

Electronic Throttle Control System

DTC Troubleshooting (cont'd)

10. Measure voltage between ETCS control relay 4P connector terminal No. 1 and body ground.

ETCS CONTROL RELAY 4P CONNECTOR



Terminal side of female terminals

Is the battery voltage?

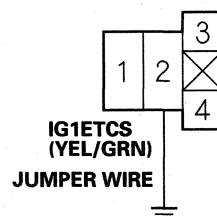
YES—Go to step 11.

NO—Repair open in the wire between the ETCS control relay and the No. 7 DBW (THROTTLE ACTUATOR CONTROL) (15 A) fuse in the auxiliary under-hood fuse box, then go to step 25.

11. Turn the ignition switch OFF.
12. Jump the SCS line with the HDS.
13. Disconnect PCM connector C (44P).

14. Connect ETCS control relay 4P connector terminal No. 2 to body ground with a jumper wire.

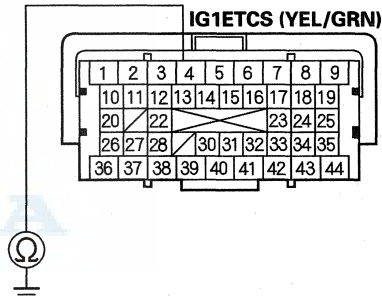
ETCS CONTROL RELAY 4P CONNECTOR



Terminal side of female terminals

15. Check for continuity between PCM connector terminal C4 and body ground.

PCM CONNECTOR C (44P)



Terminal side of female terminals

Is there continuity?

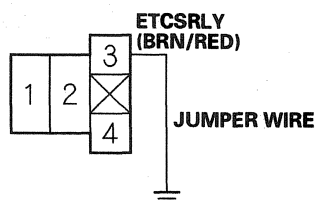
YES—Go to step 16.

NO—Repair open in the wire between the PCM (C4) and the ETCS control relay, then go to step 26.



16. Disconnect the jumper wire.
17. Disconnect PCM connector A (44P).
18. Connect ETCS control relay 4P connector terminal No. 3 to body ground with a jumper wire.

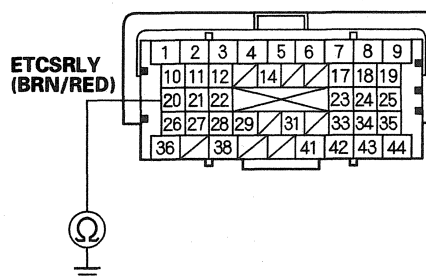
ETCS CONTROL RELAY 4P CONNECTOR



Terminal side of female terminals

19. Check for continuity between PCM connector terminal A20 and body ground.

PCM CONNECTOR A (44P)



Terminal side of female terminals

Is there continuity?

YES—Go to step 33.

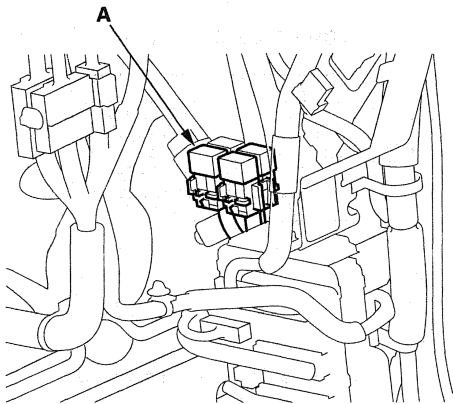
NO—Repair open in the wire between the PCM (A20) and the ETCS control relay, then go to step 26.

(cont'd)

Electronic Throttle Control System

DTC Troubleshooting (cont'd)

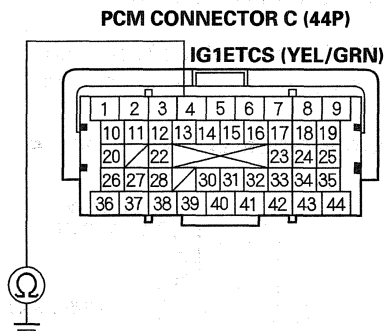
20. Remove the ETCS control relay (A).



21. Jump the SCS line with the HDS.

22. Disconnect PCM connector C (44P).

23. Check for continuity between PCM connector terminal C4 and body ground.



Is there continuity?

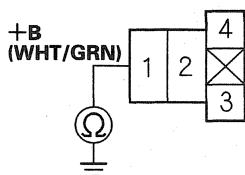
YES—Repair short in the wire between the ETCS control relay and the PCM (C4). Also replace the No. 7 DBW (THROTTLE ACTUATOR CONTROL) (15 A) fuse in the auxilially under-hood fuse box, then go to step 26.

NO—Go to step 24.



24. Check for continuity between ETCS control relay 4P connector terminal No. 1 and body ground.

ETCS CONTROL RELAY 4P CONNECTOR



Terminal side of female terminals

Is there continuity?

YES—Repair short in the wire between the No. 7 DBW (THROTTLE ACTUATOR CONTROL) (15 A) fuse and the ETCS control relay. Also replace the No. 7 DBW (THROTTLE ACTUATOR CONTROL) (15 A) fuse in the auxilially under-hood fuse box, then go to step 26.

NO—Replace the No. 7 DBW (THROTTLE ACTUATOR CONTROL) (15 A) fuse, then go to step 31.

25. Turn the ignition switch OFF.
26. Reconnect all connectors.
27. Turn the ignition switch ON (II).
28. Reset the PCM with the HDS.

29. Do the PCM idle learn procedure (see page 11-359).

30. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P1659 indicated?

YES—Check for poor connections or loose terminals at the ETCS control relay and the PCM, then go to step 1.

NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

31. Reconnect all connectors.

32. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).

33. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P1659 indicated?

YES—Check for poor connections or loose terminals at the ETCS control relay and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1.

NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-230). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

Electronic Throttle Control System

DTC Troubleshooting (cont'd)

DTC P1683: Throttle Valve Default Position Spring Performance Problem

CAUTION

Do not insert your fingers into the installed throttle body when you turn the ignition switch ON (II) or while the ignition switch is ON (II). If you do, you will seriously injure your fingers if the throttle valve is activated.

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.
4. Turn the ignition switch OFF, and wait 10 seconds.
5. Turn the ignition switch ON (II).
6. Check for Temporary DTCs or DTCs with the HDS.

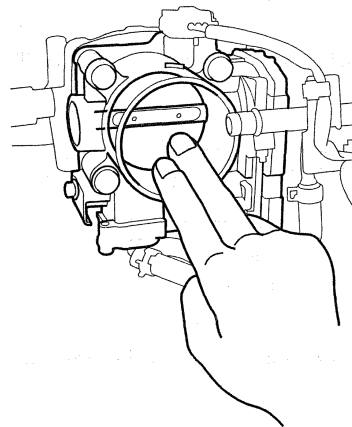
Is DTC P1683 indicated?

YES—Go to step 7.

NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the throttle body and the PCM. ■

7. Turn the ignition switch OFF.
8. Disconnect the intake air duct from the throttle body.

9. Push the throttle valve closed as shown.



10. Release the throttle valve.

Does the throttle valve return?

YES—Clean the throttle body (see page 11-407), then go to step 12 and recheck. If DTC P1683 is indicated, go to step 11.

NO—Go to step 11.

11. Replace the throttle body (see page 11-408).
12. Turn the ignition switch ON (II).
13. Reset the PCM with the HDS.
14. Do the PCM idle learn procedure (see page 11-359).
15. Turn the ignition switch OFF, and wait 10 seconds.
16. Turn the ignition switch ON (II).
17. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P1683 indicated?

YES—Check for poor connections or loose terminals at the throttle body and the PCM, then go to step 1.

NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■



DTC P1684: Throttle Valve Return Spring Performance Problem

⚠ CAUTION

Do not insert your fingers into the installed throttle body when you turn the ignition switch ON (II) or while the ignition switch is ON (II). If you do, you will seriously injure your fingers if the throttle valve is activated.

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.
4. Turn the ignition switch OFF, and wait 10 seconds.
5. Turn the ignition switch ON (II).
6. Check for Temporary DTCs or DTCs with the HDS.

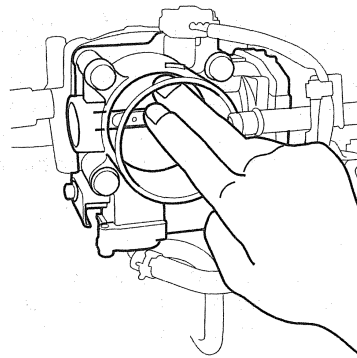
Is DTC P1684 indicated?

YES—Go to step 7.

NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the throttle body and the PCM. ■

7. Turn the ignition switch OFF.
8. Disconnect the intake air duct from the throttle body.

9. Push the throttle valve open as shown.



10. Release the throttle valve.

Does the throttle valve return?

YES—Clean the throttle body (see page 11-407), then go to step 12 and recheck. If DTC P1684 is indicated, go to step 11.

NO—Go to step 11.

11. Replace the throttle body (see page 11-408).
12. Turn the ignition switch ON (II).
13. Reset the PCM with the HDS.
14. Do the PCM idle learn procedure (see page 11-359).
15. Turn the ignition switch OFF, and wait 10 seconds.
16. Turn the ignition switch ON (II).
17. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P1684 indicated?

YES—Check for poor connections or loose terminals at the throttle body and the PCM, then go to step 1.

NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

Electronic Throttle Control System

DTC Troubleshooting (cont'd)

DTC P2101: ETCS Malfunction

⚠ CAUTION

Do not insert your fingers into the installed throttle body when you turn the ignition switch ON (II) or while the ignition switch is ON (II). If you do, you will seriously injure your fingers if the throttle valve is activated.

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Do the ETCS TEST in the INSPECTION MENU with the HDS.
4. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P2101 indicated?

YES—Go to step 7.

NO—Go to step 5.

5. Test-drive the vehicle for several minutes in the range of these recorded freeze data parameters:
 - ENGINE SPEED
 - VSS
 - APP SENSOR A
6. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P2101 indicated?

YES—Go to step 7.

NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the throttle body and the PCM, then clean the throttle body (see page 11-407). ■

7. Turn the ignition switch OFF.
8. Disconnect the intake air duct from the throttle body.
9. Turn the ignition switch ON (II).
10. Clear the DTC with the HDS.
11. Do the ETCS TEST in the INSPECTION MENU with the HDS.
12. Visually check the throttle valve operation.

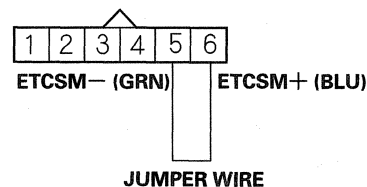
Does the throttle valve operate smoothly?

YES—Clean the throttle body (see page 11-407), then go to step 21 and recheck. If DTC P2101 is indicated, go to step 19.

NO—Go to step 13.

13. Turn the ignition switch OFF.
14. Disconnect the throttle body 6P connector.
15. Jump the SCS line with the HDS.
16. Disconnect PCM connector C (44P).
17. Connect throttle body 6P connector terminals No. 5 and No. 6 with a jumper wire.

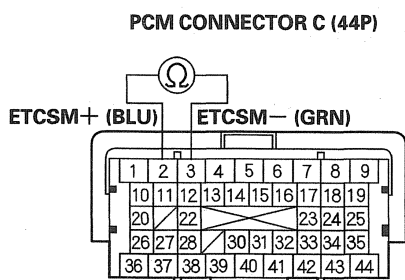
THROTTLE BODY 6P CONNECTOR



Wire side of female terminals



18. Check for continuity between PCM connector terminals C2 and C3.



Is there continuity?

YES—Go to step 27.

NO—Repair open in the wires between the throttle body and the PCM (C2, C3), then go to step 21.

19. Turn the ignition switch OFF.
20. Replace the throttle body (see page 11-408).
21. Reconnect all connectors.
22. Turn the ignition switch ON (II).
23. Reset the PCM with the HDS.
24. Do the PCM idle learn procedure (see page 11-359).

25. Test-drive the vehicle for several minutes in the range of these recorded freeze data parameters:

- ENGINE SPEED
- VSS
- APP SENSOR A

26. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P2101 indicated?

YES—Check for poor connections or loose terminals at the throttle body and the PCM, then clean the throttle body (see page 11-407), and go to step 1.

NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

27. Reconnect all connectors.

28. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).

29. Test-drive the vehicle for several minutes in the range of these recorded freeze data parameters:

- ENGINE SPEED
- VSS
- APP SENSOR A

30. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P2101 indicated?

YES—Check for poor connections or loose terminals at the throttle body and the PCM, then clean the throttle body (see page 11-407). If the PCM was updated, substitute a known-good PCM (see page 11-8), then go to step 29. If the PCM was substituted, go to step 1.

NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-230). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

Electronic Throttle Control System

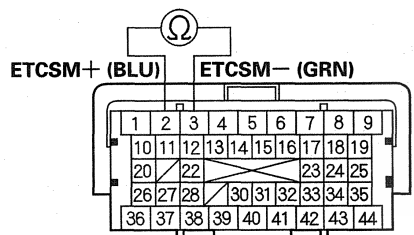
DTC Troubleshooting (cont'd)

DTC P2118: Throttle Actuator Current Range/Performance Problem

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Jump the SCS line with the HDS.
2. Disconnect PCM connector C (44P).
3. Measure resistance between PCM connector terminals C2 and C3.

PCM CONNECTOR C (44P)



Terminal side of female terminals

Is there about 1.0 Ω or less?

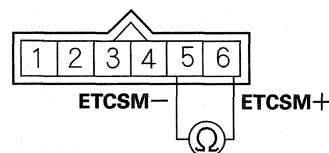
YES—Go to step 4.

NO—Go to step 15.

4. Disconnect the throttle body 6P connector.

5. At the throttle body side, measure resistance between throttle body 6P connector terminals No. 5 and No. 6 with the throttle fully closed.

THROTTLE BODY 6P CONNECTOR



Terminal side of male terminals

Is there about 1.0 Ω or less?

YES—Go to step 6.

NO—Repair short in the wires between PCM connector terminals C2 (ETCS+ line) and C3 (ETCS- line), then go to step 7.

6. Replace the throttle body (see page 11-408).
7. Reconnect all connectors.
8. Turn the ignition switch ON (II).
9. Reset the PCM with the HDS.



10. Do the PCM idle learn procedure (see page 11-359).
11. Turn the ignition switch OFF.
12. Turn the ignition switch ON (II).
13. Slowly press the accelerator pedal to the floor.
14. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P2118 indicated?

YES—Check for poor connections or loose terminals at the throttle body and the PCM, then go to step 1.

NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

15. Reconnect all connectors.
16. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).
17. Turn the ignition switch OFF.
18. Turn the ignition switch ON (II).
19. Slowly press the accelerator pedal to the floor.
20. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P2118 indicated?

YES—Check for poor connections or loose terminals at the throttle body and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then go to step 17. If the PCM was substituted, go to step 1.

NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-230). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

Electronic Throttle Control System

DTC Troubleshooting (cont'd)

DTC P2122: APP Sensor A (TP Sensor D) Circuit Low Voltage

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch ON (II).
2. Check APP SENSOR A in the DATA LIST with the HDS.

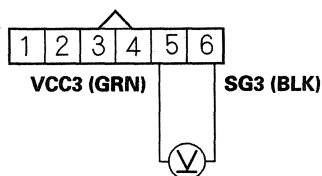
Is there about 0.2 V or less?

YES—Go to step 3.

NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at APP sensor A and the PCM. ■

3. Turn the ignition switch OFF.
4. Disconnect the APP sensor 6P connector.
5. Turn the ignition switch ON (II).
6. Measure voltage between APP sensor 6P connector terminals No. 5 and No. 6.

APP SENSOR 6P CONNECTOR



Wire side of female terminals

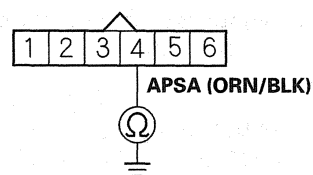
Is there about 5 V?

YES—Go to step 7.

NO—Go to step 16.

7. Turn the ignition switch OFF.
8. Jump the SCS line with the HDS.
9. Disconnect PCM connector A (44P).
10. Check for continuity between APP sensor 6P connector terminal No. 4 and body ground.

APP SENSOR 6P CONNECTOR



Wire side of female terminals

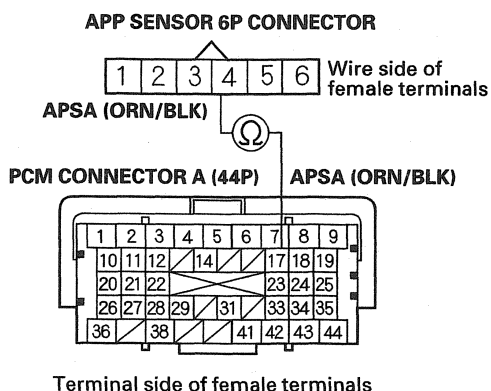
Is there continuity?

YES—Repair short in the wire between APP sensor A and the PCM (A17), then go to step 21.

NO—Go to step 11.



11. Check for continuity between PCM connector terminal A17 and the APP sensor 6P connector terminal No. 4.



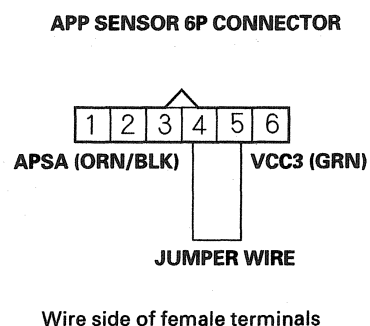
Is there continuity?

YES—Go to step 12.

NO—Repair open in the wire between APP sensor A and the PCM (A17), then go to step 21.

12. Reconnect PCM connector A (44P).

13. Connect the APP sensor 6P connector terminals No. 4 and No. 5 with a jumper wire.



14. Turn the ignition switch ON (II).

15. Check APP SENSOR A in the DATA LIST with the HDS.

Is there 0.2 V or less?

YES—Go to step 26.

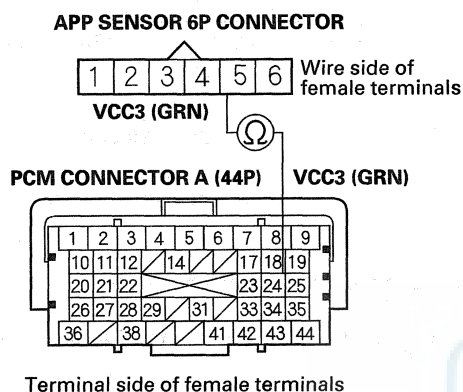
NO—Go to step 20.

(cont'd)

Electronic Throttle Control System

DTC Troubleshooting (cont'd)

16. Turn the ignition switch OFF.
17. Jump the SCS line with the HDS.
18. Disconnect PCM connector A (44P).
19. Check for continuity between PCM connector terminal A24 and the APP sensor 6P connector terminal No. 5.



Is there continuity?

YES—Go to step 27.

NO—Repair open in the wire between APP sensor A and the PCM (A24), then go to step 21.

20. Replace the APP sensor (see page 11-275).
21. Reconnect all connectors.
22. Turn the ignition switch ON (II).
23. Reset the PCM with the HDS.
24. Do the PCM idle learn procedure (see page 11-359).

25. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P2122 indicated?

YES—Check for poor connections or loose terminals at APP sensor A and the PCM, then go to step 1.

NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

26. Turn the ignition switch OFF.
27. Reconnect all connectors.
28. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).
29. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P2122 indicated?

YES—Check for poor connections or loose terminals at APP sensor A and the PCM, then go to step 1. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1.

NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-230). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■



DTC P2123: APP Sensor A (TP Sensor D) Circuit High Voltage

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch ON (II).
2. Check APP SENSOR A in the DATA LIST with the HDS.

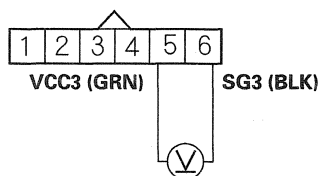
Is there about 4.9 V or more?

YES—Go to step 3.

NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at APP sensor A and the PCM. ■

3. Turn the ignition switch OFF.
4. Disconnect the APP sensor 6P connector.
5. Turn the ignition switch ON (II).
6. Measure voltage between APP sensor 6P connector terminals No. 5 and No. 6.

APP SENSOR 6P CONNECTOR



Wire side of female terminals

Is there about 5 V?

YES—Go to step 11.

NO—Go to step 7.

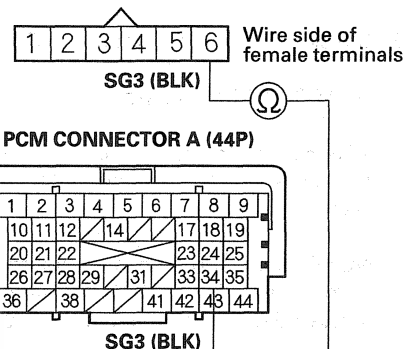
7. Turn the ignition switch OFF.

8. Jump the SCS line with the HDS.

9. Disconnect PCM connector A (44P).

10. Check for continuity between PCM connector terminal A34 and the APP sensor 6P connector terminal No. 6.

APP SENSOR 6P CONNECTOR



Terminal side of female terminals

Is there continuity?

YES—Go to step 18.

NO—Repair open in the wire between APP sensor A and the PCM (A34), then go to step 13.

(cont'd)

Electronic Throttle Control System

DTC Troubleshooting (cont'd)

11. Turn the ignition switch OFF.
12. Replace the APP sensor (see page 11-275).
13. Reconnect all connectors.
14. Turn the ignition switch ON (II).
15. Reset the PCM with the HDS.
16. Do the PCM idle learn procedure (see page 11-359).
17. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P2123 indicated?

YES—Check for poor connections or loose terminals at APP sensor A and the PCM, then go to step 1.

NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

18. Reconnect all connectors.
19. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).
20. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P2123 indicated?

YES—Check for poor connections or loose terminals at APP sensor A and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1.

NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-230). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■



DTC P2127: APP Sensor B (TP Sensor E) Circuit Low Voltage

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch ON (II).
2. Check APP SENSOR B in the DATA LIST with the HDS.

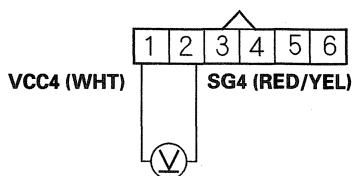
Is there about 0.2 V or less?

YES—Go to step 3.

NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at APP sensor B and the PCM. ■

3. Turn the ignition switch OFF.
4. Disconnect the APP sensor 6P connector.
5. Turn the ignition switch ON (II).
6. Measure voltage between APP sensor 6P connector terminals No. 1 and No. 2.

APP SENSOR 6P CONNECTOR



Wire side of female terminals

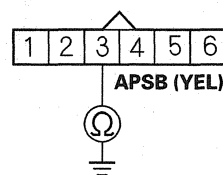
Is there about 5 V?

YES—Go to step 7.

NO—Go to step 16.

7. Turn the ignition switch OFF.
8. Jump the SCS line with the HDS.
9. Disconnect PCM connector A (44P).
10. Check for continuity between APP sensor 6P connector terminal No. 3 and body ground.

APP SENSOR 6P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair short in the wire between APP sensor B and the PCM (A18), then go to step 22.

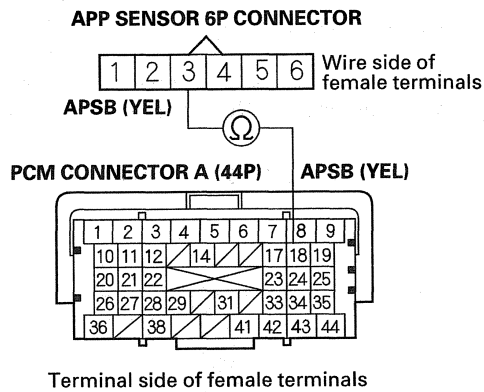
NO—Go to step 11.

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Electronic Throttle Control System

DTC Troubleshooting (cont'd)

11. Check for continuity between PCM connector terminal A18 and the APP sensor 6P connector terminal No. 3.



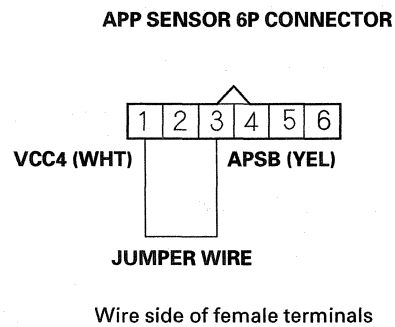
Is there continuity?

YES—Go to step 12.

NO—Repair open in the wire between APP sensor B and the PCM (A18), then go to step 22.

12. Reconnect PCM connector A (44P).

13. Connect the APP sensor 6P connector terminals No. 1 and No. 3 with a jumper wire.



14. Turn the ignition switch ON (II).

15. Check APP SENSOR B in the DATA LIST with the HDS.

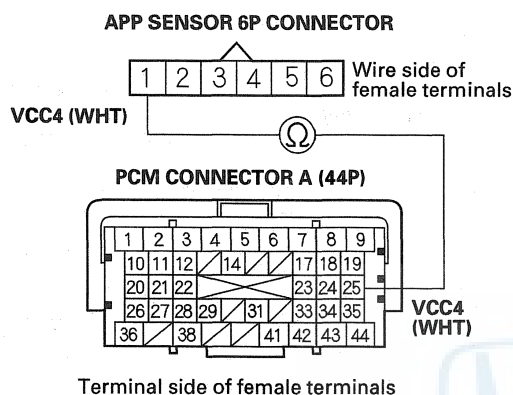
Is there about 0.2 V or less?

YES—Go to step 27.

NO—Go to step 20.



16. Turn the ignition switch OFF.
17. Jump the SCS line with the HDS.
18. Disconnect PCM connector A (44P).
19. Check for continuity between PCM connector terminal A25 and the APP sensor 6P connector terminal No. 1.



Is there continuity?

YES—Go to step 28.

NO—Repair open in the wire between APP sensor B and the PCM (A25), then go to step 22.

20. Turn the ignition switch OFF.
21. Replace the APP sensor (see page 11-275).
22. Reconnect all connectors.
23. Turn the ignition switch ON (II).
24. Reset the PCM with the HDS.
25. Do the PCM idle learn procedure (see page 11-359).

26. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P2127 indicated?

YES—Check for poor connections or loose terminals at APP sensor B and the PCM, then go to step 1.

NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

27. Turn the ignition switch OFF.
28. Reconnect all connectors.
29. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).
30. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P2127 indicated?

YES—Check for poor connections or loose terminals at APP sensor B and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1.

NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-230). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

Electronic Throttle Control System

DTC Troubleshooting (cont'd)

DTC P2128: APP Sensor B (TP Sensor E) Circuit High Voltage

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch ON (II).
2. Check APP SENSOR B in the DATA LIST with the HDS.

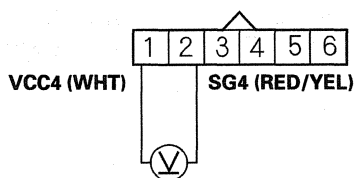
Is there about 4.0 V or more?

YES—Go to step 3.

NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at APP sensor B and the PCM. ■

3. Turn the ignition switch OFF.
4. Disconnect the APP sensor 6P connector.
5. Turn the ignition switch ON (II).
6. Measure voltage between APP sensor 6P connector terminals No. 1 and No. 2.

APP SENSOR 6P CONNECTOR



Wire side of female terminals

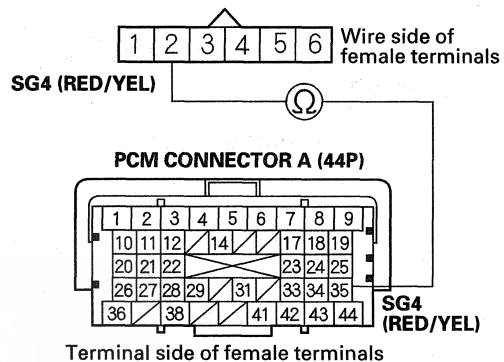
Is there about 5 V?

YES—Go to step 11.

NO—Go to step 7.

7. Turn the ignition switch OFF.
8. Jump the SCS line with the HDS.
9. Disconnect PCM connector A (44P).
10. Check for continuity between PCM connector terminal A35 and the APP sensor 6P connector terminal No. 2.

APP SENSOR 6P CONNECTOR



Is there continuity?

YES—Go to step 18.

NO—Repair open in the wire between APP sensor B and the PCM (A35), then go to step 13.



11. Turn the ignition switch OFF.
12. Replace the APP sensor (see page 11-275).
13. Reconnect all connectors.
14. Turn the ignition switch ON (II).
15. Reset the PCM with the HDS.
16. Do the PCM idle learn procedure (see page 11-359).
17. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P2128 indicated?

YES—Check for poor connections or loose terminals at APP sensor B and the PCM, then go to step 1.

NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

18. Reconnect all connectors.
19. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).
20. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P2128 indicated?

YES—Check for poor connections or loose terminals at APP sensor B and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1.

NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-230). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

Electronic Throttle Control System

DTC Troubleshooting (cont'd)

DTC P2135: TP Sensor A/B Incorrect Voltage Correlation

CAUTION

Do not insert your fingers into the installed throttle body when you turn the ignition switch ON (II) or while the ignition switch is ON (II). If you do, you will seriously injure your fingers if the throttle valve is activated.

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Do the ETCS TEST in the INSPECTION MENU with the HDS.
4. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P2135 indicated?

YES—Go to step 5.

NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the throttle body and the PCM. ■

5. Turn the ignition switch OFF.
6. Disconnect the intake air duct from the throttle body.
7. Turn the ignition switch ON (II).
8. Visually check the throttle valve operation while you clear the DTC with the HDS.

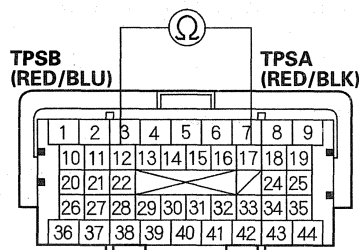
Does the valve temporarily move to the fully closed position?

YES—Go to step 15.

NO—Go to step 9.

9. Turn the ignition switch OFF.
10. Jump the SCS line with the HDS.
11. Disconnect PCM connector B (44P).
12. Check for continuity between PCM connector terminals B12 and B17.

PCM CONNECTOR B (44P)



Terminal side of female terminals

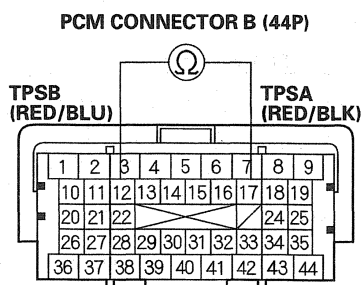
Is there continuity?

YES—Go to step 13.

NO—Go to step 22.



13. Disconnect the throttle body 6P connector.
14. Check for continuity between PCM connector terminals B12 and B17.



Is there continuity?

YES—Repair short in the wires between the PCM B17 (TPSA line) and the B12 (TPSB line), then go to step 17.

NO—Go to step 16.

15. Turn the ignition switch OFF.
16. Replace the throttle body (see page 11-408).
17. Reconnect all connectors.
18. Turn the ignition switch ON (II).
19. Reset the PCM with the HDS.
20. Do the PCM idle learn procedure (see page 11-359).
21. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P2135 indicated?

YES—Check for poor connections or loose terminals at the throttle body and the PCM, then go to step 1.

NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

22. Reconnect all connectors.
23. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).
24. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P2135 indicated?

YES—Check for poor connections or loose terminals at the throttle body and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1.

NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-230). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

Electronic Throttle Control System

DTC Troubleshooting (cont'd)

DTC P2138: APP Sensor (TP Sensor D/E) Incorrect Voltage Correlation

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch ON (II).
2. Clear the DTC with HDS.
3. Press the accelerator pedal to the floor.
4. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P2138 indicated?

YES—Go to step 5.

NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the APP sensor and the PCM. ■

5. Check APP SENSOR A and APP SENSOR B in the DATA LIST with the HDS.

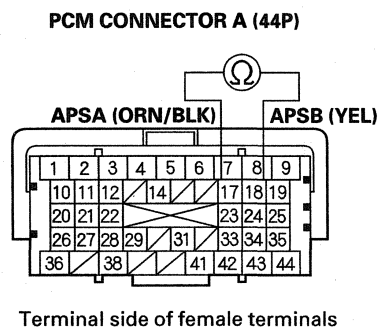
Are they the same voltage?

YES—Go to step 6.

NO—Go to step 11.

6. Turn the ignition switch OFF.
7. Jump the SCS line with the HDS.
8. Disconnect the APP sensor 6P connector.
9. Disconnect PCM connector A (44P).

10. Check for continuity between PCM connector terminals A17 and A18.



Is there continuity?

YES—Repair short in the wire between the PCM terminals (A17, A18), then go to step 13.

NO—Go to step 21.

11. Turn the ignition switch OFF.
12. Replace the APP sensor (see page 11-275).
13. Reconnect all connectors.
14. Turn the ignition switch ON (II).
15. Reset the PCM with the HDS.
16. Do the PCM idle learn procedure (see page 11-359).
17. Turn the ignition switch OFF.
18. Turn the ignition switch ON (II).
19. Press the accelerator pedal to the floor.



20. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P2138 indicated?

YES—Check for poor connections or loose terminals at the APP sensor and the PCM, then go to step 1.

NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

21. Reconnect all connectors.
22. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).
23. Turn the ignition switch OFF.
24. Turn the ignition switch ON (II).
25. Press the accelerator pedal to the floor.
26. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P2138 indicated?

YES—Check for poor connections or loose terminals at the APP sensor and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then go to step 23. If the PCM was substituted, go to step 1.

NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-230). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

Electronic Throttle Control System

DTC Troubleshooting (cont'd)

DTC P2176: Throttle Actuator Control System Idle Position Not Learned

⚠ CAUTION

Do not insert your fingers into the installed throttle body when you turn the ignition switch ON (II) or while the ignition switch is ON (II). If you do, you will seriously injure your fingers if the throttle valve is activated.

NOTE:

- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- If DTC P2135 is stored at the same time as DTC P2176, troubleshoot DTC P2135 first, then recheck for DTC P2176.

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch OFF.
4. Turn the ignition switch ON (II), and wait 10 seconds.
5. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P2176 indicated?

YES—Go to step 6.

NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the throttle body and the PCM, then clean the throttle body (see page 11-407). ■

6. Turn the ignition switch OFF.
7. Disconnect the intake air duct from the throttle body.
8. Turn the ignition switch ON (II).
9. Clear the DTC with the HDS.

10. Visually check the throttle valve operation. While doing the ETCS TEST in the INSPECTION MENU with the HDS.

Does the throttle valve move to its fully closed position?

YES—Go to step 11.

NO—Go to step 12.

11. Check for sludge or carbon on the throttle valve.

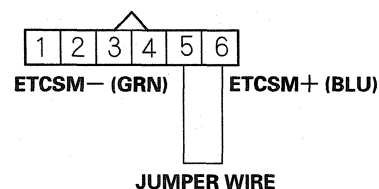
Is there sludge or carbon on the throttle valve?

YES—Clean the throttle body (see page 11-407), then go to step 21.

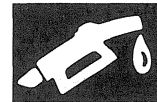
NO—Go to step 18.

12. Turn the ignition switch OFF.
13. Disconnect the throttle body 6P connector.
14. Jump the SCS line with the HDS.
15. Disconnect PCM connector C (44P).
16. Connect throttle body 6P connector terminals No. 5 and No. 6 with a jumper wire.

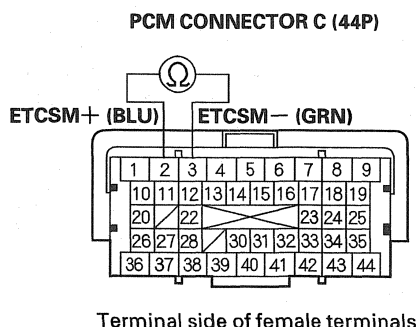
THROTTLE BODY 6P CONNECTOR



Wire side of female terminals



17. Check for continuity between PCM connector terminals C2 and C3.



Is there continuity?

YES—Go to step 27.

NO—Repair open in the wires between the throttle body and the PCM (C2, C3), then go to step 20.

18. Turn the ignition switch OFF.
19. Replace the throttle body (see page 11-408).
20. Reconnect all connectors.
21. Turn the ignition switch ON (II).
22. Reset the PCM with the HDS.
23. Do the PCM idle learn procedure (see page 11-359).
24. Turn the ignition switch OFF.
25. Turn the ignition switch ON (II), and wait 10 seconds.

26. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P2176 indicated?

YES—Check for poor connections or loose terminals at the throttle body and the PCM, then clean the throttle body (see page 11-407), and go to step 1.

NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

27. Reconnect all connectors.
28. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).
29. Turn the ignition switch OFF.
30. Turn the ignition switch ON (II), and wait 10 seconds.
31. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P2176 indicated?

YES—Check for poor connections or loose terminals at the throttle body and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then go to step 29. If the PCM was substituted, go to step 1.

NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-230). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

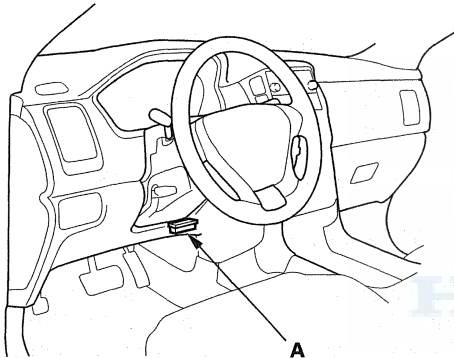
Electronic Throttle Control System

APP Sensor Signal Inspection

NOTE:

- This procedure checks the APP sensor in its fully closed position. In any other position, the APP sensor stores DTCs which are covered in other troubleshooting procedure.
- Check for Temporary DTCs or DTCs with the HDS before doing this procedure. If any DTCs are indicated, troubleshoot them first, then do this procedure.
- Press the accelerator pedal several times to check its movement. If it does not move smoothly, check the pedal, the throttle cable, and the APP sensor individually. If you find a problem in one of them, replace the part(s) that caused the problem.

1. Connect the HDS to the data link connector (DLC)
(A) located under the driver's side of the dashboard.



2. Turn the ignition switch ON (II).
Make sure the HDS communicates with the PCM. If it doesn't, go to the DLC circuit troubleshooting (see page 11-218).
3. Make sure the accelerator pedal is not pressed, then check the APP SENSOR in the DATA LIST with the HDS.
 - If it is below 2 %, the APP sensor is OK.
 - If it is above 2 %, adjust the throttle cable (see page 11-403), then go to step 4.

4. Make sure the accelerator pedal is not pressed, then check the APP SENSOR in the DATA LIST with the HDS.

- If it is below 2 %, the APP sensor is OK.
- If it is above 2 %, update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8), then go to step 5.

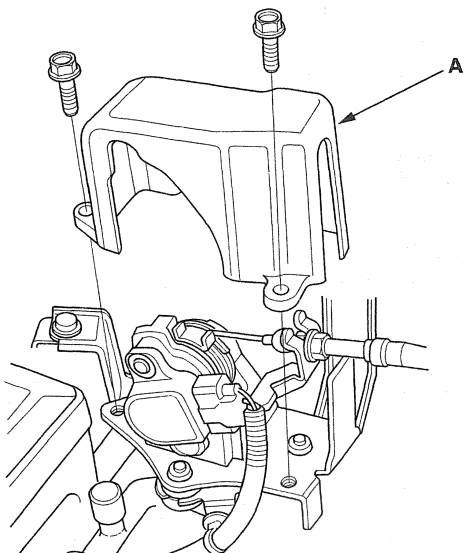
5. Make sure the accelerator pedal is not pressed, then check the APP SENSOR in the DATA LIST with the HDS.

- If it is below 2 %, the APP sensor is OK.
- If it is above 2 %, replace the APP sensor (see page 11-275), then go to step 1.

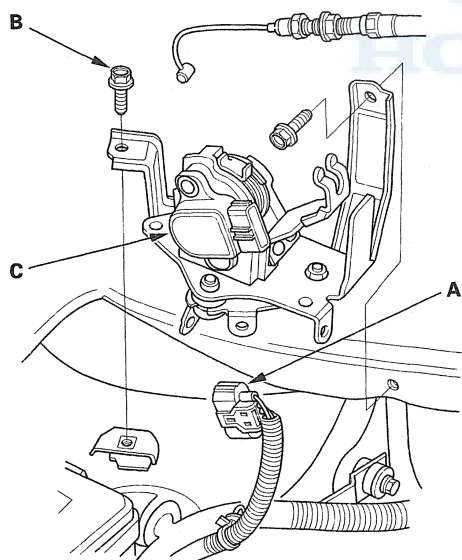


APP Sensor Replacement

1. Remove the bolts and the throttle cable cover (A).



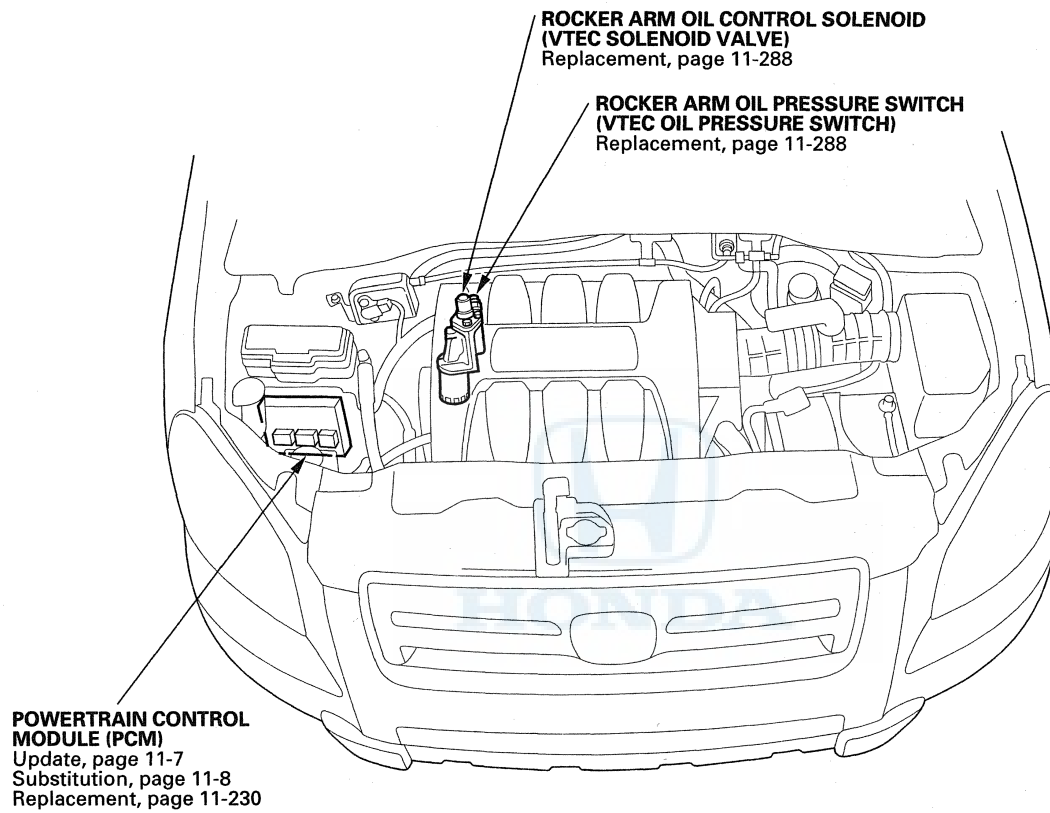
2. Remove the throttle cable (see page 11-404).
3. Disconnect the APP sensor 6P connector (A).



4. Remove the bolts (B) and APP sensor (C).
5. Install the parts in the reverse order of removal.

VTEC

Component Location Index





DTC Troubleshooting

DTC P2646: Rocker Arm Oil Pressure Switch (VTEC Oil Pressure Switch) Circuit Low Voltage

Special Tools Required

- Pressure gauge adapter 07NAJ-P07010A
- A/T low pressure gauge w/panel 07406-0070301
- A/T pressure hose 07406-0020201
- A/T pressure hose, 2,210 mm 07MAJ-PY4011A
- A/T pressure adapter 07MAJ-PY40120
- Oil pressure hose 07ZAJ-S5AA200

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Check the engine oil level.

Is the engine oil level OK?

YES—Go to step 2.

NO—Adjust the engine oil to the proper level, then go to step 20.

2. Turn the ignition switch ON (II).
3. Clear the DTC with the HDS.
4. Do the VTEC TEST in the INSPECTION MENU with the HDS.

Is the result OK?

YES—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the rocker arm oil pressure switch (VTEC oil pressure switch), the rocker arm oil control solenoid (VTEC solenoid valve), and the PCM. ■

NO—Go to step 5.

5. Turn the ignition switch OFF.
6. Disconnect the rocker arm oil pressure switch (VTEC oil pressure switch) 2P connector.
7. Turn the ignition switch ON (II).

8. Check the VTEC PRES SW in the DATA LIST with the HDS.

Is ON indicated?

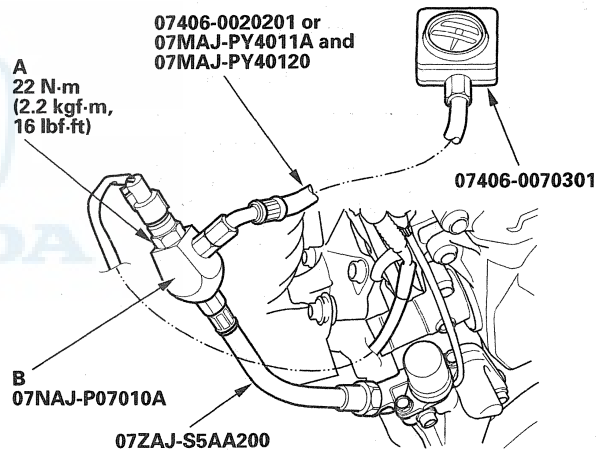
YES—Go to step 15.

NO—Go to step 9.

9. Turn the ignition switch OFF.

10. Remove the rocker arm oil pressure switch (VTEC oil pressure switch) (A), install the special tools as shown, then install the rocker arm oil pressure switch (VTEC oil pressure switch) to the oil pressure gauge adapter (B).

NOTE: Install the parts in the reverse order of removal with a new O-ring.



11. Reconnect the rocker arm oil pressure switch (VTEC oil pressure switch) 2P connector.
12. Start the engine.
13. Do the VTEC TEST in the INSPECTION MENU with the HDS.

(cont'd)

DTC Troubleshooting (cont'd)

14. Check the oil pressure.

Does the oil pressure increase to at least 392 kPa (4.0 kgf/cm², 56.9psi)?

YES—Replace the rocker arm oil pressure switch (VTEC oil pressure switch) (see page 11-288), then go to step 19.

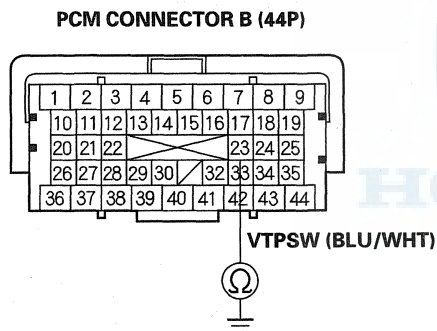
NO—Inspect the VTEC system. If it is OK. Replace the rocker arm oil control solenoid (VTEC solenoid valve) (see page 11-288), then go to step 19.

15. Turn the ignition switch OFF.

16. Jump the SCS line with the HDS.

17. Disconnect PCM connector B (44P).

18. Check for continuity between PCM connector terminal B23 and body ground.



Is there continuity?

YES—Repair short in the wire between the PCM (B23) and the rocker arm oil pressure switch (VTEC oil pressure switch), then go to step 19.

NO—Go to step 26.

19. Reconnect all connectors.

20. Turn the ignition switch ON (II).

21. Reset the PCM with the HDS.

22. Do the PCM idle learn procedure (see page 11-359).

23. Do the VTEC TEST in the INSPECTION MENU with the HDS.

24. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P2646 indicated?

YES—Check for poor connections or loose terminals at the rocker arm oil pressure switch (VTEC oil pressure switch), the rocker arm oil control solenoid (VTEC solenoid valve), and the PCM, then go to step 1.

NO—Go to step 25.

25. Monitor the OBD STATUS for DTC P2646 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 24, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the rocker arm oil pressure switch (VTEC oil pressure switch), the rocker arm oil control solenoid (VTEC solenoid valve), and the PCM, then go to step 1. If the screen indicates NOT COMPLETED, go to step 23.



26. Reconnect all connectors.
27. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).
28. Do the VTEC TEST in the INSPECTION MENU with the HDS.
29. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P2646 indicated?

YES—Check for poor connections or loose terminals at the rocker arm oil pressure switch (VTEC oil pressure switch), the rocker arm oil control solenoid (VTEC solenoid valve), and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then go to step 28. If the PCM was substituted, go to step 1.

NO—Go to step 30.

30. Monitor the OBD STATUS for DTC P2646 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-230). If any other Temporary DTCs or DTCs were indicated in step 29, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the rocker arm oil pressure switch (VTEC oil pressure switch), the rocker arm oil control solenoid (VTEC solenoid valve), and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then go to step 28. If the PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, go to step 28.

DTC Troubleshooting (cont'd)

DTC P2647: Rocker Arm Oil Pressure Switch (VTEC Oil Pressure Switch) Circuit High Voltage

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Check the engine oil level.

Is the engine oil level OK?

YES—Go to step 2.

NO—Adjust the engine oil to the proper level, then go to step 16.

2. Turn the ignition switch ON (II).
3. Clear the DTC with the HDS.
4. Do the VTEC TEST in the INSPECTION MENU with the HDS.

Is the result OK?

YES—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the rocker arm oil pressure switch (VTEC oil pressure switch) and the PCM. ■

NO—Go to step 5.

5. Check the result of step 4.

- VTEC switch Failure
- VTEC switch Open
- VTEC switch SIG Line Open
- VTEC switch GND Line Open

Is the test result any of the above?

YES—Go to step 6.

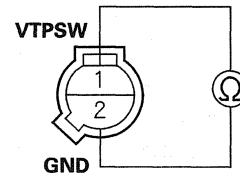
NO—Check for poor connections or loose terminals at the rocker arm oil pressure switch (VTEC oil pressure switch). If it is OK, replace the rocker arm oil control solenoid (VTEC solenoid valve) (see page 11-288), then go to step 15.

6. Turn the ignition switch OFF.

7. Disconnect the rocker arm oil pressure switch (VTEC oil pressure switch) 2P connector.

8. At the rocker arm oil pressure switch (VTEC oil pressure switch) side, check for continuity between rocker arm oil pressure switch (VTEC oil pressure switch) 2P connector terminals No. 1 and No. 2.

ROCKER ARM OIL PRESSURE SWITCH (VTEC OIL PRESSURE SWITCH) 2P CONNECTOR



Terminal side of male terminals

Is there continuity?

YES—Go to step 9.

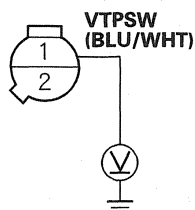
NO—Replace the rocker arm oil pressure switch (VTEC oil pressure switch) (see page 11-288), then go to step 16.

9. Turn the ignition switch ON (II).



10. Measure voltage between rocker arm oil pressure switch (VTEC oil pressure switch) 2P connector terminal No. 1 and body ground.

**ROCKER ARM OIL PRESSURE SWITCH
(VTEC OIL PRESSURE SWITCH) 2P CONNECTOR**



Wire side of female terminals

Is there battery voltage?

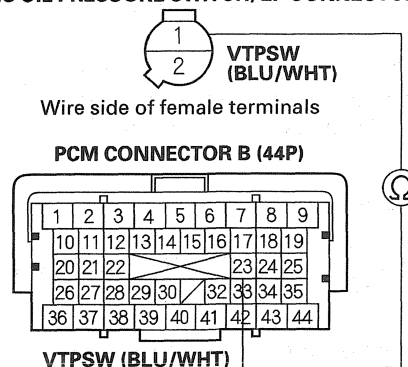
YES—Repair open in the wire between the rocker arm oil pressure switch (VTEC oil pressure switch) and G101, then go to step 15.

NO—Go to step 11.

11. Turn the ignition switch OFF.
12. Jump the SCS line with the HDS.
13. Disconnect PCM connector B (44P).

14. Check for continuity between PCM connector terminal B23 and rocker arm oil pressure switch (VTEC oil pressure switch) 2P connector terminal No. 1.

**ROCKER ARM OIL PRESSURE SWITCH
(VTEC OIL PRESSURE SWITCH) 2P CONNECTOR**



Terminal side of female terminals

Is there continuity?

YES—Go to step 22.

NO—Repair open in the wire between the PCM (B23) and the rocker arm oil pressure switch (VTEC oil pressure switch), then go to step 16.

15. Turn the ignition switch OFF.
16. Reconnect all connectors.
17. Turn the ignition switch ON (II).

(cont'd)

DTC Troubleshooting (cont'd)

18. Reset the PCM with the HDS.

19. Do the PCM idle learn procedure (see page 11-359).

20. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P2647 indicated?

YES—Check for poor connections or loose terminals at the rocker arm oil pressure switch (VTEC oil pressure switch) and the PCM, then go to step 1.

NO—Go to step 21.

21. Monitor the OBD STATUS for DTC P2647 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 20, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the rocker arm oil pressure switch (VTEC oil pressure switch) and the PCM, then go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

22. Reconnect all connectors.

23. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).

24. Start the engine, and let it idle.

25. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P2647 indicated?

YES—Check for poor connections or loose terminals at the rocker arm oil pressure switch (VTEC oil pressure switch) and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then go to step 24. If the PCM was substituted, go to step 1.

NO—Go to step 26.

26. Monitor the OBD STATUS for DTC P2647 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-230). If any other Temporary DTCs or DTCs were indicated in step 25, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the rocker arm oil pressure switch (VTEC oil pressure switch) and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then go to step 24. If the PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.



DTC P2648: Rocker Arm Oil Control Solenoid (VTEC Solenoid Valve) Circuit Low Voltage

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Do the VTEC TEST in the INSPECTION MENU with the HDS.

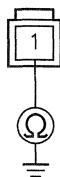
Is the result OK?

YES—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the rocker arm oil control solenoid (VTEC solenoid valve) and the PCM. ■

NO—Go to step 4.

4. Turn the ignition switch OFF.
5. Disconnect the rocker arm oil control solenoid (VTEC solenoid valve) 1P connector.
6. At the solenoid side, measure resistance between the rocker arm oil control solenoid (VTEC solenoid valve) 1P connector terminal and the solenoid valve body.

ROCKER ARM OIL CONTROL SOLENOID (VTEC SOLENOID VALVE) 1P CONNECTOR



Terminal side of male terminals

Is there 14–30 Ω at room temperature?

YES—Go to step 7.

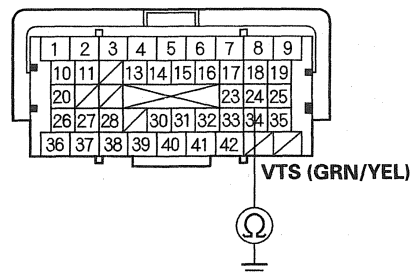
NO—Go to step 10.

7. Jump the SCS line with the HDS.

8. Disconnect PCM connector C (44P).

9. Check for continuity between PCM connector terminal C24 and body ground.

PCM CONNECTOR C (44P)



Terminal side of female terminals

Is there continuity?

YES—Repair short in the wire between the PCM (C24) and the rocker arm oil control solenoid (VTEC solenoid valve), then go to step 11.

NO—Go to step 18.

10. Replace the rocker arm oil control solenoid (VTEC solenoid valve) (see page 11-288).
11. Reconnect all connectors.
12. Turn the ignition switch ON (II).
13. Reset the PCM with the HDS.
14. Do the PCM idle learn procedure (see page 11-359).
15. Do the VTEC TEST in the INSPECTION MENU with the HDS.

(cont'd)

DTC Troubleshooting (cont'd)

16. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P2648 indicated?

YES—Check for poor connections or loose terminals at the rocker arm oil control solenoid (VTEC solenoid valve) and the PCM, then go to step 1.

NO—Go to step 17.

17. Monitor the OBD STATUS for DTC P2648 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 16, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the rocker arm oil control solenoid (VTEC solenoid valve) and the PCM, then go to step 1. If the screen indicates NOT COMPLETED, go to step 15.

18. Reconnect all connectors.

19. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).

20. Do the VTEC TEST in the INSPECTION MENU with the HDS.

21. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P2648 indicated?

YES—Check for poor connections or loose terminals at the rocker arm oil control solenoid (VTEC solenoid valve) and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then go to step 20. If the PCM was substituted, go to step 1.

NO—Go to step 22.

22. Monitor the OBD STATUS for DTC P2648 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-230). If any other Temporary DTCs or DTCs were indicated in step 21, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the rocker arm oil control solenoid (VTEC solenoid valve) and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then go to step 20. If the PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, go to step 20.



DTC P2649: Rocker Arm Oil Control Solenoid (VTEC Solenoid Valve) Circuit High Voltage

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.
4. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P2649 indicated?

YES—Go to step 5.

NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the rocker arm oil control solenoid (VTEC solenoid valve) and the PCM. ■

5. Turn the ignition switch OFF.
6. Disconnect the rocker arm oil control solenoid (VTEC solenoid valve) 1P connector.

7. At the solenoid side, measure resistance between the rocker arm oil control solenoid (VTEC solenoid valve) 1P connector terminal and the solenoid valve body.

ROCKER ARM OIL CONTROL SOLENOID (VTEC SOLENOID VALVE) 1P CONNECTOR



Terminal side of male terminals

Is there 14–30 Ω ?

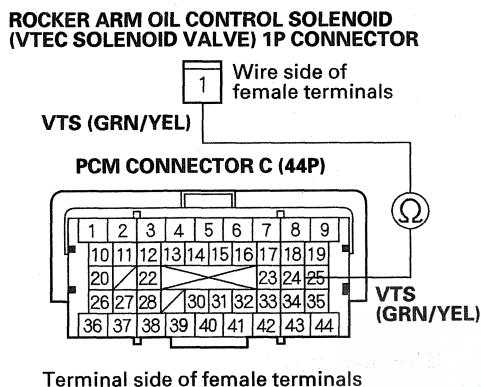
YES—Go to step 8.

NO—Go to step 11.

(cont'd)

DTC Troubleshooting (cont'd)

8. Jump the SCS line with the HDS.
9. Disconnect PCM connector C (44P).
10. Check for continuity between PCM connector terminal C24 and the rocker arm oil control solenoid (VTEC solenoid valve) 1P connector terminal.



Is there continuity?

YES—Go to step 19.

NO—Repair open in the wire between the PCM (C24) and the rocker arm oil control solenoid (VTEC solenoid valve), then go to step 12.

11. Replace the rocker arm oil control solenoid (VTEC solenoid valve) (see page 11-288).
12. Reconnect all connectors.
13. Turn the ignition switch ON (II).
14. Reset the PCM with the HDS.
15. Do the PCM idle learn procedure (see page 11-359).
16. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.
17. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P2649 indicated?

YES—Check for poor connections or loose terminals at the rocker arm oil control solenoid (VTEC solenoid valve) and the PCM, then go to step 1.

NO—Go to step 18.

18. Monitor the OBD STATUS for DTC P2649 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 17, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the rocker arm oil control solenoid (VTEC solenoid valve) and the PCM, then go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.



19. Reconnect all connectors.
20. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).
21. Start the engine, and let it idle.
22. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P2649 indicated?

YES—Check for poor connections or loose terminals at the rocker arm oil control solenoid (VTEC solenoid valve) and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then go to step 21. If the PCM was substituted, go to step 1.

NO—Go to step 23.

23. Monitor the OBD STATUS for DTC P2649 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

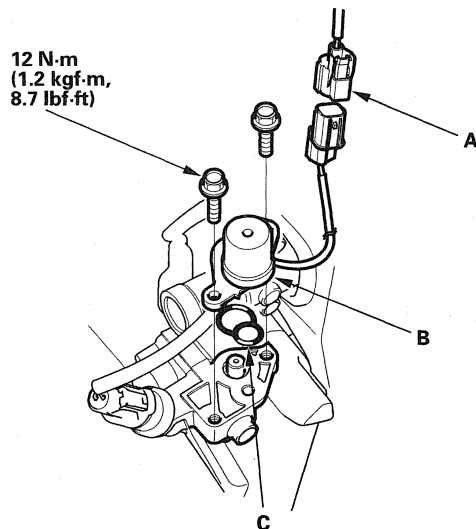
YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-230). If any other Temporary DTCs or DTCs were indicated in step 22, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the rocker arm oil control solenoid (VTEC solenoid valve) and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then go to step 21. If the PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

VTEC

Rocker Arm Oil Control Solenoid (VTEC Solenoid Valve) Replacement

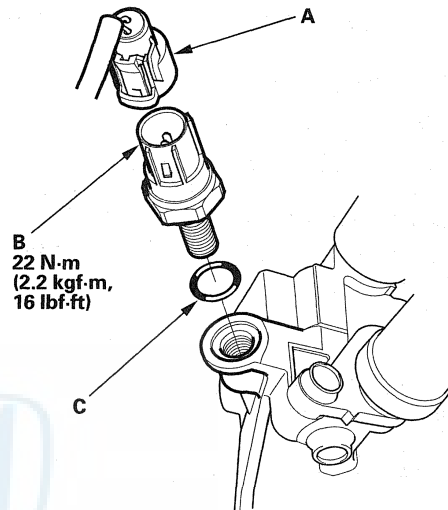
1. Disconnect the rocker arm oil control solenoid (VTEC solenoid valve) connector (A).



2. Remove the rocker arm oil control solenoid (VTEC solenoid valve) (B).
3. Install the parts in the reverse order of removal with a new O-ring (C).

Rocker Arm Oil Pressure Switch (VTEC Oil Pressure Switch) Replacement

1. Disconnect the rocker arm oil pressure switch (VTEC oil pressure switch) connector (A), then remove the rocker arm oil pressure switch (VTEC oil pressure switch) (B).

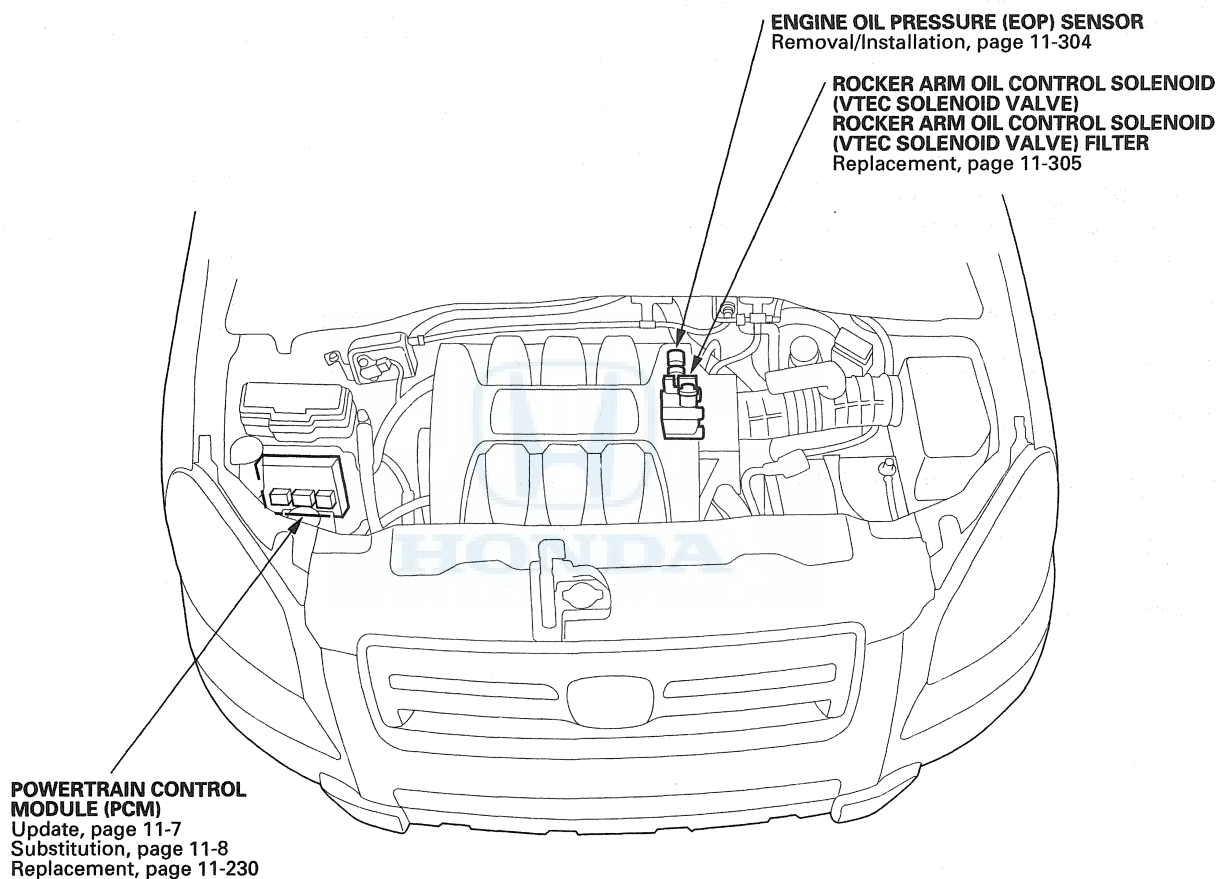


2. Install the parts in the reverse order of removal with a new O-ring (C).

Variable Cylinder Management (VCM) System



Component Location Index



Variable Cylinder Management (VCM) System

DTC Troubleshooting

DTC P0522: EOP Sensor Circuit Low Voltage

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch ON (II).
2. Check the OIL PRESSURE SENSOR in the DATA LIST with the HDS.

Is there about 0.18 V or less?

YES—Go to step 3.

NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the oil pressure sensor and the PCM. ■

3. Turn the ignition switch OFF.
4. Disconnect the EOP sensor 3P connector.
5. Turn the ignition switch ON (II).
6. Check the OIL PRESSURE SENSOR in the DATA LIST with the HDS.

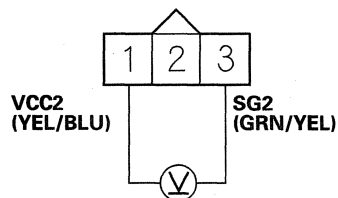
Is there about 0.18 V or less?

YES—Go to step 8.

NO—Go to step 7.

7. Measure voltage between EOP sensor 3P connector terminals No. 1 and No. 3.

EOP SENSOR 3P CONNECTOR



Wire side of female terminals

Is there about 5 V?

YES—Go to step 16.

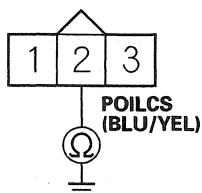
NO—Go to step 12.

8. Turn the ignition switch OFF.
9. Jump the SCS line with the HDS.
10. Disconnect PCM connector C (44P).



11. Check for continuity between EOP sensor 3P connector terminal No. 2 and body ground.

EOP SENSOR 3P CONNECTOR



Wire side of female terminals

Is there continuity?

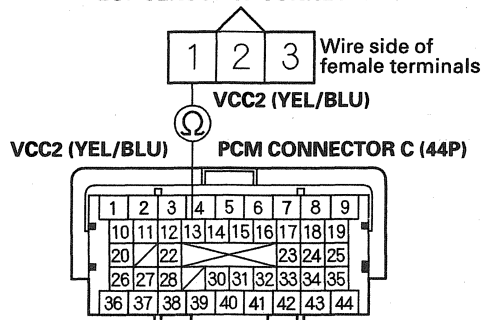
YES—Repair short in the wire between the PCM (C22) and the EOP sensor, then go to step 18.

NO—Go to step 24.

12. Turn the ignition switch OFF.
13. Jump the SCS line with the HDS.
14. Disconnect PCM connector C (44P).

15. Check for continuity between the PCM connector terminal C13 and EOP sensor 3P connector terminal No. 1.

EOP SENSOR 3P CONNECTOR



Terminal side of female terminals

Is there continuity?

YES—Go to step 24.

NO—Repair open in the wire between the PCM (C13) and the EOP sensor, then go to step 18.

16. Turn the ignition switch OFF.
17. Replace the EOP sensor (see page 11-304).
18. Reconnect all connectors.
19. Turn the ignition switch ON (II).

(cont'd)

Variable Cylinder Management (VCM) System

DTC Troubleshooting (cont'd)

20. Reset the PCM with the HDS.

21. Do the PCM idle learn procedure (see page 11-359).

22. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0522 indicated?

YES—Check for poor connections or loose terminals at the EOP sensor and the PCM, then go to step 1.

NO—Go to step 23.

23. Monitor the OBD STATUS for DTC P0522 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 22, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the EOP sensor and the PCM, then go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

24. Reconnect all connectors.

25. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).

26. Start the engine, and let it idle.

27. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0522 indicated?

YES—Check for poor connections or loose terminals at the EOP sensor and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then go to step 26. If the PCM was substituted, go to step 1.

NO—Go to step 28.

28. Monitor the OBD STATUS for DTC P0522 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-230). If any other Temporary DTCs or DTCs were indicated in step 27, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the EOP sensor and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then go to step 26. If the PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.



DTC P0523: EOP Sensor Circuit High Voltage

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch ON (II).
2. Check the OIL PRESSURE SENSOR in the DATA LIST with the HDS.

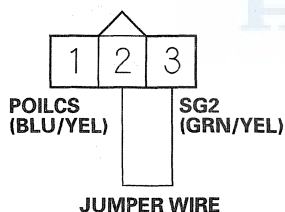
Is there about 4.79 V or more?

YES—Go to step 3.

NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the oil pressure sensor and the PCM. ■

3. Turn the ignition switch OFF.
4. Disconnect the EOP sensor 3P connector.
5. Connect EOP sensor 3P connector terminals No. 2 and No. 3 with a jumper wire.

EOP SENSOR 3P CONNECTOR



Wire side of female terminals

6. Turn the ignition switch ON (II).

7. Check the OIL PRESSURE SENSOR in the DATA LIST with the HDS.

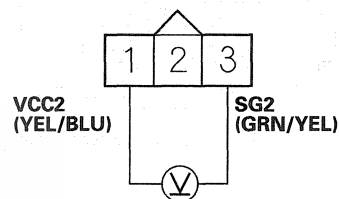
Is there about 4.79 V or more?

YES—Go to step 8.

NO—Go to step 18.

8. Remove the jumper wire.
9. Measure voltage between EOP sensor 3P connector terminals No. 1 and No. 3.

EOP SENSOR 3P CONNECTOR



Wire side of female terminals

Is there about 5 V?

YES—Go to step 14.

NO—Go to step 10.

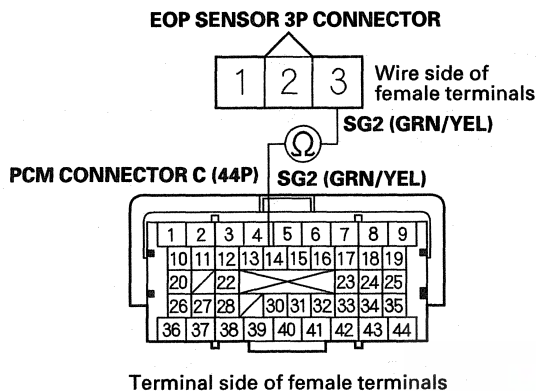
10. Turn the ignition switch OFF.

(cont'd)

Variable Cylinder Management (VCM) System

DTC Troubleshooting (cont'd)

11. Jump the SCS line with the HDS.
12. Disconnect PCM connector C (44P).
13. Check for continuity between PCM connector terminal C14 and EOP sensor 3P connector terminal No. 3.



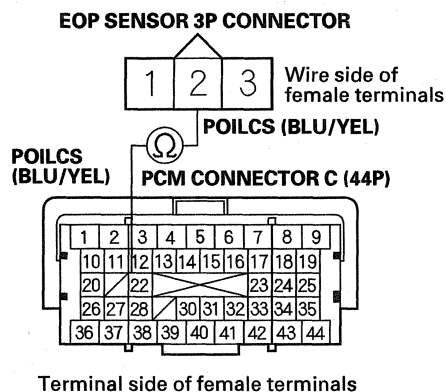
Is there continuity?

YES—Go to step 26.

NO—Repair open in the wire between the PCM (C14) and the EOP sensor, then go to step 20.

14. Turn the ignition switch OFF.
15. Jump the SCS line with the HDS.
16. Disconnect PCM connector C (44P).

17. Check for continuity between PCM connector terminal C22 and EOP sensor 3P connector terminal No. 2.



Is there continuity?

YES—Go to step 26.

NO—Repair open in the wire between the PCM (C22) and the EOP sensor, then go to step 20.

18. Turn the ignition switch OFF.
19. Replace the EOP sensor (see page 11-304).
20. Reconnect all connectors.



21. Turn the ignition switch ON (II).
22. Reset the PCM with the HDS.
23. Do the PCM idle learn procedure (see page 11-359).
24. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0523 indicated?

YES—Check for poor connections or loose terminals at the EOP sensor and the PCM, then go to step 1.

NO—Go to step 25.

25. Monitor the OBD STATUS for DTC P0523 in the DTCs MENU with the HDS.

Does the screen indicated PASSED?

YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 24, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the EOP sensor and the PCM, then go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

26. Reconnect all connectors.
27. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).
28. Start the engine, and let it idle.
29. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0523 indicated?

YES—Check for poor connections or loose terminals at the EOP sensor and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then go to step 28. If the PCM was substituted, go to step 1.

NO—Go to step 30.

30. Monitor the OBD STATUS for DTC P0523 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-230). If any other Temporary DTCs or DTCs were indicated in step 29, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the EOP sensor and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then go to step 28. If the PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

Variable Cylinder Management (VCM) System

DTC Troubleshooting (cont'd)

DTC P2646: VTEC System Stuck OFF

Special Tools Required

- Pressure gauge adapter 07NAJ-P07010A
- A/T low pressure gauge w/panel 07406-0070301
- A/T pressure hose 07406-0020201
- A/T pressure hose, 2,210 mm 07MAJ-PY4011A
- A/T pressure adapter 07MAJ-PY40120
- Oil pressure hose 07ZAJ-S5AA200

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Check the engine oil level.

Is the engine oil level OK?

YES—Go to step 2.

NO—Adjust the engine oil to the proper level, then go to step 12.

2. Turn the ignition switch ON (II).
3. Clear the DTC with the HDS.
4. Do the VTEC TEST in the INSPECTION MENU with the HDS.

Is the result OK?

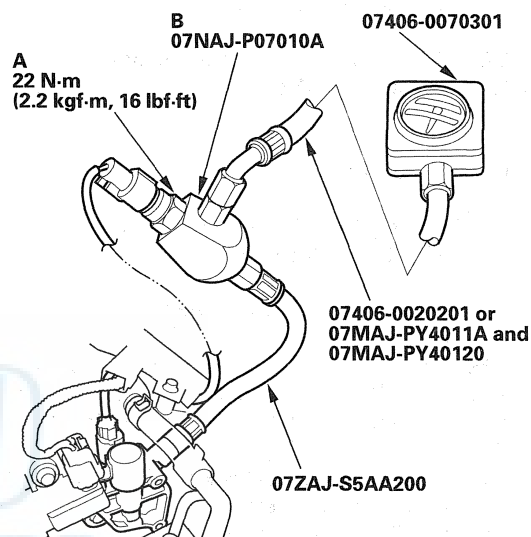
YES—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the EOP sensor, the rocker arm oil control solenoid (VTEC solenoid valve), and the PCM. ■

NO—Go to step 5.

5. Turn the ignition switch OFF.

6. Remove the EOP sensor (A), install the special tools as shown, then install the EOP sensor in the oil pressure gauge adapter (B).

NOTE: Install the parts in the reverse order of removal with new O-ring.



7. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle for 2 minutes.
8. Do the VTEC TEST in the INSPECTION MENU with the HDS.



9. Check the oil pressure.

Does the oil pressure increase to at least 30 kPa (0.3 kgf/cm², 4.3 psi)?

YES—Replace the EOP sensor (see page 11-304), then go to step 10.

NO—Replace the rocker arm oil control solenoid (VTEC solenoid valve) (see page 11-305), then go to step 10.

10. Turn the ignition switch OFF.

11. Reconnect all connectors.

12. Turn the ignition switch ON (II).

13. Reset the PCM with the HDS.

14. Do the PCM idle learn procedure (see page 11-359).

15. Test-drive under these conditions:

- Engine coolant temperature (ECT SENSOR 1) above 167 °F (75 °C)
- Transmission in D position
- Engine speed at 1,500—3,000 rpm

16. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P2646 indicated?

YES—Check for poor connections or loose terminals at the rocker arm oil control solenoid (VTEC solenoid valve), the EOP sensor, and the PCM, then go to step 1.

NO—Go to step 17.

17. Monitor the OBD STATUS for DTC P2646 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 16, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the rocker arm oil control solenoid (VTEC solenoid valve), the EOP sensor, and the PCM, then go to step 1. If the screen indicates NOT COMPLETED, go to step 15.

Variable Cylinder Management (VCM) System

DTC Troubleshooting (cont'd)

DTC P2647: VTEC System Stuck ON

Special Tools Required

- Pressure gauge adapter 07NAJ-P07010A
- A/T low pressure gauge w/panel 07406-0070301
- A/T pressure hose 07406-0020201
- A/T pressure hose, 2,210 mm 07MAJ-PY4011A
- A/T pressure adapter 07MAJ-PY40120
- Oil pressure hose 07ZAJ-S5AA200

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Check the engine oil level.

Is the engine oil level OK?

YES—Go to step 2.

NO—Adjust the engine oil to the proper level, then go to step 12.

2. Turn the ignition switch ON (II).

3. Clear the DTC with the HDS.

4. Do the VTEC TEST in the INSPECTION MENU with the HDS.

Is the result OK?

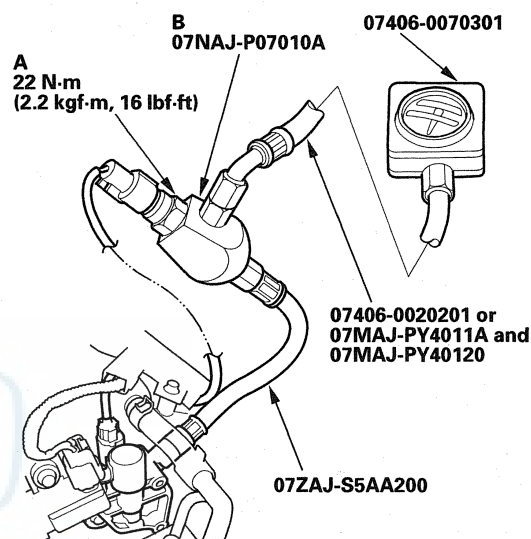
YES—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the EOP sensor, the rocker arm oil control solenoid (VTEC solenoid valve), and the PCM. ■

NO—Go to step 5.

5. Turn the ignition switch OFF.

6. Remove the EOP sensor (A), install the special tools as shown, then install the EOP sensor in the oil pressure gauge adapter (B).

NOTE: Install the parts in the reverse order of removal with new O-ring.



7. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle for 2 minutes.



8. Check the oil pressure.

Does the oil pressure increase to 392 kPa (4.0 kgf/cm², 56.9 psi)?

YES—Replace the EOP sensor (see page 11-304), then go to step 9.

NO—Replace the rocker arm oil control solenoid (VTEC solenoid valve) (see page 11-305), then go to step 9.

9. Turn the ignition switch OFF.

10. Reconnect all connectors.

11. Turn the ignition switch ON (II).

12. Reset the PCM with the HDS.

13. Do the PCM idle learn procedure (see page 11-359).

14. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle for 2 minutes.

15. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P2647 indicated?

YES—Check for poor connections or loose terminals at the rocker arm oil control solenoid (VTEC solenoid valve), the EOP sensor, and the PCM, then go to step 1.

NO—Go to step 16.

16. Monitor the OBD STATUS for DTC P2647 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 15, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the rocker arm oil control solenoid (VTEC solenoid valve), the EOP sensor, and the PCM, then go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

Variable Cylinder Management (VCM) System

DTC Troubleshooting (cont'd)

DTC 2648: Rocker Arm Oil Control Solenoid (VTEC Solenoid Valve) Circuit Low Voltage

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Do the VTEC TEST in the INSPECTION MENU with the HDS.
4. Check for Temporary DTCs or DTCs with the HDS.

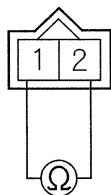
Is DTC P2648 indicated?

YES—Go to step 5.

NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the rocker arm oil control solenoid (VTEC solenoid valve) and the PCM. ■

5. Turn the ignition switch OFF.
6. Disconnect the rocker arm oil control solenoid (VTEC solenoid valve) 2P connector.
7. At the solenoid side, measure resistance between rocker arm oil control solenoid (VTEC solenoid valve) 2P connector terminals No. 1 and No. 2.

ROCKER ARM OIL CONTROL SOLENOID (VTEC SOLENOID VALVE) 2P CONNECTOR



Terminal side of male terminals

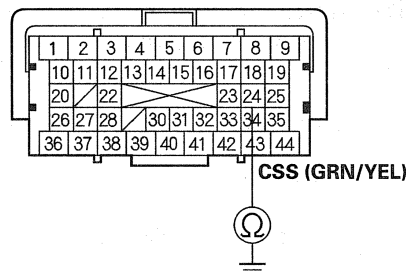
Is there 14–30 Ω?

YES—Go to step 8.

NO—Go to step 11.

8. Jump the SCS line with the HDS.
9. Disconnect PCM connector C (44P).
10. Check for continuity between PCM connector terminal C24 and body ground.

PCM CONNECTOR C (44P)



Terminal side of female terminals

Is there continuity?

YES—Repair short in the wire between the rocker arm oil control solenoid (VTEC solenoid valve), and the PCM (C24), then go to step 12.

NO—Go to step 19.

11. Replace the rocker arm oil control solenoid (VTEC solenoid valve) (see page 11-305).
12. Reconnect all connectors.
13. Turn the ignition switch ON (II).
14. Reset the PCM with the HDS.
15. Do the PCM idle learn procedure (see page 11-359).
16. Do the VTEC TEST in the INSPECTION MENU with the HDS.
17. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P2648 indicated?

YES—Check for poor connections or loose terminals at the rocker arm oil control solenoid (VTEC solenoid valve) and the PCM, then go to step 1.

NO—Go to step 18.



18. Monitor the OBD STATUS for DTC P2648 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 17, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the rocker arm oil control solenoid (VTEC solenoid valve), and the PCM, then go to step 1. If the screen indicates NOT COMPLETED, go to step 16.

19. Reconnect all connectors.
20. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).
21. Do the VTEC TEST in the INSPECTION MENU with the HDS.
22. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P2648 indicated?

YES—Check for poor connections or loose terminals at the rocker arm oil control solenoid (VTEC solenoid valve) and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then go to step 21. If the PCM was substituted, go to step 1.

NO—Go to step 23.

23. Monitor the OBD STATUS for DTC P2648 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-230). If any other Temporary DTCs or DTCs were indicated in step 22, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the rocker arm oil control solenoid (VTEC solenoid valve) and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, go to step 21.

Variable Cylinder Management (VCM) System

DTC Troubleshooting (cont'd)

DTC P2649: Rocker Arm Oil Control Solenoid (VTEC Solenoid Valve) Circuit High Voltage

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Check for Temporary DTCs or DTCs with the HDS.

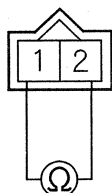
Is DTC P2649 indicated?

YES—Go to step 4.

NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the rocker arm oil control solenoid (VTEC solenoid valve) and the PCM. ■

4. Turn the ignition switch OFF.
5. Disconnect the rocker arm oil control solenoid (VTEC solenoid valve) 2P connector.
6. At the solenoid side, measure resistance between rocker arm oil control solenoid (VTEC solenoid valve) 2P connector terminals No. 1 and No. 2.

ROCKER ARM OIL CONTROL SOLENOID (VTEC SOLENOID VALVE) 2P CONNECTOR



Terminal side of male terminals

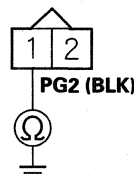
Is there 14–30 Ω?

YES—Go to step 7.

NO—Go to step 11.

7. Check for continuity between rocker arm oil control solenoid (VTEC solenoid valve) 2P connector terminal No. 1 and body ground.

ROCKER ARM OIL CONTROL SOLENOID (VTEC SOLENOID VALVE) 2P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Go to step 8.

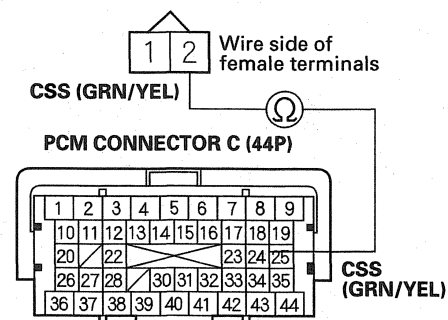
NO—Repair open in the wire between the rocker arm oil control solenoid (VTEC solenoid valve) and G101, then go to step 12.

8. Jump the SCS line with the HDS.
9. Disconnect PCM connector C (44P).



10. Check for continuity between PCM connector terminal C24 and rocker arm oil control solenoid (VTEC solenoid valve) 2P connector terminal No. 2.

**ROCKER ARM OIL CONTROL SOLENOID
(VTEC SOLENOID VALVE) 2P CONNECTOR**



Is there continuity?

YES—Go to step 18.

NO—Repair open in the wire between the PCM (C24) and the rocker arm oil control solenoid (VTEC solenoid valve), then go to step 12.

11. Replace the rocker arm oil control solenoid (VTEC solenoid valve) (see page 11-305).
12. Reconnect all connectors.
13. Turn the ignition switch ON (II).
14. Reset the PCM with the HDS.
15. Do the PCM idle learn procedure (see page 11-359).

16. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P2649 indicated?

YES—Check for poor connections or loose terminals at the rocker arm oil control solenoid (VTEC solenoid valve) and the PCM, then go to step 1.

NO—Go to step 17.

17. Monitor the OBD STATUS for DTC P2649 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 16, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the rocker arm oil control solenoid (VTEC solenoid valve) and the PCM, then go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

(cont'd)

Variable Cylinder Management (VCM) System

DTC Troubleshooting (cont'd)

18. Reconnect all connectors.
19. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).
20. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P2649 indicated?

YES—Check for poor connections or loose terminals at the rocker arm oil control solenoid (VTEC solenoid valve) and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1.

NO—Go to step 21.

21. Monitor the OBD STATUS for DTC P2649 in the DTCs MENU with the HDS.

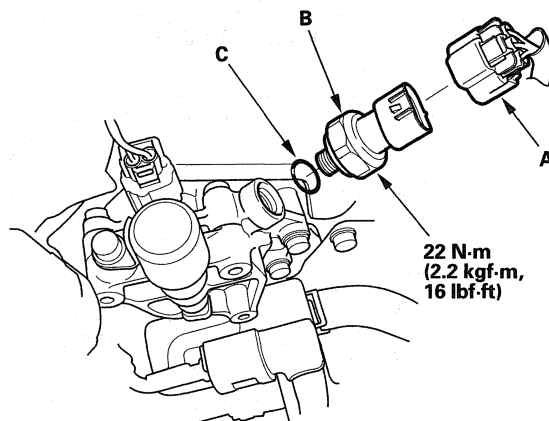
Does the screen indicate PASSED?

YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-230). If any other Temporary DTCs or DTCs were indicated in step 20, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the rocker arm oil control solenoid (VTEC solenoid valve) and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

EOP Sensor Removal/Installation

1. Remove the engine cover (see step 1 on page 9-4).
2. Remove the EOP sensor 3P connector (A).

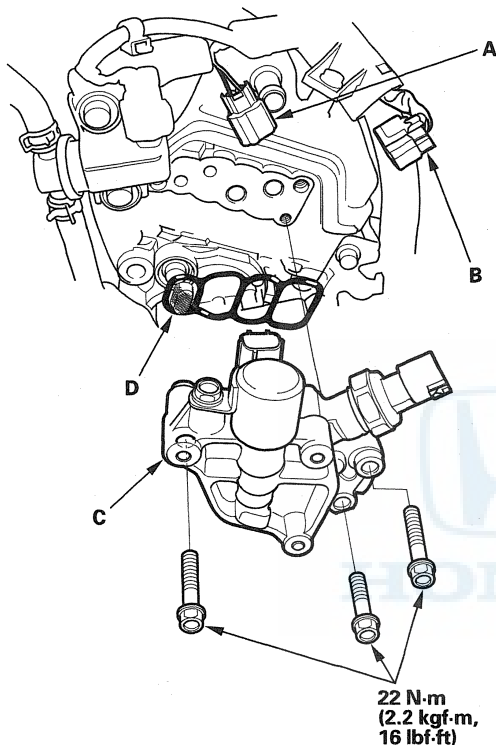


3. Remove the EOP sensor (B).
4. Install the parts in the reverse order of removal with a new O-ring (C).



Rocker Arm Oil Control Solenoid (VTEC Solenoid Valve)/Rocker Arm Oil Control Solenoid (VTEC Solenoid Valve) Filter Replacement

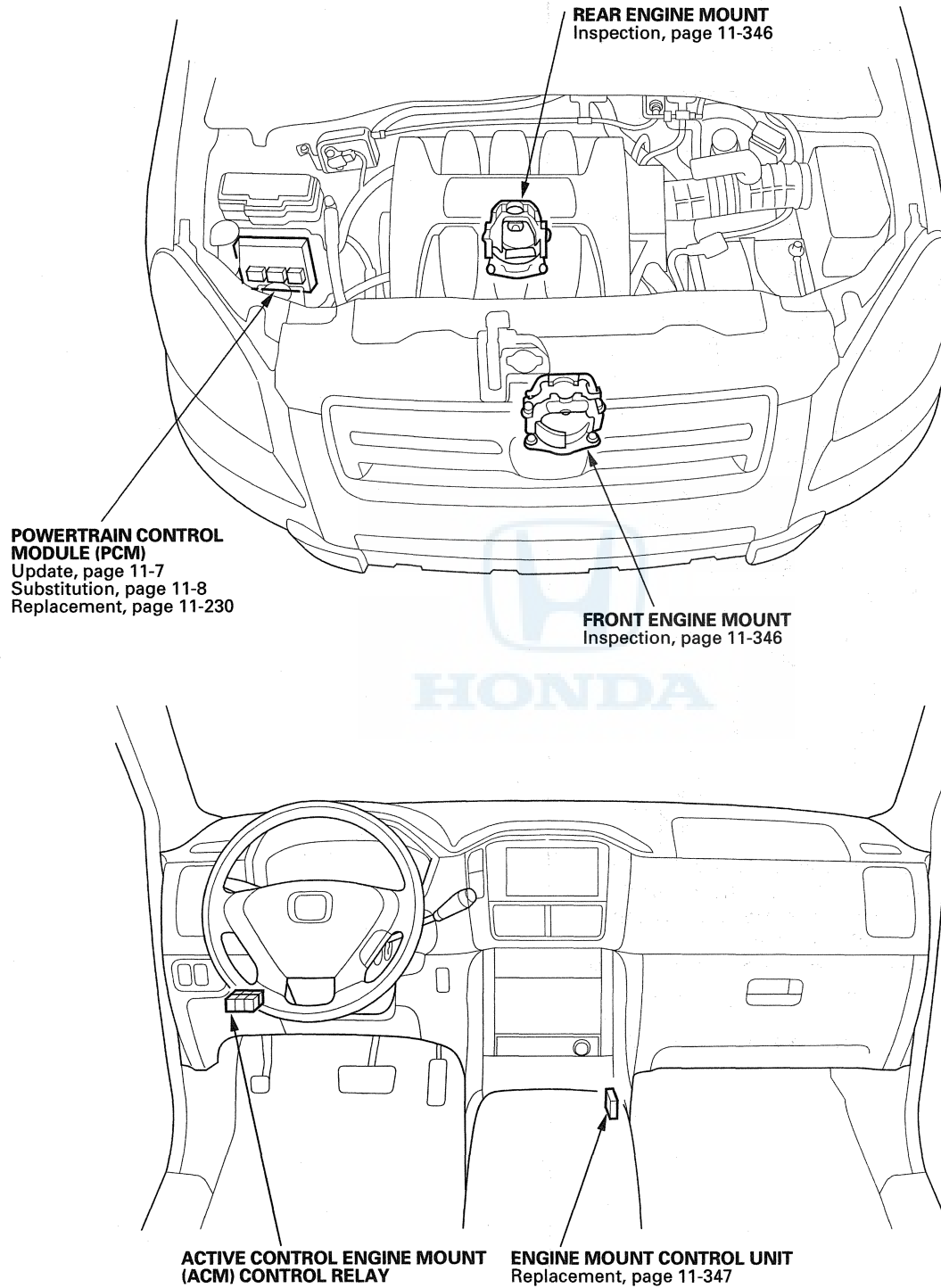
1. Remove the engine cover (see step 1 on page 9-4).
2. Disconnect the rocker arm oil control solenoid (VTEC solenoid valve) 2P connector (A) and the EOP sensor 3P connector (B).



3. Remove the rocker arm oil control solenoid (VTEC solenoid valve) assembly (C) from the rear bank cylinder head, and check the rocker arm oil control solenoid (VTEC solenoid valve) filter (D) for clogging. If it is clogged, replace the solenoid valve filter, the engine oil filter, and the engine oil.
4. Install the parts in the reverse order of removal.

Active Control Engine Mount (ACM) System

Component Location Index





DTC Troubleshooting

DTC P0A14: Front Engine Mount Actuator Circuit Malfunction

DTC P0AB6: Rear Engine Mount Actuator Circuit Malfunction

NOTE:

- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- Information marked with an asterisk (*) applies to rear active control engine mount (ACM) actuator.

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Do the VTEC TEST in the INSPECTION MENU with the HDS.
4. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0A14 and/or P0AB6 indicated?*

YES—Go to step 5.

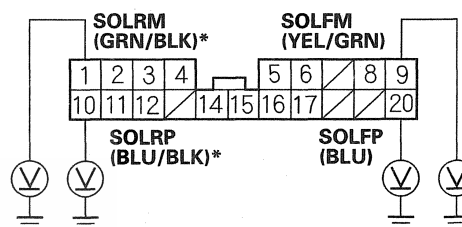
NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the engine mount control unit and the active control engine mount (ACM) actuator. ■

5. Turn the ignition switch OFF.
6. Disconnect the front active control engine mount (ACM) actuator (rear active control engine mount (ACM) actuator)* 2P connector.
7. Disconnect the engine mount control unit 20P connector.
8. Turn the ignition switch ON (II).

9. Measure voltage between body ground and the appropriate engine mount control unit 20P connector terminal (see table).

DTC	ACTIVE CONTROL ENGINE MOUNT (ACM) ACTUATOR TERMINAL	ENGINE MOUNT CONTROL UNIT TERMINAL	WIRE COLOR
P0AB6	Rear side No. 1	No. 1	GRN/BLK
P0AB6	Rear side No. 2	No. 10	BLU/BLK
P0A14	Front side No. 1	No. 9	YEL/GRN
P0A14	Front side No. 2	No. 20	BLU

ENGINE MOUNT CONTROL UNIT 20P CONNECTOR



Wire side of female terminals

Is there battery voltage?

YES—Repair short to power in the wire between the engine mount control unit and the active control engine mount (ACM) actuator, then go to step 13.

NO—Go to step 10.

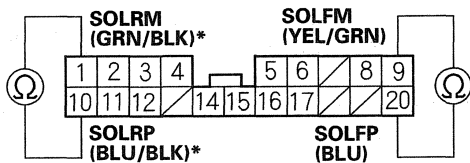
(cont'd)

Active Control Engine Mount (ACM) System

DTC Troubleshooting (cont'd)

- 10. Turn the ignition switch OFF.
- 11. Check for continuity between engine mount control unit 20P connector terminals No. 9 (No. 1)* and No. 20 (No. 10)*.

ENGINE MOUNT CONTROL UNIT 20P CONNECTOR



Wire side of female terminals

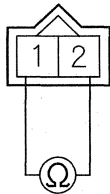
Is there continuity?

YES—Repair short in the wire between the engine mount control unit No. 9 and No. 20 terminals (No. 1 and No. 10 terminals)*, then go to step 14.

NO—Go to step 12.

- 12. At the actuator side, measure resistance between active control engine mount (ACM) actuator 2P connector terminals No. 1 and No. 2.

ACTIVE CONTROL ENGINE MOUNT (ACM) ACTUATOR 2P CONNECTOR



Terminal side of male terminals

Is there about 0.75—1.15 Ω?

YES—Replace the engine mount control unit (see page 11-347), then go to step 14.

NO—Replace the front engine mount (see page 5-27) or rear engine mount (see page 5-27)*, then go to step 14.

- 13. Turn the ignition switch OFF.
- 14. Reconnect all connectors.
- 15. Turn the ignition switch ON (II).

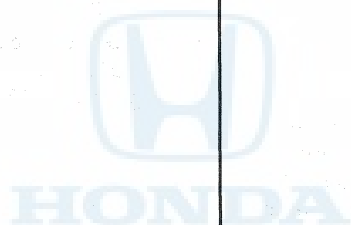


16. Reset the PCM with the HDS.
17. Do the PCM idle learn procedure (see page 11-359).
18. Do the VTEC TEST in the INSPECTION MENU with the HDS.
19. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0A14 and/or P0AB6 is indicated?*

YES—Check for poor connections or loose terminals at the engine mount control unit and the active control engine mount (ACM) actuator, then go to step 1.

NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■



Active Control Engine Mount (ACM) System

DTC Troubleshooting (cont'd)

DTC P0A15: Front Engine Mount Actuator Control Circuit Low Current

DTC P0AB7: Rear Engine Mount Actuator Control Circuit Low Current

NOTE:

- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- Information marked with an asterisk (*) applies to rear active control engine mount (ACM) actuator.

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine, and let it idle 10 seconds.
4. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0A15 and/or P0AB7 indicated?*

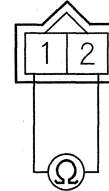
YES—Go to step 5.

NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the engine mount control unit and the active control engine mount (ACM) actuator or the engine mount control unit and G505. ■

5. Turn the ignition switch OFF.
6. Disconnect the front (rear)* active control engine mount (ACM) actuator 2P connector.

7. At the actuator side, measure resistance between front (rear)* active control engine mount (ACM) actuator 2P connector terminals No. 1 and No. 2.

**ACTIVE CONTROL ENGINE MOUNT (ACM)
ACTUATOR 2P CONNECTOR**



Terminal side of male terminals

Is there about 0.75—1.15 Ω ?

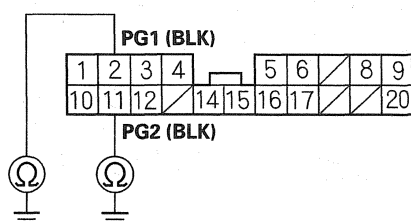
YES—Go to step 8.

NO—Replace the front engine mount (see page 5-27) or rear engine mount (see page 5-27)*, then go to step 13.



8. Disconnect the engine mount control unit 20P connector.
9. Check for continuity between engine mount control unit 20P connector terminals No. 2 and No. 11 and body ground.

ENGINE MOUNT CONTROL UNIT 20P CONNECTOR



Wire side of female terminals

Is there continuity?

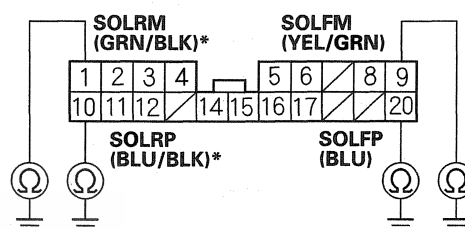
YES—Go to step 10.

NO—Repair open in the wire between the engine mount control unit (No. 2, No. 11) and the G505, then go to step 13.

10. Check for continuity between body ground and the appropriate engine mount control unit (see table).

DTC	ACTIVE CONTROL ENGINE MOUNT (ACM) ACTUATOR TERMINAL	ENGINE MOUNT CONTROL UNIT TERMINAL	WIRE COLOR
P0AB7	Rear side No. 1	No. 1	GRN/BLK
P0AB7	Rear side No. 2	No. 10	BLU/BLK
P0A15	Front side No. 1	No. 9	YEL/GRN
P0A15	Front side No. 2	No. 20	BLU

ENGINE MOUNT CONTROL UNIT 20P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair short in the wire between the engine mount control unit and the active control engine mount (ACM) actuator, then go to step 13.

NO—Go to step 11.

(cont'd)

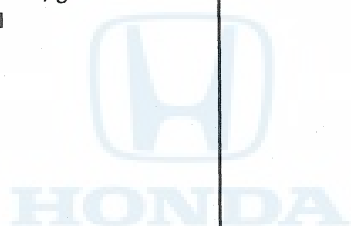


13. Reconnect all connectors.
14. Turn the ignition switch ON (II).
15. Reset the PCM with the HDS.
16. Do the PCM idle learn procedure (see page 11-359).
17. Let the engine idle 10 seconds.
18. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0A15 and/or P0AB7 indicated?*

YES—Check for poor connections or loose terminals at the engine mount control unit and the active control engine mount (ACM) actuator, then go to step 1.

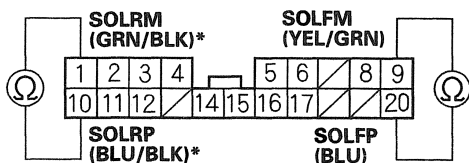
NO—Troubleshooting is complete. If any other temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■





11. Check for continuity between engine mount control unit 20P connector terminals No. 9 (No. 1)* and No. 20 (No. 10)*.

ENGINE MOUNT CONTROL UNIT 20P CONNECTOR



Wire side of female terminals

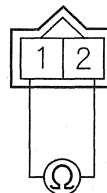
Is there continuity?

YES—Repair short in the wire between the engine mount control unit No. 9 and No. 20 terminals (No. 1 and No. 10 terminals)*, then go to step 14.

NO—Go to step 12.

12. At the actuator side, measure the resistance between front (rear)* active control engine mount (ACM) actuator 2P connector terminals No. 1 and No. 2.

ACTIVE CONTROL ENGINE MOUNT (ACM) ACTUATOR 2P CONNECTOR



Terminal side of male terminals

Is there about 0.75–1.15 Ω?

YES—Replace the engine mount control unit (see page 11-347), then go to step 14.

NO—Replace the front engine mount (see page 5-27), or rear engine mount (see page 5-27)*, then go to step 14.

(cont'd)

Active Control Engine Mount (ACM) System

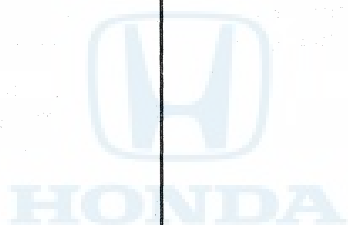
DTC Troubleshooting (cont'd)

13. Turn the ignition switch OFF.
14. Reconnect all connectors.
15. Turn the ignition switch ON (II).
16. Reset the PCM with the HDS.
17. Do the PCM idle learn procedure (see page 11-359).
18. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0A16 and/or P0AB8 indicated?*

YES—Check for poor connections or loose terminals at the engine mount control unit and active control engine mount (ACM) actuator, then go to step 1.

NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■





DTC P15AB: Engine Mount Control Unit Power Source Circuit Low Voltage

NOTE:

- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- If DTC P15AB is stored at the same time as DTC P16C5, troubleshoot DTC P16C5 first, then recheck for P15AB.

1. Turn the ignition switch ON (II).
2. Check for Temporary DTCs or DTCs with the HDS.

Is DTC U0073 indicated?

YES—Do the troubleshooting for the DTC U0073 (see page 11-199), then go to step 19.

NO—Go to step 3.

3. Clear the DTC with the HDS.
4. Turn the ignition switch OFF.
5. Turn the ignition switch ON (II).
6. Check for Temporary DTCs or DTCs with the HDS.

Is DTC U1101 indicated?

YES—Go to step 8.

NO—Go to step 7.

7. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P15AB indicated?

YES—Go to step 8.

NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the engine mount control unit and the PCM, or the engine mount control unit and G503. ■

8. Turn the ignition switch ON (II).
9. Check for poor connections at PCM connector A (44P) and the engine mount control unit 20P connector.

Are the connections OK?

YES—Go to step 10.

NO—Repair the poor connections, then go to step 16.

10. Turn the ignition switch OFF.
11. Disconnect the engine mount control unit 20P connector.
12. Turn the ignition switch ON (II).

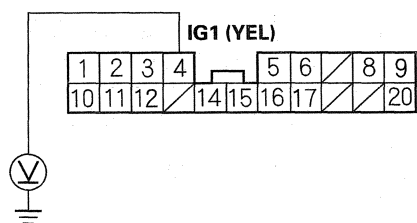
(cont'd)

Active Control Engine Mount (ACM) System

DTC Troubleshooting (cont'd)

13. Measure voltage between engine mount control unit 20P connector terminal No. 4 and body ground.

ENGINE MOUNT CONTROL UNIT 20P CONNECTOR



Wire side of female terminals

Is there battery voltage?

YES—Go to step 16.

NO—Go to step 14.

14. Turn the ignition switch OFF.
15. Inspect the No. 9 BACK UP LIGHT, INSTRUMENT LIGHT (10 A) fuse in the driver's under-dash fuse/relay box.

Is the fuse OK?

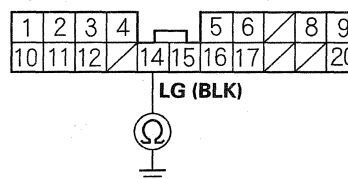
YES—Repair open in the wire between the No. 9 BACK UP LIGHT, INSTRUMENT LIGHT (10 A) fuse and engine mount control unit (No. 4), then go to step 22.

NO—Repair short in the wire between the No. 9 BACK UP LIGHT, INSTRUMENT LIGHT (10 A) fuse and engine mount control unit (No. 4). Also replace the No. 9 BACK UP LIGHT, INSTRUMENT LIGHT (10 A) fuse, then go to step 22.

16. Turn the ignition switch OFF.

17. Check for continuity between engine mount control unit 20P connector terminals No. 14 and body ground.

ENGINE MOUNT CONTROL UNIT 20P CONNECTOR



Wire side of female terminals

Is there continuity?

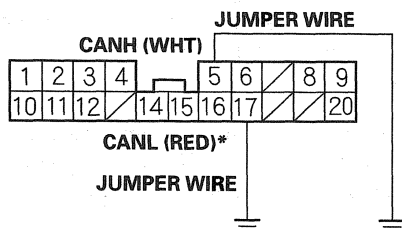
YES—Go to step 18.

NO—Repair open in the wire between engine mount control unit (No. 14) and G503, then go to step 22.



18. Jump the SCS line with the HDS.
19. Disconnect the PCM connector A (44P).
20. Connect engine mount control unit 20P connector terminals No. 5 and No. 17* to body ground with a jumper wire.

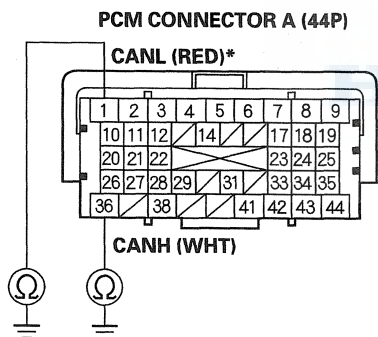
ENGINE MOUNT CONTROL UNIT 20P CONNECTOR



Wire side of female terminals

*: CANL Line

21. Check for continuity between PCM connector terminals A36 and A1* and body ground individually.



Terminal side of female terminals

*: CANL Line

Is there continuity?

YES—Replace the engine mount control unit (see page 11-347), then go to step 22.

NO—Repair open in the wire between PCM (A36 (A1)*) and engine mount control unit (No. 5 (No. 17)*), then go to step 22.

*: CANL line

22. Reconnect all connectors.
23. Turn the ignition switch ON (II).
24. Reset the PCM with the HDS.
25. Do the PCM idle learn procedure (see page 11-359).
26. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P15AB indicated?

YES—Check for poor connections or loose terminals at the engine mount control unit and the PCM, then go to step 1.

NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

Active Control Engine Mount (ACM) System

DTC Troubleshooting (cont'd)

DTC P15AC: Engine Mount Control Unit Internal Circuit Malfunction

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P15AC indicated?

YES—Go to step 4.

NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the engine mount control unit and the active control engine mount (ACM) actuator. ■

4. Turn the ignition switch OFF.
5. Replace the engine mount control unit (see page 11-347).
6. Turn the ignition switch ON (II).

7. Reset the PCM with the HDS.

8. Do the PCM idle learn procedure (see page 11-359).

9. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P15AC indicated?

YES—Check for poor connections or loose terminals at the engine mount control unit and the active control engine mount (ACM) actuator, then go to step 1.

NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■





DTC P15AD: Engine Mount Control Unit Internal Circuit Malfunction

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P15AD indicated?

YES—Go to step 4.

NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the engine mount control unit and the active control engine mount (ACM) actuator. ■

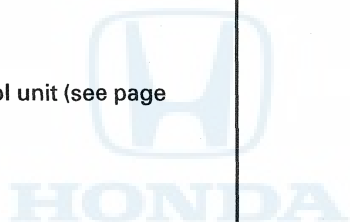
4. Turn the ignition switch OFF.
5. Replace the engine mount control unit (see page 11-347).

6. Turn the ignition switch ON (II).
7. Reset the PCM with the HDS.
8. Do the PCM idle learn procedure (see page 11-359).
9. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P15AD indicated?

YES—Check for poor connections or loose terminals at the engine mount control unit and the active control engine mount (ACM) actuator, then go to step 7.

NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■



Active Control Engine Mount (ACM) System

DTC Troubleshooting (cont'd)

DTC P15AE: Cylinder Pause Signal Malfunction

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Do the VTEC TEST in the INSPECTION MENU with the HDS.
4. Check for Temporary DTCs or DTCs with the HDS.

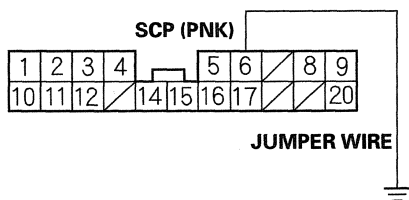
Is DTC P15AE indicated?

YES—Go to step 5.

NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the PCM and the engine mount control unit. ■

5. Turn the ignition switch OFF.
6. Jump the SCS line with the HDS.
7. Disconnect PCM connector A (44P).
8. Disconnect the engine mount control unit 20P connector.
9. Connect engine mount control unit 20P connector terminal No. 6 to body ground with a jumper wire.

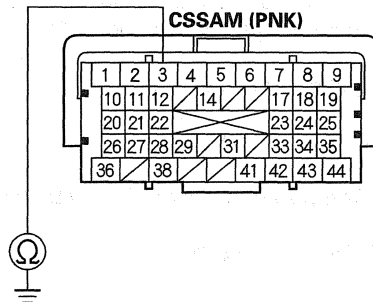
ENGINE MOUNT CONTROL UNIT 20P CONNECTOR



Wire side of female terminals

10. Check for continuity between PCM connector terminal A3 and body ground.

PCM CONNECTOR A (44P)



Terminal side of female terminals

Is there continuity?

YES—Replace the engine mount control unit (see page 11-347), then go to step 11.

NO—Repair open in the wire between the PCM (A3) and the engine mount control unit (No. 6), then go to step 11.

11. Reconnect all connectors.
12. Turn the ignition switch ON (II).

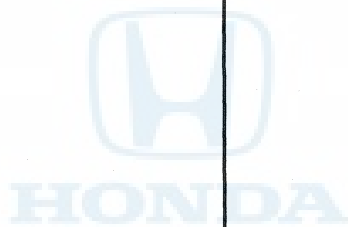


13. Reset the PCM with the HDS.
14. Do the PCM idle learn procedure (see page 11-359).
15. Do the VTEC TEST in the INSPECTION MENU with the HDS.
16. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P15AE indicated?

YES—Check for poor connections or loose terminals at the PCM and the engine mount control unit, then go to step 1.

NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■



Active Control Engine Mount (ACM) System

DTC Troubleshooting (cont'd)

DTC P15AF: CMP Sensor Signal Malfunction

NOTE:

- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- If DTC P0340 and/or P0344 is stored at the same time as DTC P15AF, troubleshoot DTC P0340 and/or P0344 first, then recheck for DTC P15AF.

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine, and let it idle 10 seconds.
4. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P15AF indicated?

YES—Go to step 5.

NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the PCM and the engine mount control unit. ■

5. Turn the ignition switch OFF.
6. Check for poor connections at PCM connector A (44P) and the engine mount control unit 20P connector.

Are the connections OK?

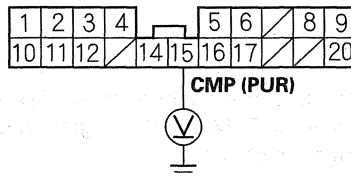
YES—Go to step 7.

NO—Repair the poor connections, then go to step 25.

7. Disconnect the CMP sensor 3P connector.
8. Turn the ignition switch ON (II).

9. Measure voltage between engine mount control unit 20P connector terminal No. 15 and body ground.

ENGINE MOUNT CONTROL UNIT 20P CONNECTOR



Wire side of female terminals

Is there about 5 V?

YES—Go to step 10.

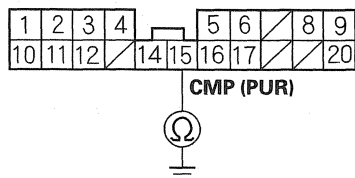
NO—Go to step 15.

10. Turn the ignition switch OFF.
11. Jump the SCS line with the HDS.
12. Disconnect PCM connector A (44P).
13. Disconnect the engine mount control unit 20P connector.



14. Check for continuity between engine mount control unit 20P connector terminal No. 15 and body ground.

ENGINE MOUNT CONTROL UNIT 20P CONNECTOR



Wire side of female terminals

Is there continuity?

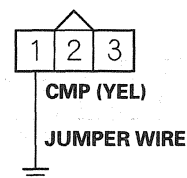
YES—Repair short in the wire between the engine mount control unit (No. 15) and the PCM (A27), then go to step 25.

NO—Go to step 30.

15. Turn the ignition switch OFF.

16. Connect CMP sensor 3P connector terminal No. 1 to body ground with a jumper wire.

CMP SENSOR 3P CONNECTOR



Wire side of female terminals

17. Turn the ignition switch ON (II).

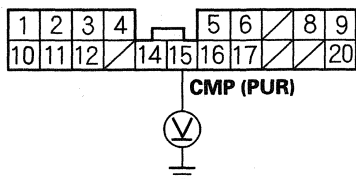
(cont'd)

Active Control Engine Mount (ACM) System

DTC Troubleshooting (cont'd)

18. Measure voltage between engine mount control unit 20P connector terminal No. 15 and body ground.

ENGINE MOUNT CONTROL UNIT 20P CONNECTOR



Wire side of female terminals

Is there about 0 V?

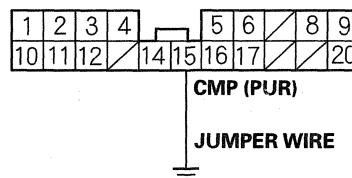
YES—Replace the engine mount control unit (see page 11-347), then go to step 25.

NO—Go to step 19.

19. Turn the ignition switch OFF.
20. Disconnect the engine mount control unit 20P connector.
21. Jump the SCS line with the HDS.
22. Disconnect PCM connector A (44P).

23. Connect engine mount control unit 20P connector terminal No. 15 to body ground with a jumper wire.

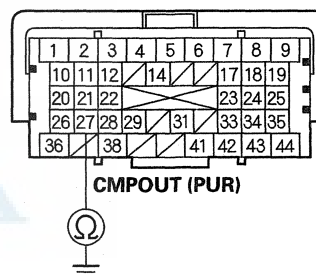
ENGINE MOUNT CONTROL UNIT 20P CONNECTOR



Wire side of female terminals

24. Check for continuity between PCM connector terminal A27 and body ground.

PCM CONNECTOR A (44P)



Terminal side of female terminals

Is there continuity?

YES—Go to step 30.

NO—Repair open in the wire between the PCM (A27) and the engine mount control unit (No. 15), then go to step 25.

25. Reconnect all connectors.
26. Turn the ignition switch ON (II).



27. Reset the PCM with the HDS.
28. Do the PCM idle learn procedure (see page 11-359).
29. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P15AF indicated?

YES—Check for poor connections or loose terminals at the PCM and the engine mount control unit, then go to step 1.

NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

30. Reconnect all connectors.
31. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).
32. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P15AF indicated?

YES—Check for poor connections or loose terminals at the PCM and the engine mount control unit, then go to step 1. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1.

NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-230). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

Active Control Engine Mount (ACM) System

DTC Troubleshooting (cont'd)

DTC P15B0: CKP Sensor Signal Malfunction

NOTE:

- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- If DTC P0335 and/or P0339 is stored at the same time as DTC P0335, troubleshoot DTC P0335 and/or P0339 first, then recheck for DTC P15B0.

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine, and let it idle 10 seconds.
4. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P15B0 indicated?

YES—Go to step 5.

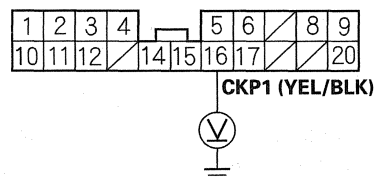
NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the PCM and the engine mount control unit. ■

5. Turn the ignition switch OFF.
6. Check for poor connections at PCM connector A (44P) and the engine mount control unit 20P connector.

Are the connections OK?
YES—Go to step 7.
NO—Repair the poor connections, then go to step 25.
7. Disconnect the CKP sensor 6P connector (see page 11-228).
8. Turn the ignition switch ON (II).

9. Measure voltage between engine mount control unit 20P connector terminal No. 16 and body ground.

ENGINE MOUNT CONTROL UNIT 20P CONNECTOR



Wire side of female terminals

Is there about 5 V?

YES—Go to step 10.

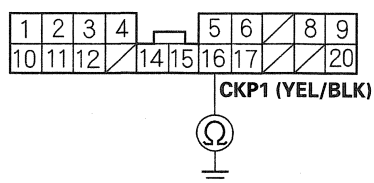
NO—Go to step 15.

10. Turn the ignition switch OFF.
11. Jump the SCS line with the HDS.
12. Disconnect PCM connector A (44P).



13. Disconnect the engine mount control unit 20P connector.
14. Check for continuity between engine mount control unit 20P connector terminal No. 16 and body ground.

ENGINE MOUNT CONTROL UNIT 20P CONNECTOR



Wire side of female terminals

Is there continuity?

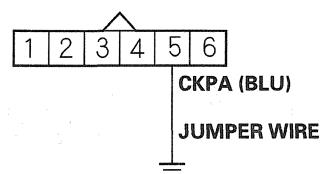
YES—Repair short in the wire between the PCM (A26) and the engine mount control unit (No. 16), then go to step 25.

NO—Go to step 30.

15. Turn the ignition switch OFF.

16. Connect the CKP sensor 6P connector terminal No. 5 to body ground with a jumper wire.

CKP SENSOR A/B 6P CONNECTOR



Wire side of female terminals

17. Turn the ignition switch ON (II).

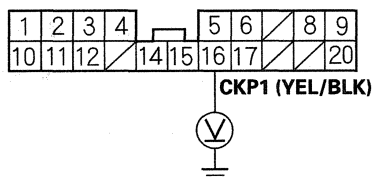
(cont'd)

Active Control Engine Mount (ACM) System

DTC Troubleshooting (cont'd)

18. Measure voltage between engine mount control unit 20P connector terminal No. 16 and body ground.

ENGINE MOUNT CONTROL UNIT 20P CONNECTOR



Wire side of female terminals

Is there about 0 V?

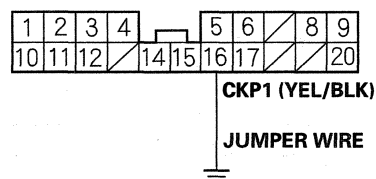
YES—Replace the engine mount control unit (see page 11-347), then go to step 25.

NO—Go to step 19.

19. Turn the ignition switch OFF.
20. Disconnect the engine mount control unit 20P connector.
21. Jump the SCS line with the HDS.
22. Disconnect PCM connector A (44P).

23. Connect engine mount control unit 20P connector terminal No. 16 to body ground with a jumper wire.

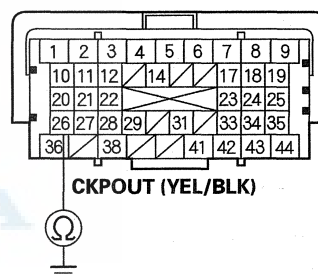
ENGINE MOUNT CONTROL UNIT 20P CONNECTOR



Wire side of female terminals

24. Check for continuity between PCM connector terminal A26 and body ground.

PCM CONNECTOR A (44P)



Terminal side of female terminals

Is there continuity?

YES—Go to step 30.

NO—Repair open in the wire between the PCM (A26) and the engine mount control unit (No. 16), then go to step 25.



25. Reconnect all connectors.
26. Turn the ignition switch ON (II).
27. Reset the PCM with the HDS.
28. Do the PCM idle learn procedure (see page 11-359).
29. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P15B0 indicated?

YES—Check for poor connections or loose terminals at the engine mount control unit and the PCM, then go to step 1.

NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

30. Reconnect all connectors.
31. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).
32. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P15B0 indicated?

YES—Check for poor connections or loose terminals at the engine mount control unit and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1.

NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-230). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

Active Control Engine Mount (ACM) System

DTC Troubleshooting (cont'd)

DTC P15B1: CMP Sensor/CKP Sensor Signal Incorrect Correlation

NOTE:

- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- If DTC P0335, P0339, P0340 and/or P0344 is stored at the same time as DTC P15B1, troubleshoot DTC P0335, P0339, P0340 and/or P0344 first, then recheck for DTC P15B1.
- Information marked with an asterisk (*) applies to CKPOUT-CKP1 line.

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Test-drive the vehicle for 20 minutes in the range of these recorded freeze data parameters:
 - ENGINE SPEED
 - VSS
4. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P15B1 indicated?

YES—Go to step 5.

NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at PCM and engine mount control unit. ■

5. Turn the ignition switch OFF.
6. Check for poor connections at PCM connector A (44P), the engine mount control unit 20P connector, and C204.

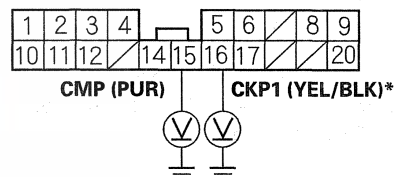
Are the connections OK?

YES—Go to step 7.

NO—Repair the poor connections, then go to step 19.

7. Turn the ignition switch OFF.
8. Disconnect the CMP sensor 3P connector.
9. Disconnect the CKP sensor 6P connector (see page 11-228).
10. Disconnect the engine mount control unit 20P connector.
11. Turn the ignition switch ON (II).
12. Measure voltage between engine mount control unit 20P connector terminal No. 15 (No. 16)* and body ground.

ENGINE MOUNT CONTROL UNIT 20P CONNECTOR



Wire side of female terminals

Is there about 5 V?

YES—Replace the engine mount control unit (see page 11-347), then go to step 19.

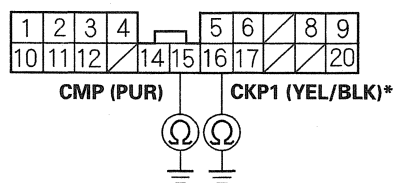
NO—Go to step 13.



13. Turn the ignition switch OFF.

14. Check for continuity between engine mount control unit 20P connector terminal No. 15 (No. 16)* and body ground.

ENGINE MOUNT CONTROL UNIT 20P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair short in the wire between the PCM (A27 (A26)*) and engine mount control unit (No. 15 (No. 16)*), then go to step 19.

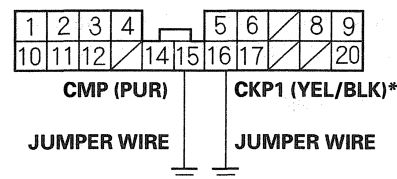
NO—Go to step 15.

15. Jump the SCS line with the HDS.

16. Disconnect PCM connector A (44P).

17. Connect engine mount control unit 20P connector terminal No. 15 (No. 16)* to body ground with the jumper wire.

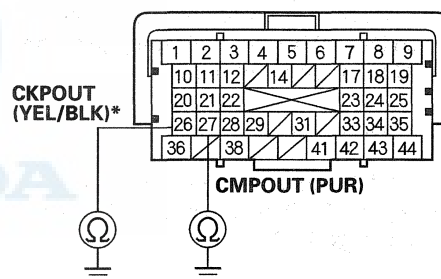
ENGINE MOUNT CONTROL UNIT 20P CONNECTOR



Wire side of female terminals

18. Check for continuity between PCM connector terminal A27 (A26)* and body ground.

PCM CONNECTOR A (44P)



Terminal side of female terminals

*: CANL Line

Is there continuity?

YES—Go to step 25.

NO—Repair open in the wire between the PCM (A27 (A26)*) and engine mount control unit (No. 15 (No. 16)*), then go to step 19.

(cont'd)

Active Control Engine Mount (ACM) System

DTC Troubleshooting (cont'd)

19. Reconnect all connectors.
20. Turn the ignition switch ON (II).
21. Reset the PCM with the HDS.
22. Do the PCM idle learn procedure (see page 11-359).
23. Test-drive the vehicle for 20 minutes in the range of these recorded freeze data parameters.

- ENGINE SPEED
- VSS

24. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P15B1 indicated?

YES—Check for poor connections or loose terminals at the PCM and the engine mount control unit, then go to step 1.

NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

25. Reconnect all connectors.
26. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).
27. Test-drive the vehicle for 20 minutes in the range of the recorded freeze data parameter.

- ENGINE SPEED
- VSS

28. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P15B1 indicated?

YES—Check for poor connections or loose terminals at the PCM and engine mount control unit. If the PCM was updated, substitute a known-good PCM (see page 11-8), then go to step 27. If the PCM was substituted, go to step 1.

NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-230). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■



DTC P16C4: Engine Mount Actuator Control Power Circuit Stuck OFF

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch ON (II).
2. Clear the DTCs with the HDS.
3. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P16C4 indicated?

YES—Go to step 4.

NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the engine mount control unit and the active control engine mount (ACM) control relay. ■

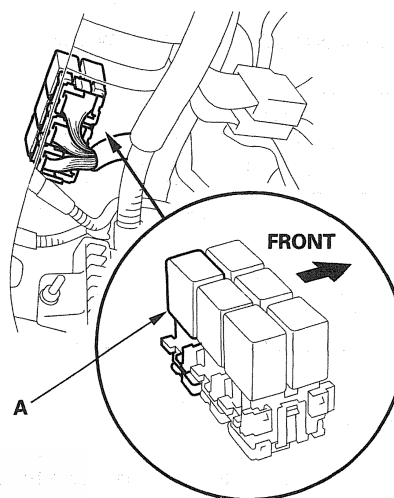
4. Turn the ignition switch OFF.
5. Inspect the No. 5 ACM (10 A) fuse in the auxiliary under-hood fuse box.

Is the fuse OK?

YES—Go to step 9.

NO—Go to step 6.

6. Remove the driver's dashboard lower cover (see page 20-90), then remove the active control engine mount (ACM) control relay (A).



7. Disconnect the engine mount control unit 20P connector.

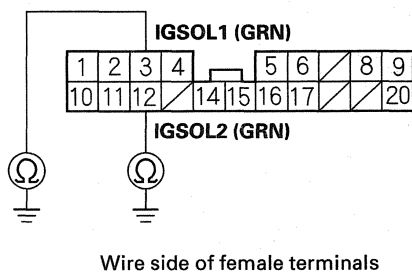
(cont'd)

Active Control Engine Mount (ACM) System

DTC Troubleshooting (cont'd)

8. Check for continuity between body ground and engine mount control unit 20P connector terminals No. 3 and No. 12 individually.

ENGINE MOUNT CONTROL UNIT 20P CONNECTOR

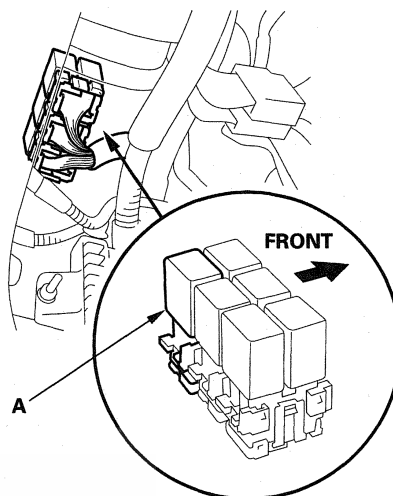


Is there continuity?

YES—Repair short in the wire between the engine mount control unit (No. 3, No. 12) and active control engine mount (ACM) control relay. Also replace the No. 5 ACM (10 A) fuse, then go to step 20.

NO—Repair short in the wire between active control engine mount (ACM) control relay and the No. 5 ACM (10 A) fuse. Also replace the No. 5 ACM (10 A) fuse, then go to step 20.

9. Remove the driver's dashboard lower cover (see page 20-90), then remove the active control engine mount (ACM) control relay (A).



10. Test the active control engine mount (ACM) control relay (see page 22-82).

Is the active control engine mount (ACM) control relay OK?

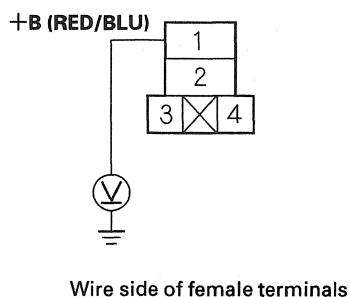
YES—Go to step 11.

NO—Replace the active control engine mount (ACM) control relay, then go to step 20.



11. Measure voltage between active control engine mount (ACM) control relay 4P connector terminal No. 1 and body ground.

**ACTIVE CONTROL ENGINE MOUNT (ACM)
CONTROL RELAY 4P CONNECTOR**



Is there battery voltage?

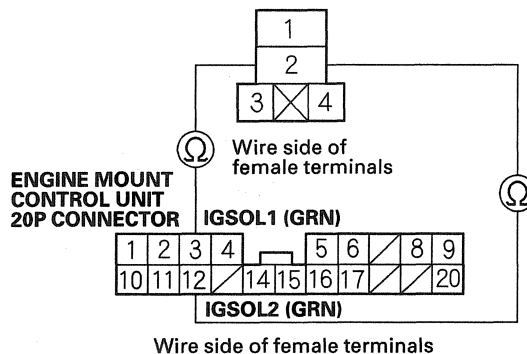
YES—Go to step 12.

NO—Repair open in the wire between the active control engine mount (ACM) control relay and the No. 5 ACM (10 A) fuse, then go to step 20.

12. Disconnect the engine mount control unit 20P connector.

13. Check for continuity between active control engine mount (ACM) control relay 4P connector terminal No. 2 and engine mount control unit 20P connector terminals No. 3 and No. 12 individually.

**ACTIVE CONTROL ENGINE MOUNT (ACM)
CONTROL RELAY 4P CONNECTOR**



Is there continuity?

YES—Go to step 14.

NO—Repair open in the wire between the engine mount control unit (No. 3 (No. 12)) and active control engine mount (ACM) control relay, then go to step 20.

14. Turn the ignition switch ON (II).

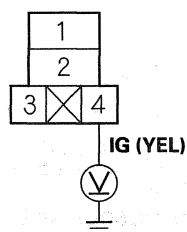
(cont'd)

Active Control Engine Mount (ACM) System

DTC Troubleshooting (cont'd)

15. Measure voltage between active control engine mount (ACM) control relay 4P connector terminal No. 4 and body ground.

**ACTIVE CONTROL ENGINE MOUNT (ACM)
CONTROL RELAY 4P CONNECTOR**



Wire side of female terminals

Is there battery voltage?

YES—Go to step 18.

NO—Go to step 16.

16. Turn the ignition switch OFF.
17. Inspect the No. 9 BACK UP LIGHT, INSTRUMENT LIGHT (10 A) fuse in the driver's under-dash fuse/relay box.

Is the fuse OK?

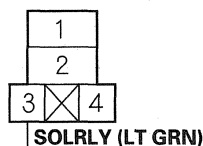
YES—Repair open in the wire between the active control engine mount (ACM) control relay and the No. 9 BACK UP LIGHT, INSTRUMENT LIGHT (10 A) fuse, then go to step 20.

NO—Repair short in the wire between active control engine mount (ACM) control relay and the No. 9 BACK UP LIGHT, INSTRUMENT LIGHT (10 A) fuse. Also replace the No. 9 BACK UP LIGHT, INSTRUMENT LIGHT (10 A) fuse, then go to step 20.

18. Turn the ignition switch OFF.

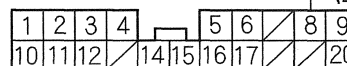
19. Check for continuity between engine mount control unit 20P connector terminal No. 8 and active control engine mount (ACM) control relay 4P connector terminal No. 3.

**ACTIVE CONTROL ENGINE MOUNT (ACM)
CONTROL RELAY 4P CONNECTOR**



Wire side of female terminals

**ENGINE MOUNT CONTROL
UNIT 20P CONNECTOR**



Wire side of female terminals

Is there continuity?

YES—Replace the engine mount control unit (see page 11-347), then go to step 20.

NO—Repair open in the wire between the engine mount control unit (No. 8) and the active control engine mount (ACM) control relay, then go to step 20.

20. Reconnect all connectors.

21. Turn the ignition switch ON (II).

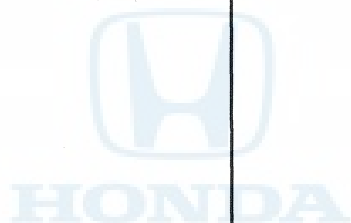


22. Reset the PCM with the HDS.
23. Do the PCM idle learn procedure (see page 11-359).
24. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P16C4 indicated?

YES—Check for poor connections or loose terminals at the engine mount control unit and the active control engine mount (ACM) control relay, then go to step 1.

NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■



Active Control Engine Mount (ACM) System

DTC Troubleshooting (cont'd)

DTC P16C5: Engine Mount Actuator Control Power Circuit Stuck ON

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

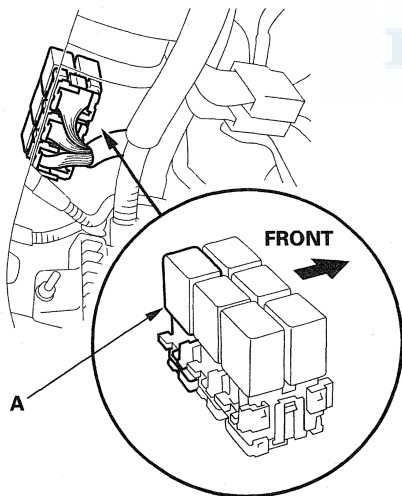
1. Turn the ignition switch ON (II).
2. Check the ACM BATTERY VOLTAGE and ACM RELAY in the DATA LIST with the HDS.

Does the ACM BATTERY VOLTAGE indicate battery voltage when the ACM RELAY indicates OFF?

YES—Go to step 3.

NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the engine mount control unit and the active control engine mount (ACM) control relay. ■

3. Remove the driver's dashboard lower cover (see page 20-90), then remove the active control engine mount (ACM) control relay (A).



4. Test the active control engine mount (ACM) control relay (see page 22-82).

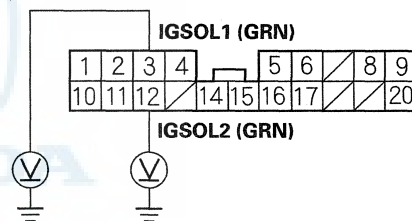
Is the active control engine mount (ACM) control relay OK?

YES—Go to step 5.

NO—Replace the active control engine mount (ACM) control relay, then go to step 10.

5. Turn the ignition switch OFF.
6. Disconnect the engine mount control unit 20P connector.
7. Measure voltage between body ground and engine mount control unit 20P connector terminals No. 3 and No. 12 individually.

ENGINE MOUNT CONTROL UNIT 20P CONNECTOR



Wire side of female terminals

Is there battery voltage?

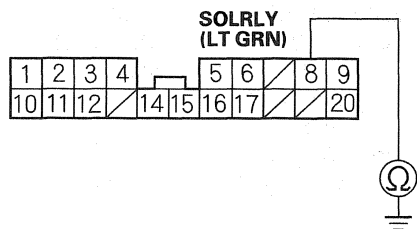
YES—Repair short to power in the wire between the engine mount control unit (No. 3/No. 12) and the active control engine mount (ACM) control relay, then go to step 9.

NO—Go to step 8.



8. Check for continuity between engine mount control unit 20P connector terminal No. 8 and body ground.

ENGINE MOUNT CONTROL UNIT 20P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair short in the wire between the engine mount control unit (No. 8) and the active control engine mount (ACM) control relay, then go to step 9.

NO—Replace the engine mount control unit (see page 11-347), then go to step 9.

9. Reconnect all connectors.

10. Turn the ignition switch ON (II).

11. Reset the PCM with the HDS.

12. Do the PCM idle learn procedure (see page 11-359).

13. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P16C5 indicated?

YES—Check for poor connections or loose terminals at the engine mount control unit and the active control engine mount (ACM) control relay, then go to step 1.

NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

Active Control Engine Mount (ACM) System

DTC Troubleshooting (cont'd)

DTC P16C6: Engine Mount Actuator High Voltage During Function Test

NOTE:

- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- If DTC P0A14, P0A16, P0AB6, P0AB8, P16C7, or P16C8 are stored at the same time as DTC P16C6, troubleshoot those DTCs first, then recheck for P16C6.
- Information marked with an asterisk (') applies to the rear active control engine mount (ACM) actuator.

1. Turn the ignition switch ON (II).
2. Clear the DTCs with the HDS.
3. Do the ACM ACTIVATION in the INSPECTION MENU of the ACM with the HDS.
4. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P16C6 indicated?

YES—Go to step 5.

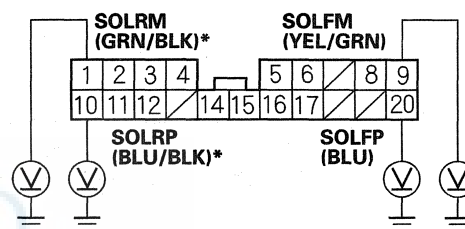
NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the engine mount control unit and the active control engine mount (ACM) actuator. ■

5. Turn the ignition switch OFF.
6. Disconnect both active control engine mount (ACM) actuator 2P connectors.
7. Disconnect the engine mount control unit 20P connector.
8. Turn the ignition switch ON (II).

9. Measure voltage between body ground and the appropriate engine mount control unit connector terminal (see table).

ACTIVE CONTROL ENGINE MOUNT (ACM) ACTUATOR TERMINAL	ENGINE MOUNT CONTROL UNIT TERMINAL	WIRE COLOR
Rear side No. 1	No. 1	GRN/BLK
Rear side No. 2	No. 10	BLU/BLK
Front side No. 1	No. 9	YEL/GRN
Front side No. 2	No. 20	BLU

ENGINE MOUNT CONTROL UNIT 20P CONNECTOR



Wire side of female terminals

Is there battery voltage?

YES—Repair short to power in the wire between the engine mount control unit and the active control engine mount (ACM) actuator, then go to step 13.

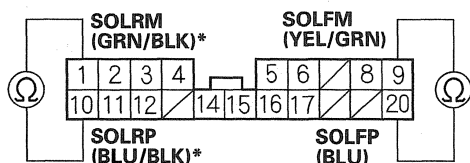
NO—Go to step 10.



10. Turn the ignition switch OFF.

11. Check for continuity between engine mount control unit 20P connector terminals No. 9 (No. 1)* and No. 20 (No. 10)*.

ENGINE MOUNT CONTROL UNIT 20P CONNECTOR



Wire side of female terminals

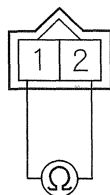
Is there continuity?

YES—Repair short in the wire between the engine mount control unit No. 9 and No. 20 terminals (No. 1 and No. 10 terminals)*, then go to step 14.

NO—Go to step 12.

12. At the actuator side, measure resistance between active control engine mount (ACM) actuator 2P connector terminals No. 1 and No. 2.

ACTIVE CONTROL ENGINE MOUNT (ACM) ACTUATOR 2P CONNECTOR



Terminal side of male terminals

Is there about 0.75—1.15 Ω?

YES—Replace the engine mount control unit (see page 11-347), then go to step 14.

NO—Replace the faulty engine mount; front engine mount (see page 5-27), rear engine mount (see page 5-27)*.

13. Turn the ignition switch OFF.

14. Reconnect all connectors.

15. Turn the ignition switch ON (II).

16. Reset the PCM with the HDS.

17. Do the PCM idle learn procedure (see page 11-359).

18. Do the ACM ACTIVATION with VTEC in the INSPECTION MENU with the HDS.

19. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P16C6 indicated?

YES—Check for poor connections or loose terminals at the engine mount control unit and the active control engine mount (ACM) actuator, then go to step 1.

NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

Active Control Engine Mount (ACM) System

DTC Troubleshooting (cont'd)

DTC P16C7: Rear Engine Mount Actuator Control Circuit High Current

DTC P16C8: Front Engine Mount Actuator Control Circuit High Current

NOTE:

- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- Information marked with an asterisk (*) applies to the rear active control engine mount (ACM) actuator.

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Wait 10 seconds.
4. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P16C7 and/or P16C8 indicated?*

YES—Go to step 5.

NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the engine mount control unit and the active control engine mount (ACM) actuator. ■

5. Turn the ignition switch OFF.
6. Replace the engine mount control unit (see page 11-347).
7. Turn the ignition switch ON (II).

8. Reset the PCM with the HDS.

9. Do the PCM idle learn procedure (see page 11-359).

10. Wait 10 seconds.

11. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P16C7 and/or P16C8 indicated?*

YES—Check for poor connections or loose terminals at the engine mount control unit and the active control engine mount (ACM) actuator, then go to step 1.

NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■



DTC P16C9: Engine Mount Control Unit Internal Circuit Malfunction

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Wait 10 seconds.
4. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P16C9 indicated?

YES—Go to step 5.

NO—Intermittent failure, the system is OK at this time. ■

5. Turn the ignition switch OFF.
6. Replace the engine mount control unit (see page 11-347).
7. Turn the ignition switch ON (II).
8. Reset the PCM with the HDS.
9. Do the PCM idle learn procedure (see page 11-359).
10. Wait 10 seconds.
11. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P16C9 indicated?

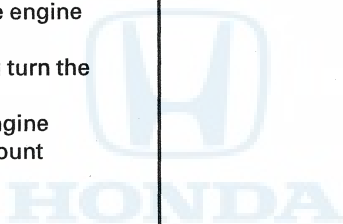
YES—Check for poor connections or loose terminals at the engine mount control unit, then go to step 1.

NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

Active Control Engine Mount (ACM) System

Engine Mount Vibration and Noise Inspection

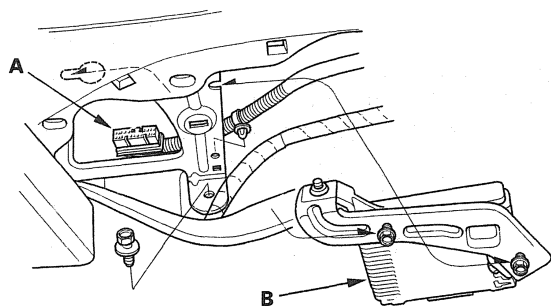
1. Turn the ignition switch ON (II).
2. Check for Temporary DTCs or DTCs with the HDS.
 - If there are any Temporary DTCs or DTCs indicated, go to the indicated DTC's troubleshooting.
 - If there are no Temporary DTCs or DTCs indicated, go to step 4.
3. Clear the DTC with the HDS.
4. Open the engine hood.
5. Select ACM in the INSPECTION MENU, then select Fr ACM and Rr ACM with the HDS.
6. Feel the engine for vibration while you turn the engine mounts on and off in Fr ACM and Rr ACM with the HDS.
 - If the engine moves when you turn the engine mounts on and off, go to step 7.
 - If the engine does not move when you turn the engine mounts on and off, replace the corresponding engine mount; front engine mount (see page 5-27), rear engine mount (see page 5-27).
7. Check for any of these conditions that may cause increased vibration and noise:
 - Engine misfire
 - Deformed radiator mounting parts (brackets upper cushions, or lower cushions)
 - Loose bumper beam
 - Looseness, deformation, or tears in the rubber portion of the engine or transmission mounts
 - Loose, damaged, or interference from exhaust system parts
 - Collision damage to the frame or undercarriage
 - Abnormal wear of tires
 - Loose or damaged suspension parts
 - Wheel alignment out of specification





Engine Mount Control Unit Replacement

1. Remove the passenger's console side trim (see page 20-88).
2. Disconnect the engine mount control unit 20P connector (A).

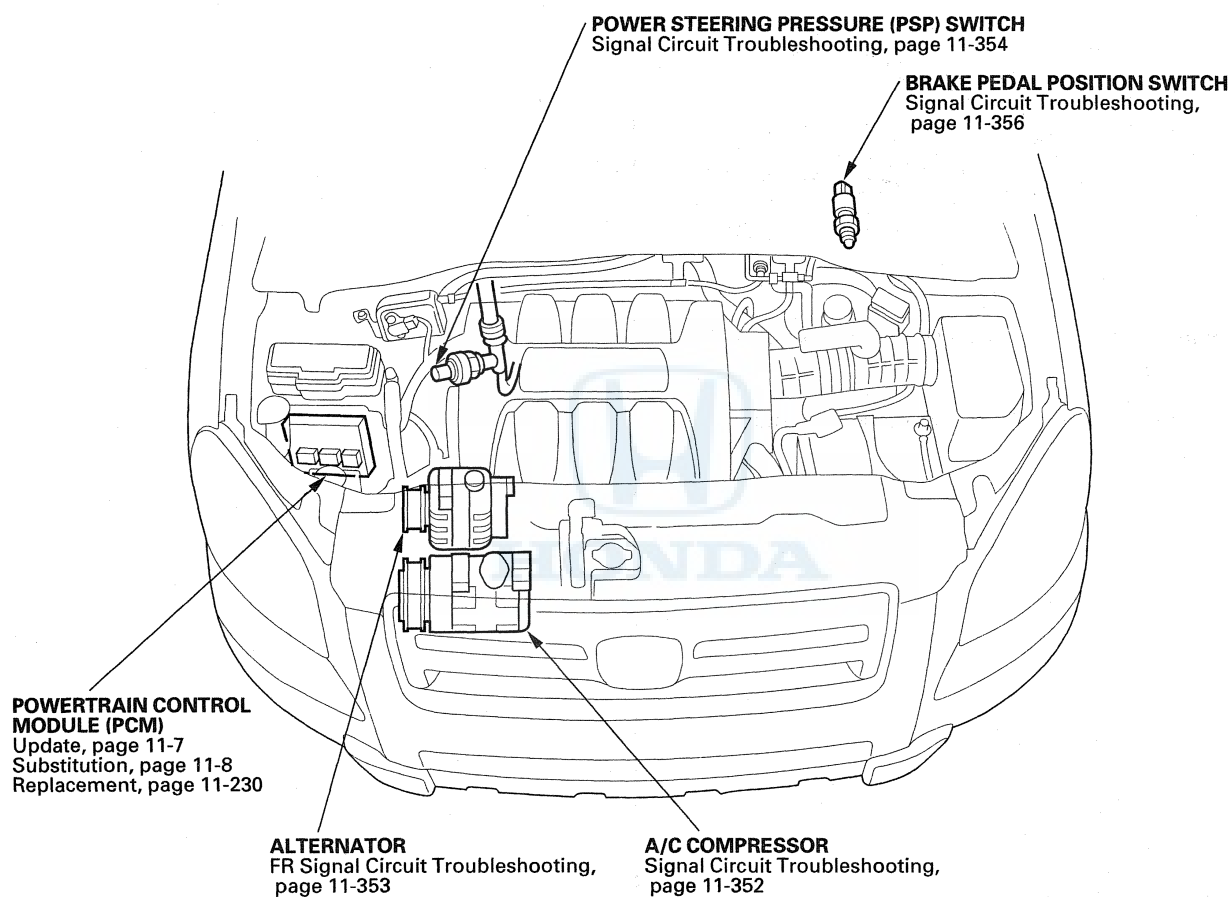


3. Remove the bolts and the engine mount control unit (B).
4. Install the parts in the reverse order of removal.



Idle Control System

Component Location Index





DTC Troubleshooting

DTC P0506: Idle Control System RPM Lower Than Expected

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.
4. Check for these conditions in the DATA LIST with the HDS:
 - ECT SENSOR 1 above 158 °F (70 °C)
 - IAT SENSOR above 32 °F (0 °C)
 - Vehicle speed is 0 mph (0 km/h)
 - ST FUEL TRIM between 0.73 and 1.47
 - FSS is CLOSED
5. Monitor the OBD STATUS for DTC P0506 in the DTCs MENU with the HDS.

Does the screen indicate FAILED?

YES—Go to step 6.

NO—If the screen indicates PASSED, go to step 15. If the screen indicates EXECUTING, keep idling until a result comes on. If the screen indicates OUT OF CONDITION, go to step 4 and recheck.
6. Remove the intake air duct from the throttle body.

7. Check for dirt, carbon, or damage in the throttle bore.

Is there dirt, carbon, or damage in the throttle bore?

YES—If there is dirt or carbon, clean the throttle body (see page 11-407). Also check for damage to the air cleaner element (see page 11-402), then go to step 9. If there is damage in the throttle bore, go to step 8.

NO—Check the A/C system or power steering system, then go to step 17.

8. Replace the throttle body (see page 11-408).
9. Reset the PCM with the HDS.
10. Do the PCM idle learn procedure (see page 11-359).
11. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.
12. Check for these conditions in the DATA LIST with the HDS:
 - ECT SENSOR 1 above 158 °F (70 °C)
 - IAT SENSOR above 32 °F (0 °C)
 - Vehicle speed is 0 mph (0 km/h)
 - ST FUEL TRIM between 0.73 and 1.47
 - FSS is CLOSED

(cont'd)

Idle Control System

DTC Troubleshooting (cont'd)

13. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0506 indicated?

YES—Check the A/C system and/or power steering system, then go to step 1.

NO—Go to step 14.

14. Monitor the OBD STATUS for DTC P0506 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 13, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check the A/C system and/or power steering system, then go to step 1. If the screen indicates EXECUTING, keep idling until a result comes on. If the screen indicates OUT OF CONDITION, go to step 12.

15. Remove the intake air duct from the throttle body.

16. Check for dirt, carbon, or damage in the throttle bore.

Is there dirt, carbon, or damage in the throttle bore?

YES—If there is dirt or carbon, clean the throttle body (see page 11-407). Also check for damage to the air cleaner element (see page 11-402), then go to step 9. If there is damage in the throttle bore, go to step 8.

NO—Go to step 17.

17. Recheck with different load conditions (turn on the headlights, blower motor, or A/C; change the gear position, etc.).

18. Monitor the OBD STATUS for DTC P0506 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Intermittent failure, the system is OK at this time. ■

NO—If the screen indicates FAILED, check the A/C system and/or power steering system, then go to step 1. If the screen indicates EXECUTING, keep idling until a result comes on. If the screen indicates OUT OF CONDITION, go to step 12.



DTC P0507: Idle Control System RPM Higher Than Expected

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.

4. Monitor the OBD STATUS for DTC P0507 in the DTCs MENU with the HDS.

Does the screen indicate FAILED?

YES—Go to step 5.

NO—If the screen indicates PASSED, intermittent failure, the system is OK at this time. If the screen indicates EXECUTING, keep idling until a result comes on. If the screen indicates OUT OF CONDITION, recheck with different load conditions (electrical, A/C, gear position, etc.), then go to step 3.

5. Check for vacuum leaks at these parts:

- PCV valve
- PCV hose
- EVAP canister purge valve
- Throttle body
- Intake manifold
- Brake booster hose

Are there any leaks?

YES—Repair or replace the leaking part(s), then go to step 6.

NO—Go to step 6.

6. Turn the ignition switch ON (II).
7. Reset the PCM with the HDS.
8. Do the PCM idle learn procedure (see page 11-359).
9. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.

10. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0507 indicated?

YES—Check for poor connections or loose terminals at the throttle body and the PCM, then go to step 1.

NO—Go to step 11.

11. Monitor the OBD STATUS for DTC P0507 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 10, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the throttle body and the PCM, then go to step 1. If the screen indicates EXECUTING, keep idling until a result comes on. If the screen indicates OUT OF CONDITION, recheck with different load conditions (turn on the headlights, blower motor, or A/C; change the gear position, etc.), then go to step 9.

Idle Control System

A/C Signal Circuit Troubleshooting

1. Start the engine, and let it idle.
2. Turn the blower switch on.
3. Turn the A/C switch on.
4. Check the A/C CLUTCH in the DATA LIST with the HDS.

Does it indicate ON?

YES—Go to step 5.

NO—Do the A/C pressure switch circuit troubleshooting (see page 21-40).

5. Check the A/C system.

Does the A/C system operate?

YES—The air conditioning system circuit is OK. ■

NO—Go to step 6.

6. Turn the ignition switch OFF.
7. Turn the ignition switch ON (II).
8. Activate the A/C CLUTCH in the INSPECTION MENU with the HDS.

Is there a clicking noise from the A/C compressor clutch?

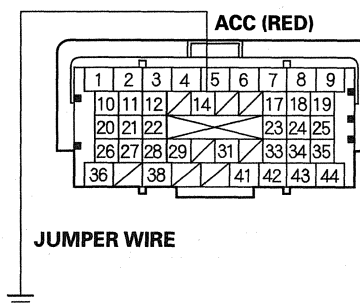
YES—Do the A/C system test (see page 21-71).

NO—Go to step 9.

9. Turn the ignition switch OFF.
10. Jump the SCS line with the HDS.
11. Disconnect PCM connector A (44P).
12. Turn the ignition switch ON (II).

13. Momentarily connect PCM connector terminal A14 to body ground with a jumper wire several times.

PCM CONNECTOR A (44P)



Terminal side of female terminals

Is there a clicking noise from the A/C compressor clutch?

YES—Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM (see page 11-230). ■

NO—Check for poor connections or loose terminals at the A/C clutch relay and the PCM. If the connections are OK, check the A/C clutch relay (see page 22-82), repair open in the wire between the PCM (A14), the A/C clutch relay, and the other A/C systems.



Alternator FR Signal Circuit Troubleshooting

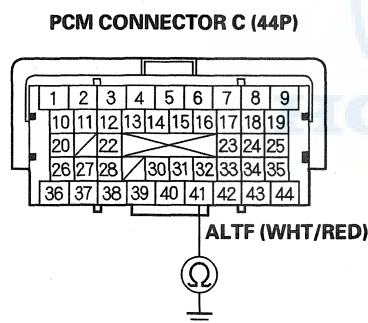
1. Start the engine, and let it idle.
2. Monitor the ALTERNATOR in the DATA LIST with the HDS.
3. Check if the indicated percentage varies when the headlight switch is turned on.

Does the percentage vary?

YES—The alternator signal circuit is OK. ■

NO—Go to step 4.

4. Turn the headlight switch and ignition switch OFF.
5. Jump the SCS line with the HDS.
6. Disconnect the alternator 4P connector.
7. Disconnect PCM connector C (44P).
8. Check for continuity between body ground and PCM connector terminal C41.



Is there continuity?

YES—Repair short in the wire between the PCM (C41) and the alternator. ■

NO—Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM (see page 11-230). ■

Idle Control System

PSP Switch Signal Circuit Troubleshooting

1. Start the engine, and let it idle.
2. Align the steering wheel straight ahead.
3. Check the PSP SWITCH in the DATA LIST with the HDS.

Does it indicate ON?

YES—Go to step 4.

NO—Go to step 14.

4. Turn the steering wheel to the full lock position.
5. Check the PSP SWITCH in the DATA LIST with the HDS.

Does it change to OFF?

YES—The PSP switch signal circuit is OK. ■

NO—Go to step 6.

6. Turn the ignition switch OFF.
7. Disconnect the PSP switch 2P connector.
8. Start the engine.
9. Check the PSP SWITCH in the DATA LIST with the HDS.

Does it change to OFF?

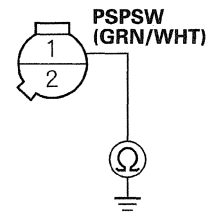
YES—Replace the PSP switch. ■

NO—Go to step 10.

10. Turn the ignition switch OFF.
11. Jump the SCS line with the HDS.
12. Disconnect PCM connector A (44P).

13. Check for continuity between PSP switch 2P connector terminal No. 1 and body ground.

PSP SWITCH 2P CONNECTOR



Wire side of female terminals

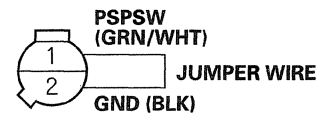
Is there continuity?

YES—Repair short in the wire between the PCM (A38) and the PSP switch. ■

NO—Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM (see page 11-230). ■

14. Turn the ignition switch OFF.
15. Disconnect the PSP switch 2P connector.
16. Connect PSP switch 2P connector terminals No. 1 and No. 2 with a jumper wire, then start the engine.

PSP SWITCH 2P CONNECTOR



Wire side of female terminals



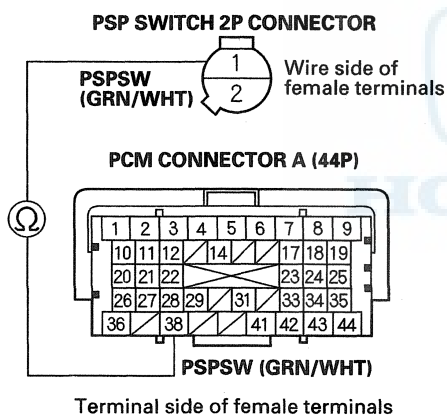
17. Check the PSP SWITCH in the DATA LIST with the HDS.

Does it change to ON?

YES—Replace the PSP switch. ■

NO—Go to step 18.

18. Turn the ignition switch OFF.
19. Remove the jumper wire from the PSP switch 2P connector.
20. Jump the SCS line with the HDS.
21. Disconnect PCM connector A (44P).
22. Check for continuity between PCM connector terminal A38 and PSP switch 2P connector terminal No. 1.



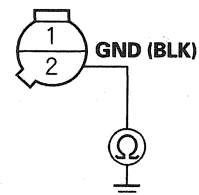
Is there continuity?

YES—Go to step 23.

NO—Repair open in the wire between the PSP switch and the PCM (A38). ■

23. Check for continuity between PSP switch 2P connector terminal No. 2 and body ground.

PSP SWITCH 2P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM (see page 11-230). ■

NO—Repair open in the wire between the PSP switch and G201. ■

Idle Control System

Brake Pedal Position Switch Signal Circuit Troubleshooting

1. Turn the ignition switch ON (II).
2. Check the BRAKE SWITCH in the DATA LIST with the HDS.

Does it indicate OFF?

YES—Go to step 3.

NO—Inspect the brake pedal position switch (see page 19-5). ■

3. Press the brake pedal, and check the BRAKE SWITCH in the DATA LIST with the HDS.

Does it change to ON?

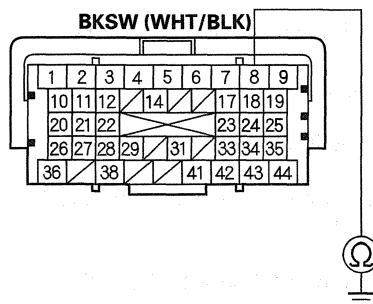
YES—The brake pedal position switch signal circuit (BKSX line) is OK. ■

NO—Go to step 4.

4. Turn the ignition switch OFF.
5. Jump the SCS line with the HDS.
6. Disconnect the brake pedal position switch 4P connector.
7. Disconnect PCM connector A (44P).

8. Check for continuity between PCM connector terminal A8 and body ground.

PCM CONNECTOR A (44P)



Terminal side of female terminals

Is there continuity?

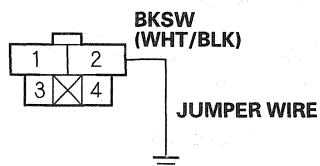
YES—Repair short in the wire between the PCM (A8) and the No. 47, STOP (20 A) fuse. Also replace the No. 47, STOP (20 A) fuse. ■

NO—Go to step 9.



9. Connect brake pedal position switch 4P connector terminal No. 2 to body ground with a jumper wire.

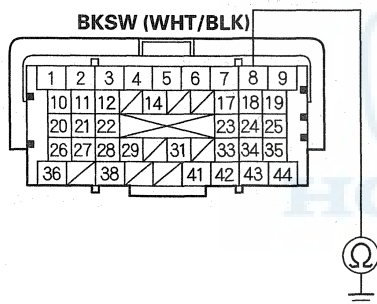
**BRAKE PEDAL POSITION SWITCH
4P CONNECTOR**



Wire side of female terminals

10. Check for continuity between PCM connector terminal A8 and body ground.

PCM CONNECTOR A (44P)



Terminal side of female terminals

Is there continuity?

YES—Repair open in the wire between the brake pedal position switch and the No. 47, STOP (20 A) fuse. Inspect the brake pedal position switch (see page 19-5). ■

NO—Repair open in the wire between the PCM (A8) and the brake pedal position switch. ■

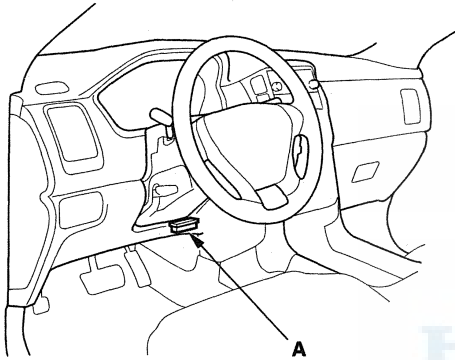
Idle Control System

Idle Speed Inspection

NOTE:

- Before checking the idle speed, check these items:
 - The malfunction indicator lamp (MIL) has not been reported on, and there are no DTCs.
 - Ignition timing
 - Spark plugs
 - Air cleaner
 - PCV system
- Apply the parking brake.

1. Disconnect the evaporative emission (EVAP) canister purge valve connector.
2. Connect the HDS to the data link connector (DLC) (A) located under the driver's side of the dashboard.



3. Turn the ignition switch ON (II).
4. Make sure the HDS communicates with the PCM. If it doesn't, go to the DLC circuit troubleshooting (see page 11-218).

5. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.
6. Check the idle speed without load conditions: headlights, blower fan, radiator fan, and air conditioner off.

Idle speed should be: 730 (650) * \pm 50 rpm (in Park or neutral)

*** : J35Z1 engine**

7. Let the engine idle for 1 minute with high electric load (A/C switch on, temperature set to max cool, blower fan on High, rear window defogger on, and headlights on high beam).

Idle speed should be: 730 (700) * \pm 50 rpm (in Park or neutral)

*** : J35Z1 engine**

NOTE: If the idle speed is not within specification, do the PCM idle learn procedure (see page 11-359). If the idle speed is still not within specification, go to symptom troubleshooting.

8. Reconnect the EVAP canister purge valve connector.



PCM Idle Learn Procedure

The idle learn procedure must be done so the PCM can learn the engine idle characteristics.

Do the idle learn procedure whenever you do any of these actions:

- Replace PCM.
- Reset PCM.
- Update PCM.
- Clean or replace the throttle body.

NOTE: Erasing DTCs with the HDS does not require you to do the idle learn procedure.

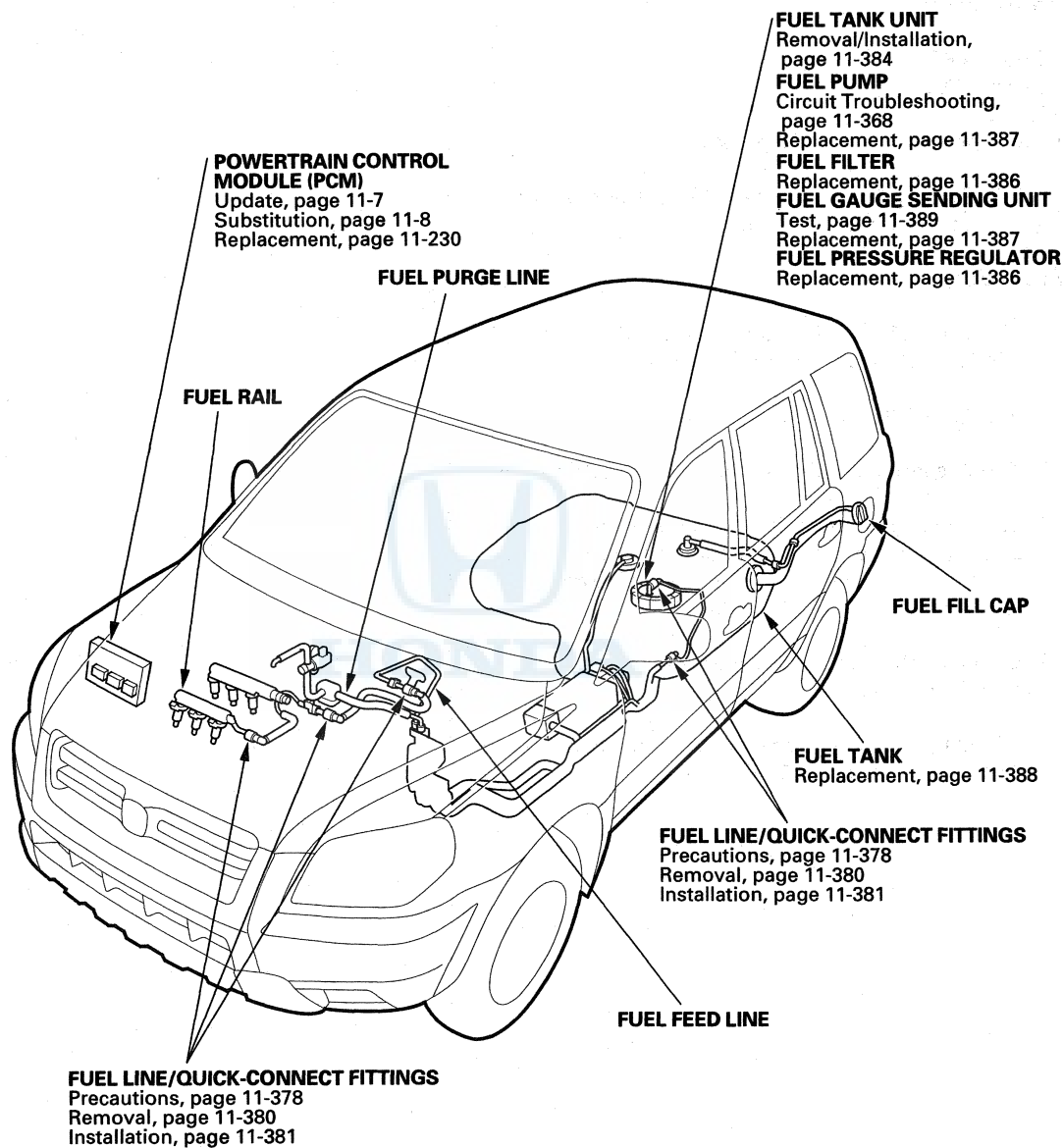
Procedure

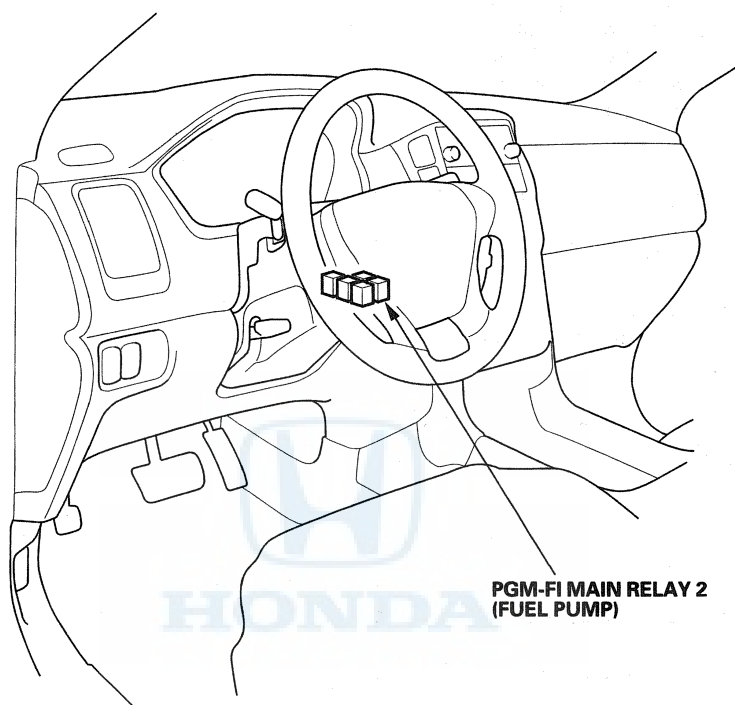
1. Make sure all electrical items (A/C, audio, rear window defogger, lights, etc.) are off.
2. Reset the PCM with the HDS.
3. Turn the ignition switch ON (II), and wait 2 seconds.
4. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, or until the engine coolant temperature reaches 194 °F (90 °C).
5. Let the engine idle for about 5 minutes with the throttle fully closed.

NOTE: If the radiator fan comes on, do not include its running time in the 5 minutes.

Fuel Supply System

Component Location Index





**PGM-FI MAIN RELAY 2
(FUEL PUMP)**

Fuel Supply System

DTC Troubleshooting

DTC P0461: Fuel Level Sensor (Fuel Gauge Sending Unit) Circuit Range/Performance Problem

NOTE:

- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- Because it requires 124 miles (200 km) of driving without refueling to complete this diagnosis, DTC P0461 cannot be duplicated during this troubleshooting.

1. Test the fuel gauge sending unit (see page 11-389).

Is the fuel gauge sending unit OK?

YES—Check for poor connections or loose terminals at the fuel gauge sending unit and the gauge control module. ■

NO—Replace the fuel gauge sending unit (see page 11-387), then go to step 2.

2. Turn the ignition switch ON (II).
3. Reset the PCM with the HDS.
4. Do the PCM idle learn procedure (see page 11-359).
5. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0461 indicated?

YES—Check for poor connections or loose terminals at the fuel gauge sending unit and the gauge control module, then go to step 1.

NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■



DTC P0462: Fuel Level Sensor (Fuel Gauge Sending Unit) Circuit Low Voltage

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS, and wait 5 seconds.
3. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0462 indicated?

YES—Go to step 4.

NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the gauge control module and the fuel gauge sending unit. ■

4. Turn the ignition switch OFF.
5. Remove the driver's second row seat (see page 20-115).
6. Remove the access panel from the floor.
7. Disconnect the fuel tank unit 5P connector.
8. Turn the ignition switch ON (II).
9. Clear the DTC with the HDS, and wait 5 seconds.
10. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0463 indicated?

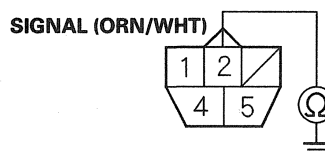
YES—Replace the fuel gauge sending unit (see page 11-387), then go to step 22.

NO—Go to step 11.

11. Turn the ignition switch OFF.
12. Remove the gauge control module (see page 22-102).
13. Disconnect the gauge control module connector B (36P).

14. Check for continuity between fuel tank unit 5P connector terminal No. 2 and body ground.

FUEL TANK UNIT 5P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair short in the wire between the gauge control module (signal line) and the fuel gauge sending unit, then go to step 23.

NO—Go to step 15.

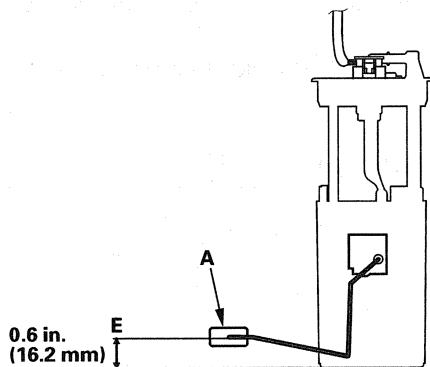
15. Reconnect the gauge control module connector B (36P).
16. Remove the fuel tank unit (see page 11-384).
17. Connect the fuel tank unit 5P connector.
18. Turn the ignition switch ON (II).
19. Clear the DTC with the HDS.

(cont'd)

Fuel Supply System

DTC Troubleshooting (cont'd)

20. Set the float (A) to the E position.



21. Check the fuel gauge.

Does the fuel gauge move to the empty position?

YES—Go to step 29.

NO—Replace the gauge control module (see page 22-102), then go to step 22.

22. Turn the ignition switch OFF.
23. Reconnect all connectors.
24. Install the parts in the reverse order of removal.
25. Turn the ignition switch ON (II).
26. Reset the PCM with the HDS.
27. Do the PCM idle learn procedure (see page 11-359).
28. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0462 indicated?

YES—Check for poor connections or loose terminals at the gauge control module and the fuel gauge sending unit, then go to step 1.

NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

29. Install the parts in the reverse order of removal.
30. Reconnect all connectors.
31. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).
32. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0462 indicated?

YES—Check for poor connections or loose terminals at the gauge control module and the fuel gauge sending unit, then go to step 1. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1.

NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-230). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■



DTC P0463: Fuel Level Sensor (Fuel Gauge Sending Unit) Circuit High Voltage

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS, and wait 5 seconds.
3. Check for Temporary DTCs or DTCs with the HDS.

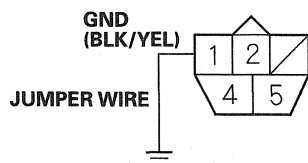
Is DTC P0463 indicated?

YES—Go to step 4.

NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the gauge control module and the fuel gauge sending unit. ■

4. Turn the ignition switch OFF.
5. Remove the driver's second row seat (see page 20-115).
6. Remove the access panel from the floor.
7. Disconnect the fuel tank unit 5P connector.
8. Connect fuel tank unit 5P connector terminal No. 1 to body ground with a jumper wire.

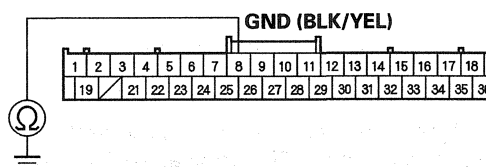
FUEL TANK UNIT 5P CONNECTOR



Wire side of female terminals

9. Remove the gauge control module (see page 22-102).
10. Disconnect gauge control module connector B (36P).
11. Check for continuity between gauge control module connector B (36P) terminal No. 8 and body ground.

GAUGE CONTROL MODULE CONNECTOR B (36P)



Wire side of female terminals

Is there continuity?

YES—Go to step 12.

NO—Repair open in the wire between the gauge control module (GND line) and the fuel gauge sending unit, then go to step 24.

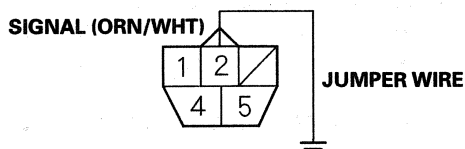
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Fuel Supply System

DTC Troubleshooting (cont'd)

12. Connect fuel tank unit 5P connector terminal No. 2 to body ground with a jumper wire.

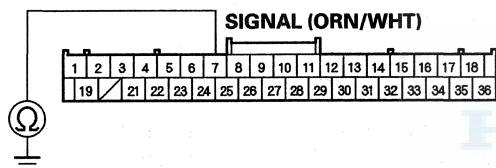
FUEL TANK UNIT 5P CONNECTOR



Wire side of female terminals

13. Check for continuity between gauge control module connector B (36P) terminal No. 7 and body ground.

GAUGE CONTROL MODULE CONNECTOR B (36P)



Wire side of female terminals

Is there continuity?

YES—Go to step 14.

NO—Repair open in the wire between the gauge control module (SIGNAL line) and the fuel gauge sending unit, then go to step 24.

14. Remove the jumper wire from the fuel tank unit 5P connector.

15. Remove the fuel tank unit (see page 11-384).

16. Test the fuel gauge sending unit (see page 11-389).

Is the fuel gauge sending unit OK?

YES—Go to step 17.

NO—Replace the fuel gauge sending unit (see page 11-387), then go to step 23.

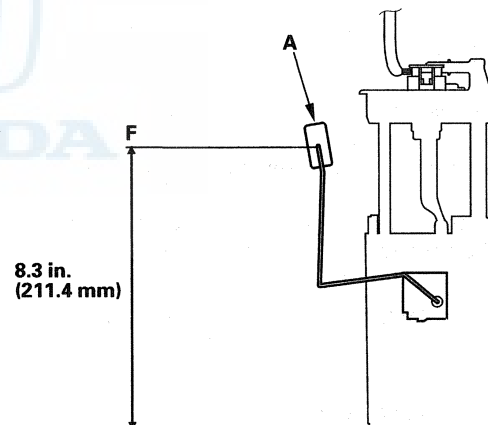
17. Connect the fuel tank unit 5P connector.

18. Reconnect gauge control module connector B (36P).

19. Turn the ignition switch ON (II).

20. Clear the DTC with the HDS.

21. Set the float (A) to the F position.



22. Check the fuel gauge.

Does the gauge move to the full position?

YES—Go to step 30.

NO—Replace the gauge control module (see page 22-102), then go to step 23.



23. Turn the ignition switch OFF.
24. Reconnect all connectors.
25. Install the parts in the reverse order of removal.
26. Turn the ignition switch ON (II).
27. Reset the PCM with the HDS.
28. Do the PCM idle learn procedure (see page 11-359).
29. Check for Temporary DTCs or DTCs with the HDS.

If DTC P0463 indicated?

YES—Check for poor connections or loose terminals at the gauge control module and the fuel gauge sending unit, then go to step 1.

NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

30. Install the parts in the reverse order of removal.
31. Reconnect all connectors.
32. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).
33. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0463 indicated?

YES—Check for poor connections or loose terminals at the gauge control module and the fuel gauge sending unit. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1.

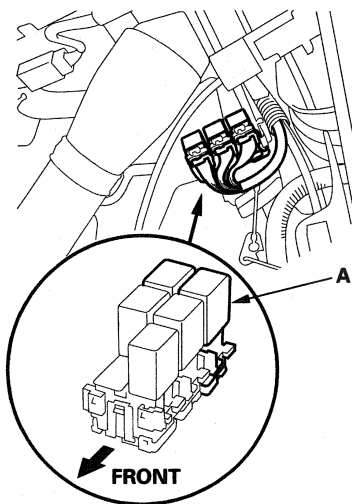
NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-230). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

Fuel Supply System

Fuel Pump Circuit Troubleshooting

If you suspect a problem with the fuel pump, check that the fuel pump actually runs; when it is on, you will hear some noise if you listen to the fuel fill port with the fuel fill cap removed. The fuel pump should run for 2 seconds when the ignition switch is first turned on. If the fuel pump does not make noise, check as follows:

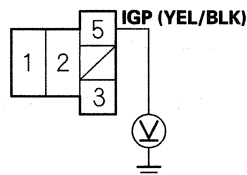
1. Turn the ignition switch OFF.
2. Remove PGM-FI main relay 2 (FUEL PUMP) (A).



3. Turn the ignition switch ON (II).

4. Measure voltage between PGM-FI main relay 2 (FUEL PUMP) 5P connector terminal No. 5 and body ground.

PGM-FI MAIN RELAY 2 (FUEL PUMP)
5P CONNECTOR



Wire side of female terminals

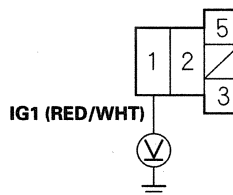
Is there battery voltage?

YES—Go to step 5.

NO—Repair open in the wire between PGM-FI main relay 1 (FI MAIN) and PGM-FI main relay 2 (FUEL PUMP). ■

5. Measure voltage between PGM-FI main relay 2 (FUEL PUMP) 5P connector terminal No. 1 and body ground.

PGM-FI MAIN RELAY 2 (FUEL PUMP)
5P CONNECTOR



Wire side of female terminals

Is there battery voltage?

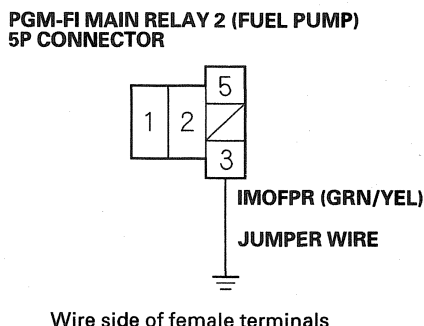
YES—Go to step 6.

NO—

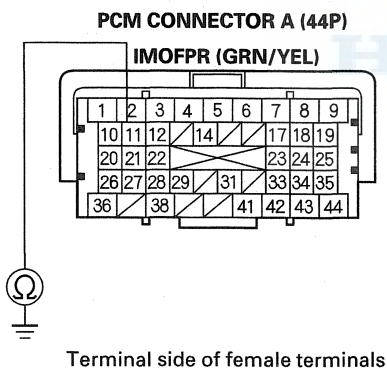
- Check the No. 1 FUEL PUMP (15 A) fuse in the driver's under-dash fuse/relay box. ■
- Check for an open between the driver's under-dash fuse/relay box and PGM-FI main relay 2 (FUEL PUMP). ■
- If needed, replace the driver's under-dash fuse/relay box. ■



6. Turn the ignition switch OFF.
7. Connect PGM-FI main relay 2 (FUEL PUMP) 5P connector terminal No. 3 to body ground with a jumper wire.



8. Jump the SCS line with the HDS.
9. Disconnect PCM connector A (44P).
10. Check for continuity between body ground and PCM connector terminal A11.

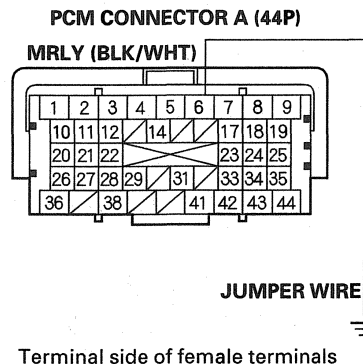


Is there continuity?

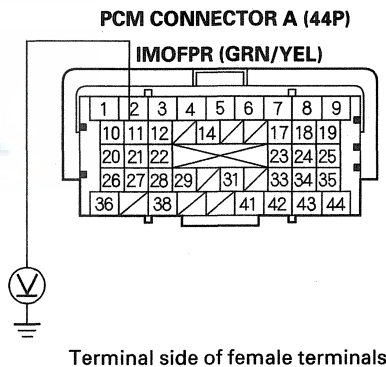
YES—Go to step 11.

NO—Repair open in the wire between PGM-FI main relay 2 (FUEL PUMP) and the PCM (A11). ■

11. Reinstall PGM-FI main relay 2 (FUEL PUMP).
12. Connect PCM connector terminal A6 to body ground with jumper wire.



13. Turn the ignition switch ON (II).
14. Measure voltage between PCM connector terminal A11 and body ground.



Is there battery voltage?

YES—Go to step 15.

NO—Replace PGM-FI main relay 2 (FUEL PUMP). ■

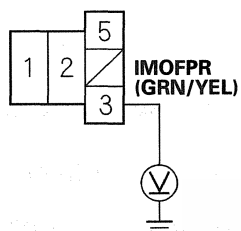
(cont'd)

Fuel Supply System

Fuel Pump Circuit Troubleshooting (cont'd)

15. Turn the ignition switch OFF.
16. Reconnect PCM connector A (44P).
17. Open the SCS line with the HDS.
18. Turn the ignition switch ON (II), then measure voltage between PGM-FI main relay 2 (FUEL PUMP) 5P connector terminal No. 3 and body ground within 2 seconds.

PGM-FI MAIN RELAY 2 (FUEL PUMP)
5P CONNECTOR



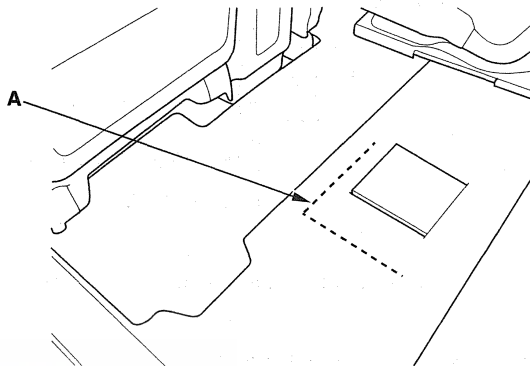
Wire side of female terminals

Is there battery voltage?

YES—Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM (see page 11-230). ■

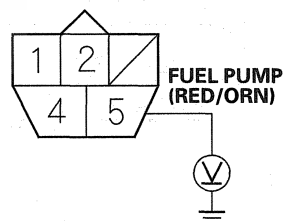
NO—Go to step 19.

19. Turn the ignition switch OFF.
20. Remove the driver's side second row seat (see page 20-115).
21. Cut the carpet at the dotted line (A). Be careful not to cut the wire harness under the carpet.



22. Remove the access panel from the floor.
23. Turn the ignition switch ON (II), then measure voltage between fuel tank unit 5P connector terminal No. 5 and body ground within 2 seconds.

FUEL TANK UNIT 5P CONNECTOR



Wire side of female terminals

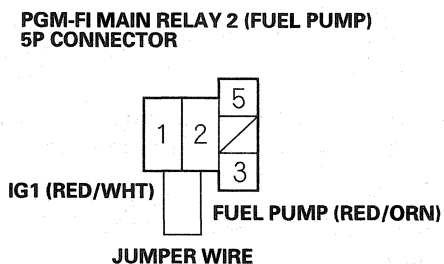
Is there battery voltage?

YES—Go to step 28.

NO—Go to step 24.

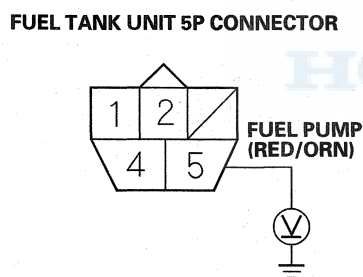


24. Turn the ignition switch OFF.
25. Remove PGM-FI main relay 2 (FUEL PUMP).
26. Connect PGM-FI main relay 2 (FUEL PUMP) 5P connector terminals No. 1 and No. 2 with a jumper wire.



Wire side of female terminals

27. Turn the ignition switch ON (II), and measure voltage between fuel tank unit 5P connector terminal No. 5 and body ground within 2 seconds.



Wire side of female terminals

Is there battery voltage?

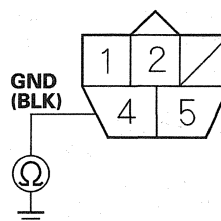
YES—Replace PGM-FI main relay 2 (FUEL PUMP). ■

NO—Repair open in the wire between PGM-FI main relay 2 (FUEL PUMP) and fuel tank unit 5P connector. ■

28. Turn the ignition switch OFF.

29. Check for continuity between fuel tank unit 5P connector terminal No. 4 and body ground.

FUEL TANK UNIT 5P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Replace the fuel pump (see page 11-387). ■

NO—Repair open in the wire between the fuel tank unit 5P connector and G601. ■

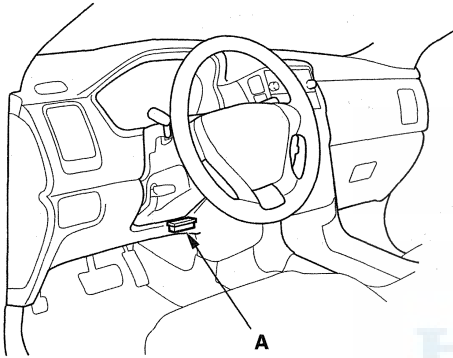
Fuel Supply System

Fuel Pressure Relieving

Before disconnecting fuel lines or hoses, relieve pressure from the system by disabling the fuel pump and then disconnecting the fuel tube/quick connect fitting in the engine compartment.

With the HDS

1. Make sure you have the anti-theft codes for the audio system and the navigation system (if equipped), then write down the audio presets.
2. Turn the ignition switch OFF.
3. Connect the HDS to the data link connector (DLC) (A) located under the driver's side of the dashboard.



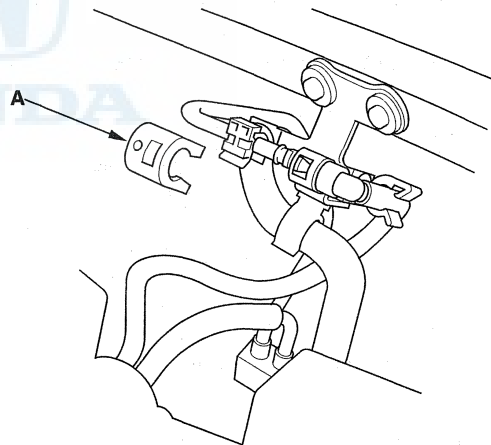
4. Turn the ignition switch ON (II).
5. Make sure the HDS communicates with the PCM. If it doesn't, go to the DLC circuit troubleshooting (see page 11-218).
6. Turn the ignition switch OFF.

7. Remove the fuel fill cap to relieve the pressure in the fuel tank.
8. Turn the ignition switch ON (II).
9. From the INSPECTION MENU of the HDS, select Fuel Pump OFF, then start the engine, and let it idle until it stalls.
10. Turn the ignition switch OFF.

NOTE:

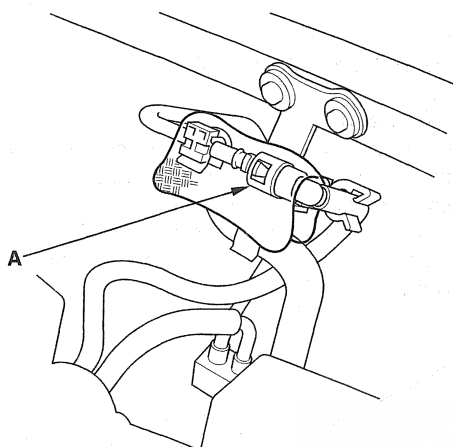
- Do not allow the engine to idle above 1,000 rpm or the PCM will continue to operate the fuel pump.
- A DTC or a Temporary DTC may be set during this procedure. Check for DTCs, and clear them as needed (see page 11-4).

11. Turn the ignition switch OFF.
12. Disconnect the negative cable from the battery.
13. Remove the quick-connect fitting cover (A).





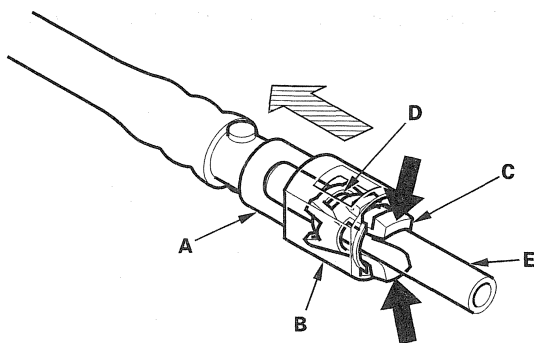
14. Check the fuel quick-connect fitting for dirt, and clean it if needed.
15. Place a rag or shop towel over the quick-connect fitting (A).



16. Disconnect the quick-connect fitting (A): Hold the connector (B) with one hand, and squeeze the retainer tabs (C) with the other hand to release them from the locking tabs (D). Pull the connector off.

NOTE:

- Be careful not to damage the line (E) or other parts.
- Do not use tools.
- If the connector does not move, keep the retainer tabs pressed down, and alternately pull and push the connector until it comes off easily.
- Do not remove the retainer from the line; once removed, the retainer must be replaced with a new one.



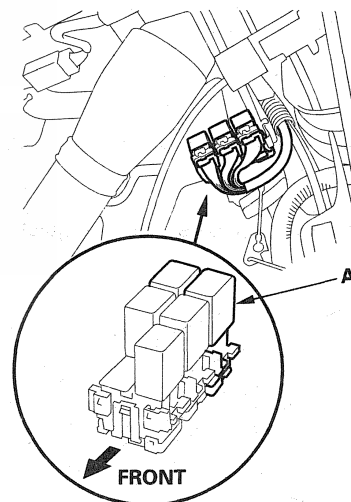
17. After disconnecting the quick-connect fitting, check it for dirt or damage (see step 4 on page 11-381).

18. Reconnect the negative cable to the battery, then do this:

- Enter the anti-theft codes for the audio system and the navigation system (if equipped), then enter the audio presets.
- Set the clock (on vehicles without navigation).

Without the HDS

1. Make sure you have the anti-theft codes for the audio system and the navigation system (if equipped), then write down the audio presets.
2. Remove the driver's dashboard lower cover (see page 20-90), then remove PGM-FI main relay 2 (FUEL PUMP) (A).



3. Start the engine, and let it idle until it stalls.

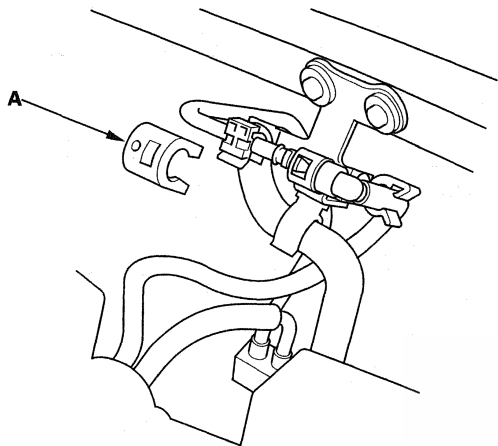
NOTE: If any DTCs are stored, clear and ignore them.

(cont'd)

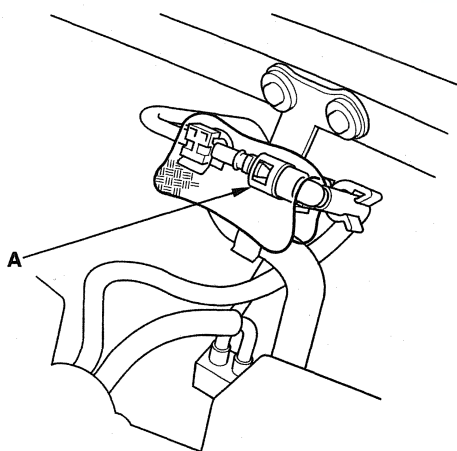
Fuel Supply System

Fuel Pressure Relieving (cont'd)

4. Turn the ignition switch OFF.
5. Remove the fuel fill cap.
6. Disconnect the negative cable from the battery.
7. Remove the quick-connect fitting cover (A).



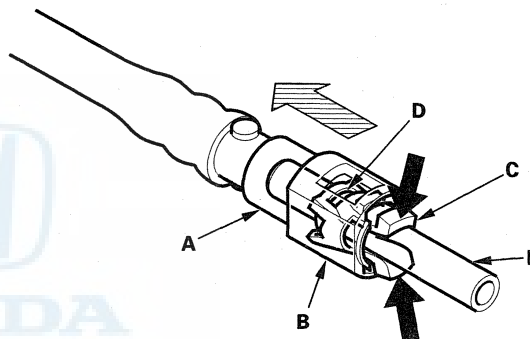
8. Check the fuel quick-connect fitting for dirt, and clean it if needed.
9. Place a rag or shop towel over the quick-connect fitting (A).



10. Disconnect the quick-connect fitting (A): Hold the connector (B) with one hand, and squeeze the retainer tabs (C) with the other hand to release them from the locking tabs (D). Pull the connector off.

NOTE:

- Be careful not to damage the line (E) or other parts.
- Do not use tools.
- If the connector does not move, keep the retainer tabs pressed down, and alternately pull and push the connector until it comes off easily.
- Do not remove the retainer from the line; once removed, the retainer must be replaced with a new one.



11. After disconnecting the quick-connect fitting, check it for dirt or damage (see step 4 on page 11-381).
12. Reconnect the negative cable to the battery, then do this:
 - Enter the anti-theft codes for the audio system and the navigation system (if equipped), then enter the audio presets.
 - Set the clock (on vehicles without navigation).

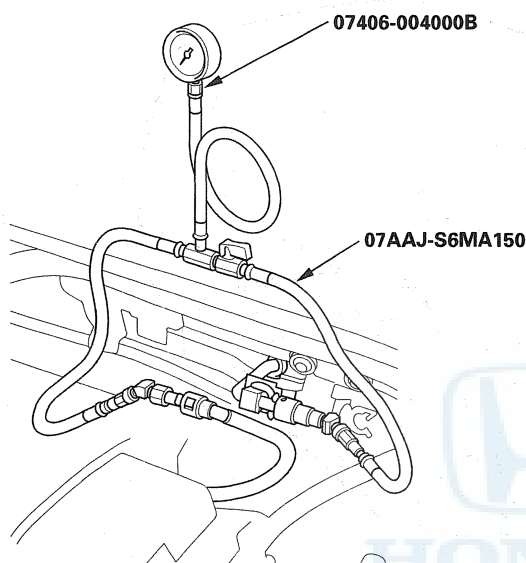


Fuel Pressure Test

Special Tools Required

- Fuel pressure gauge 07406-004000B
- Fuel pressure gauge attachment set 07AAJ-S6MA150

1. Relieve the fuel pressure (see page 11-372).
2. Disconnect the quick-connect fitting. Attach the fuel pressure gauge set and the fuel pressure gauge.



3. Start the engine, and let it idle.
 - If the engine starts, go to step 5.
 - If the engine does not start, go to step 4.
4. Check to see if the fuel pump is running: listen to the fuel filler port with the fuel fill cap removed. The fuel pump should run for 2 seconds when the ignition switch is first turned on.
 - If the pump runs, go to step 5.
 - If the pump does not run, do the fuel pump circuit troubleshooting (see page 11-368).
5. Read the fuel pressure gauge. The pressure should be 380—430 kPa (3.9—4.4 kgf/cm², 55—63 psi).
 - If the pressure is OK, the test is complete.
 - If the pressure is out of specification, replace the fuel pressure regulator (see page 11-386) and the fuel filter (see page 11-386), then recheck the fuel pressure.

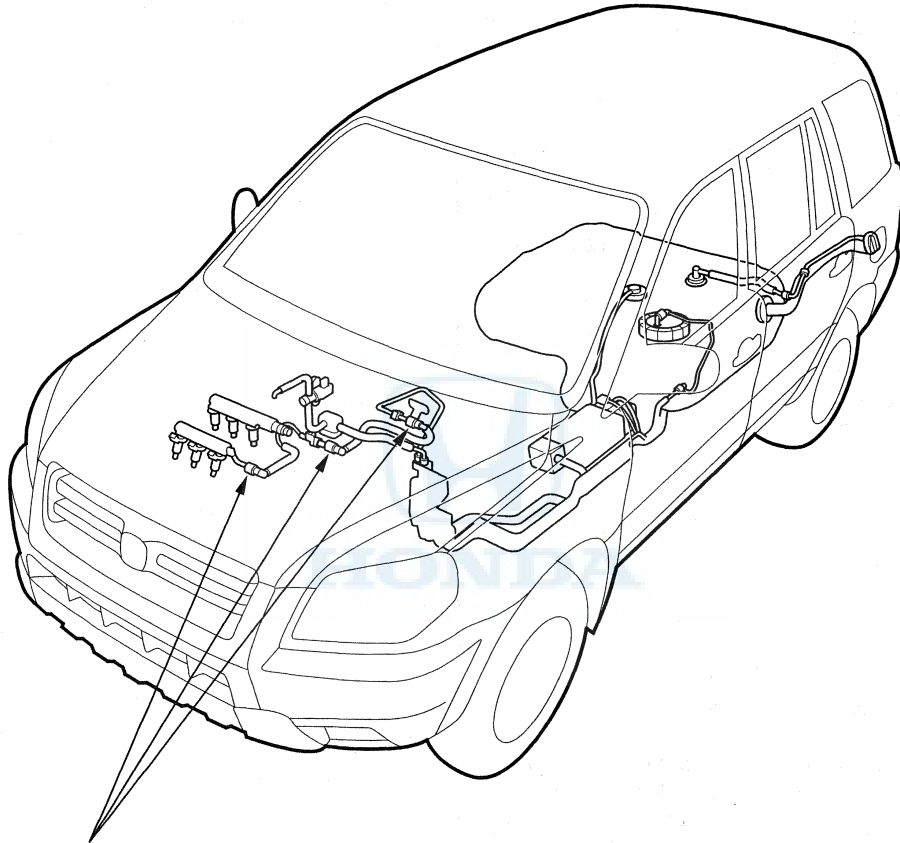
Fuel Tank Draining

1. Remove the fuel tank unit (see page 11-384).
2. Using a hand pump, a hose, and a container suitable for fuel, draw the fuel from the fuel tank.
3. Reinstall the fuel tank unit (see page 11-385).

Fuel Supply System

Fuel Line Inspection

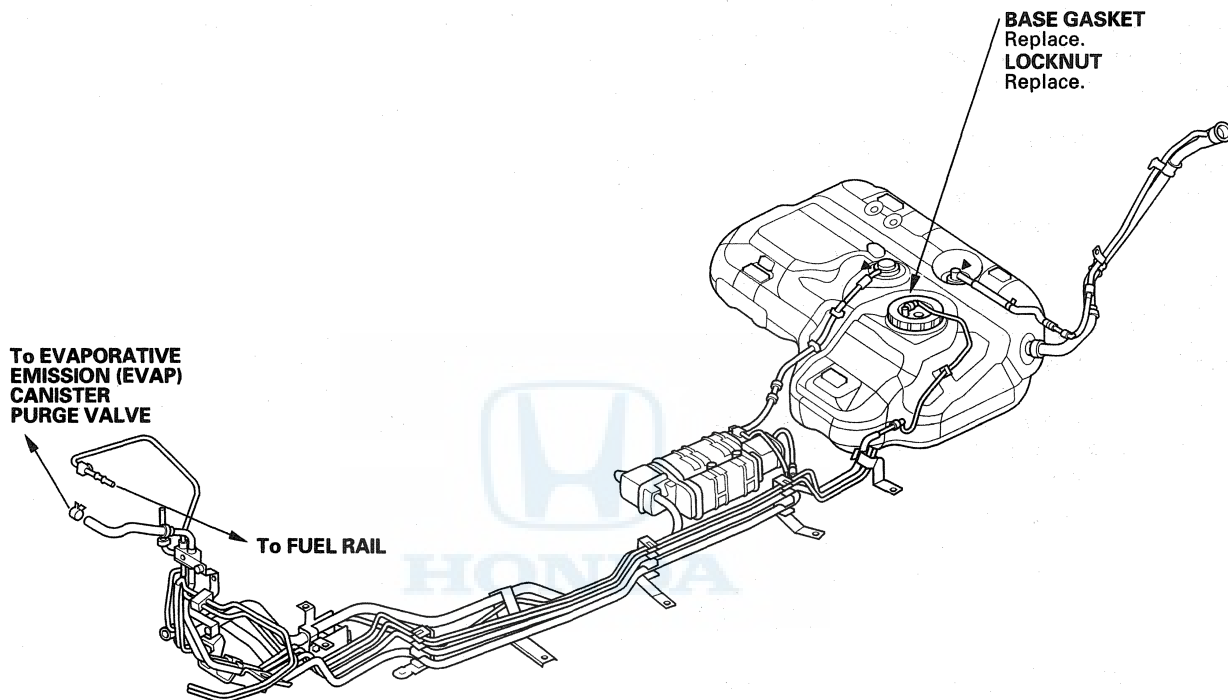
Check the fuel system lines, and hoses for damage, leaks, and deterioration. Replace any damaged parts.



Make sure the connections are secure and the quick-connect fitting covers are firmly locked in place.



Check all clamps, and retighten if necessary.



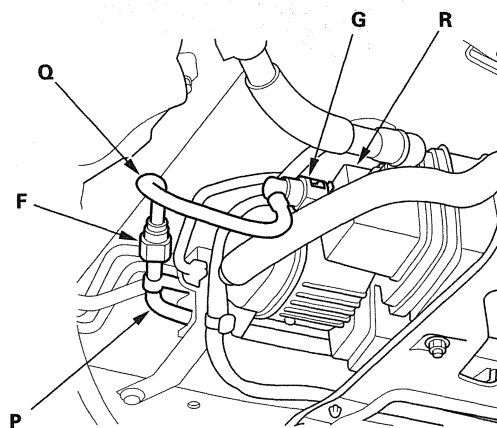
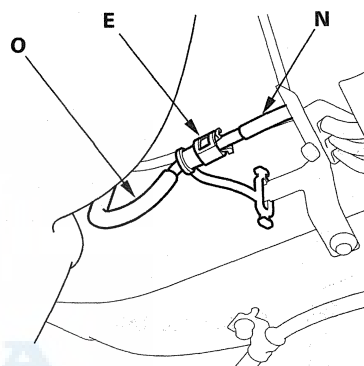
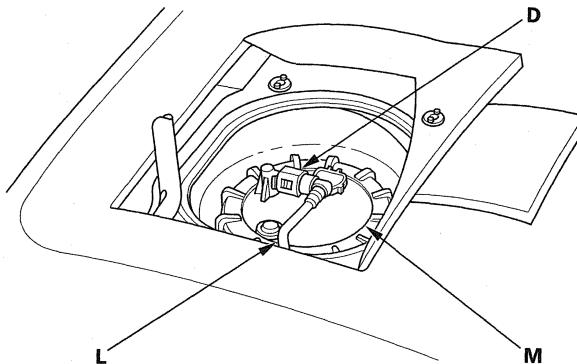
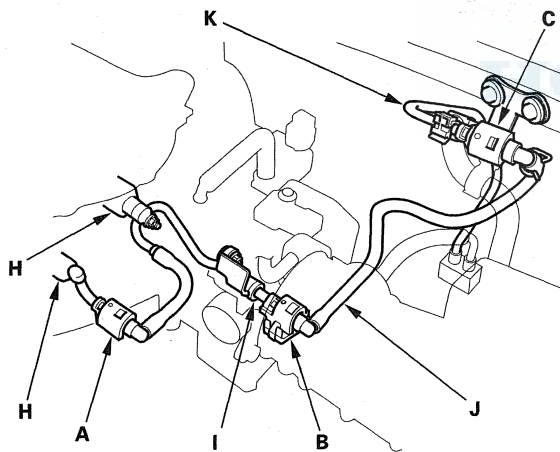
Fuel Supply System

Fuel Line/Quick-Connect Fitting Precautions

The fuel line/quick-connect fittings (A), (B), (C), (D), (E), (F), (G) connect the fuel rail (H) to the fuel feed joint (I), the fuel feed joint (I) to the fuel feed hose (J), the fuel hose (J), to the fuel line (K), the fuel feed hose (L) to the fuel tank unit (M), the fuel line (N) to the fuel feed hose (O), the EVAP purge pipe (P) to EVAP purge hose (Q), and the EVAP purge hose (Q) to the EVAP canister (R). When removing or installing the fuel feed hose, fuel tank unit or fuel tank, it is necessary to disconnect or connect the quick-connect fittings.

Pay attention to the following:

- The fuel feed hoses, fuel line, and quick-connect fittings are not heat-resistant; be careful not to damage them during welding or other heat-generating procedures.
- The fuel feed hoses, fuel line, and quick-connect fittings are not acid-proof; do not touch them with a shop towel that was used for wiping battery electrolyte. Replace them if they came into contact with electrolyte or something similar.
- When connecting or disconnecting the fuel feed hoses, fuel line, and quick-connect fittings, be careful not to bend or twist them excessively. Replace them if they are damaged.





A disconnected quick-connect fitting can be reconnected, but the retainer on the mating line cannot be reused once it has been removed from the line.

Replace the retainer when:

- replacing the fuel rail.
- replacing the fuel feed joint.
- replacing the fuel line.
- replacing the fuel pump.
- replacing the fuel filter.
- replacing the fuel gauge sending unit.
- replacing the EVAP purge pipe.
- replacing the EVAP canister.
- it has been removed from the line.
- it is damaged.

Place	Manufacturer	Retainer color	Line diameter
A, B, C	Tokai	Blue green	0.31 in. (8.0 mm)
D	Tokai	Orange	0.4 in. (9.5 mm)
E	Tokai	Blue green	0.31 in. (8.0 mm)
F, G	Tokai	Orange	0.4 in. (9.5 mm)

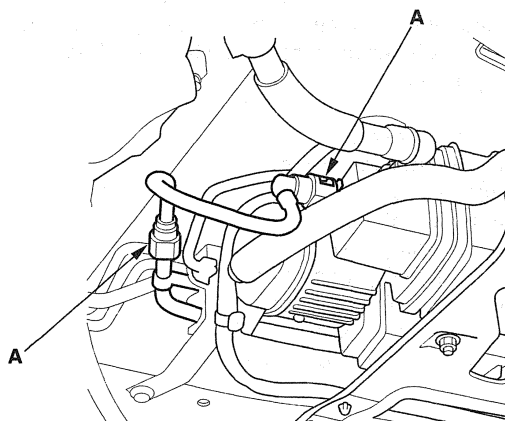
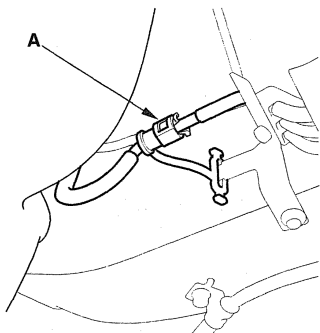
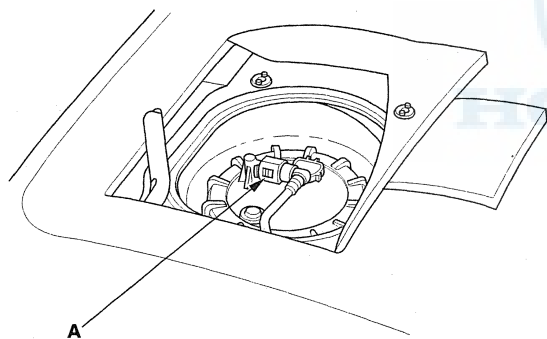
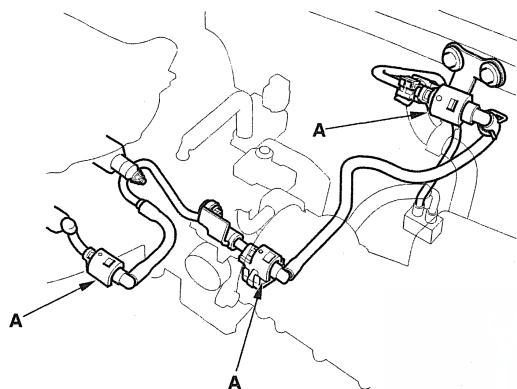
HONDA

Fuel Supply System

Fuel Line/Quick-Connect Fitting Removal

NOTE: Before you work on the fuel lines and fittings, read the "Fuel Line/Quick-Connect Fitting Precautions" (see page 11-378).

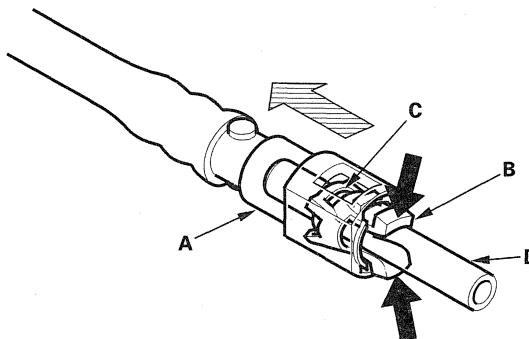
1. Relieve the fuel pressure (see page 11-372).
2. Check the fuel quick-connect fittings (A) for dirt, and clean them if needed.



3. Place a rag or shop towel over the quick-connect fitting. Hold the connector (A) with one hand, and squeeze the retainer tabs (B) with the other hand to release them from the locking tabs (C). Pull the connector off.

NOTE:

- Be careful not to damage the line (D) or other parts. Do not use tools.
- If the connector does not move, keep the retainer tabs pressed down, and alternately pull and push the connector until it comes off easily.
- Do not remove the retainer from the line; once removed, the retainer must be replaced with a new one.

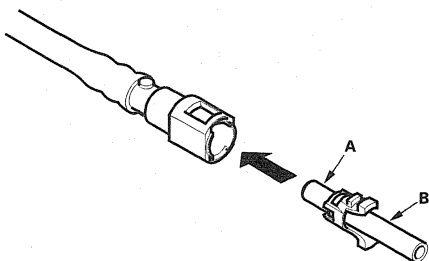




Fuel Line/Quick-Connect Fitting Installation

4. Check the contact area (A) of the line (B) for dirt or damage.

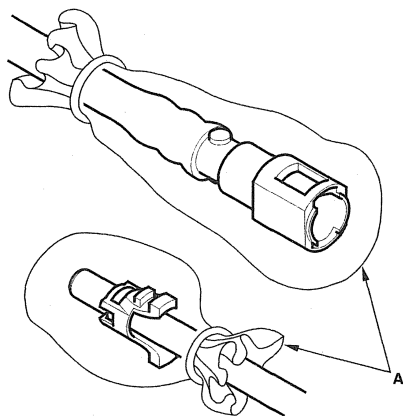
- If it is dirty, clean it.
- If it is rusty or damaged, replace the fuel pump, fuel filter, or fuel feed line.



5. To prevent damage and keep foreign matter out, cover the disconnected connector and line ends with plastic bags (A).

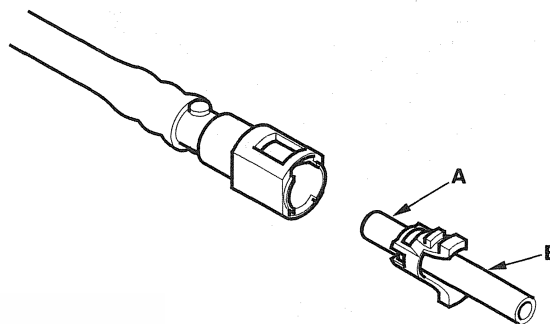
NOTE:

- The retainer cannot be reused once it has been removed from the line.
Replace the retainer when:
 - replacing the fuel rail.
 - replacing the fuel feed joint.
 - replacing the fuel feed line.
 - replacing the fuel pump.
 - replacing the fuel filter.
 - replacing the fuel gauge sending unit.
 - replacing the EVAP purge pipe.
 - replacing the EVAP canister.
 - it has been removed from the line.
 - it is damaged.



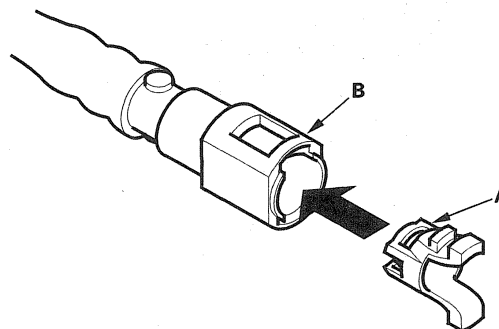
NOTE: Before you work on the fuel lines and fittings, read the "Fuel Line/Quick-Connect Fitting Precautions" (see page 11-378).

1. Check the contact area (A) of the line (B) for dirt or damage, and clean it if needed.



2. Insert a new retainer (A) into the connector (B) if the retainer is damaged, or after:

- replacing the fuel rail.
- replacing the fuel feed joint.
- replacing the fuel feed line.
- replacing the fuel pump.
- replacing the fuel filter.
- replacing the fuel gauge sending unit.
- replacing the EVAP purge pipe.
- replacing the EVAP canister.
- removing the retainer from the line.
- Use the same manufacturer retainer and the same size retainer when replacing the retainer (see page 11-378).

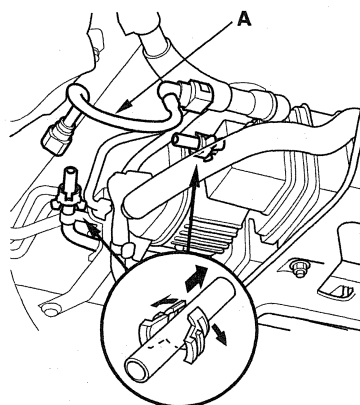
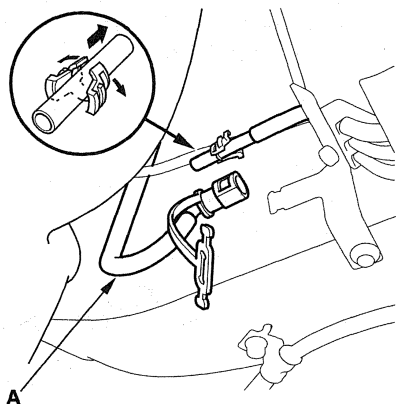
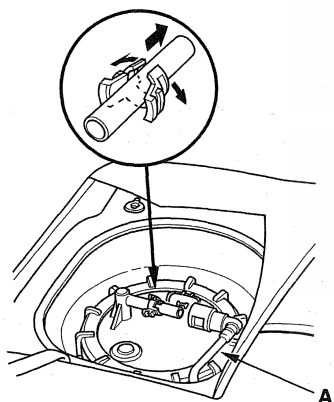
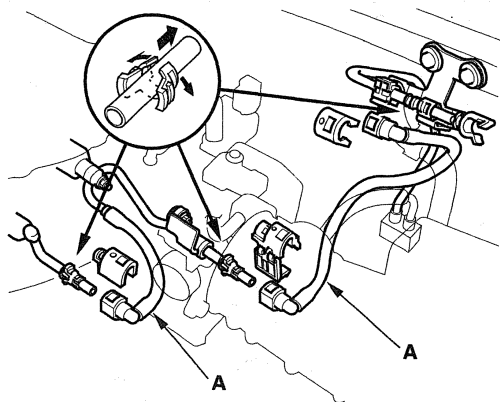


(cont'd)

Fuel Supply System

Fuel Line/Quick-Connect Fitting Installation (cont'd)

3. Before connecting a new fuel tube/quick-connect fitting assembly (A), remove the old retainer from the mating line.

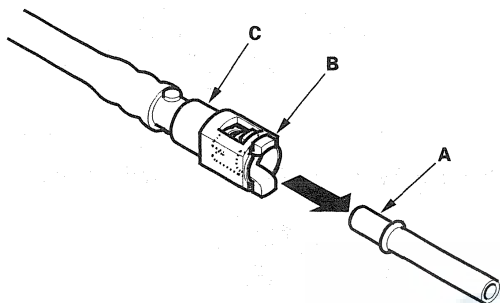




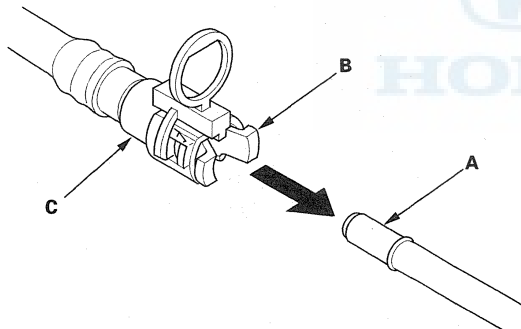
4. Align the quick-connect fittings with the line (A), and align the retainer locking tabs (B) with the connector grooves (C). Then press the quick-connect fittings onto the line until both retainer pawls lock with a clicking sound.

NOTE: If it is hard to connect, put a small amount of new engine oil on the line end.

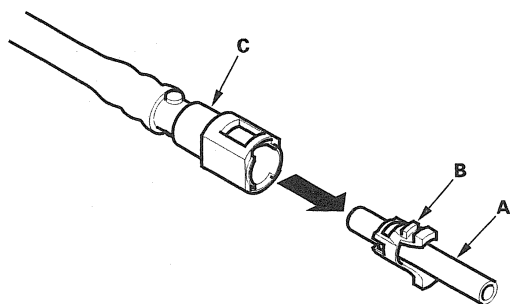
Connection with new retainer



Connection to new fuel line



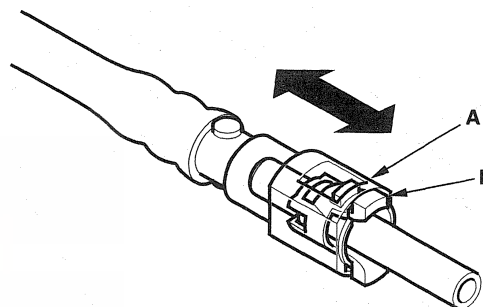
Reconnection to existing retainer



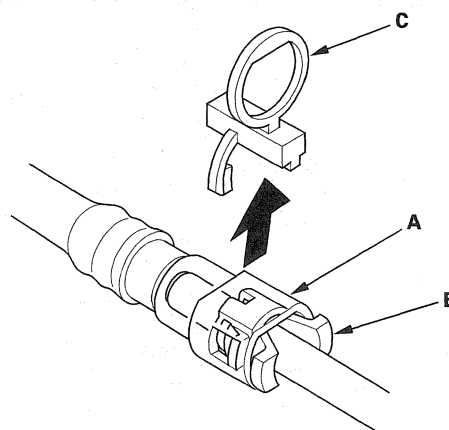
5. When you reconnect the connector (A) with the old retainer, make sure the connection is secure and the tabs (B) are firmly locked into place; check visually and also by pulling the connector. When you replace the fuel line with a new one, make sure you remove the ring pull (C) upwards after you confirm the connection is secure.

NOTE: Before you remove the ring pull, make sure the fuel line connection is secure. If the connection is not secure, the ring pull could break when you try to remove it.

Reconnection to existing retainer



Connection to new fuel line



6. Reconnect the negative cable to the battery, and turn the ignition switch ON (II) (but do not operate the starter motor). The fuel pump will run for about 2 seconds, and fuel pressure will rise. Repeat two or three times, and check that there is no leakage in the fuel supply system.

Fuel Supply System

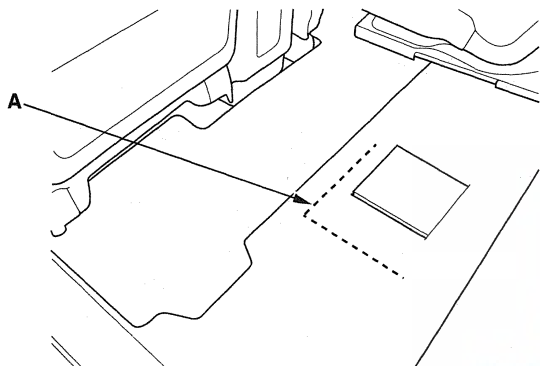
Fuel Tank Unit Removal/Installation

Special Tools Required

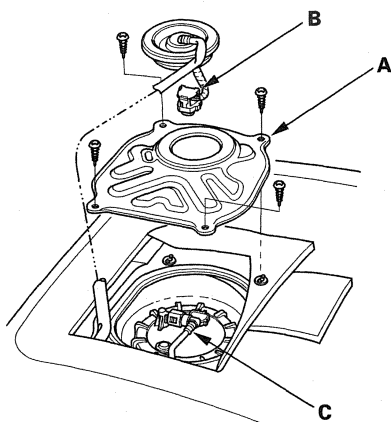
Fuel sender wrench 07AAA-S0XA100

Removal

1. Relieve fuel pressure (see page 11-372).
2. Remove the fuel fill cap.
3. Remove the driver's side second row seat (see page 20-115).
4. Cut the carpet at the dotted line (A). Be careful not to cut the wire harness under the carpet.

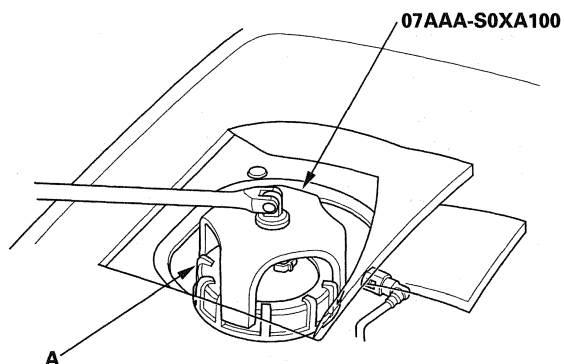


5. Remove the access panel (A) from the floor, then disconnect the fuel tank unit 5P connector (B).

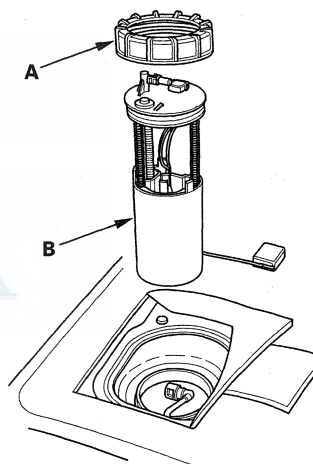


6. Disconnect the quick-connect fitting (C) from the fuel tank unit.

7. Using the special tool, loosen the fuel tank unit locknut (A).



8. Remove the locknut (A) and the fuel tank unit (B).



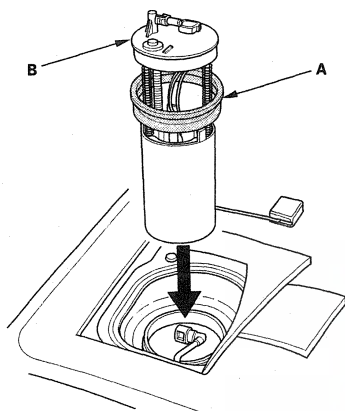


Installation

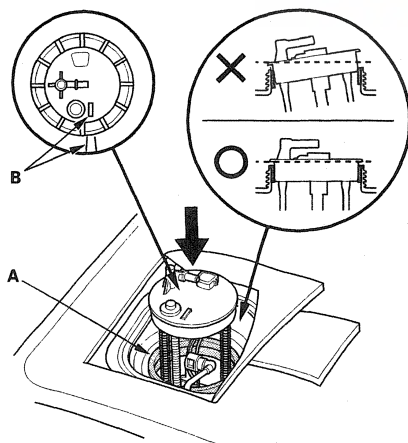
1. Temporarily attach a new base gasket (A) to the fuel tank unit (B), then insert the fuel tank unit partially into the fuel tank.

NOTE:

- Be careful not to damage the new base gasket.
- Be careful not to bend the fuel gauge sending unit.
- Do not coat the base gasket with oil.



2. Transfer the base gasket (A) from the fuel tank unit to the fuel tank.



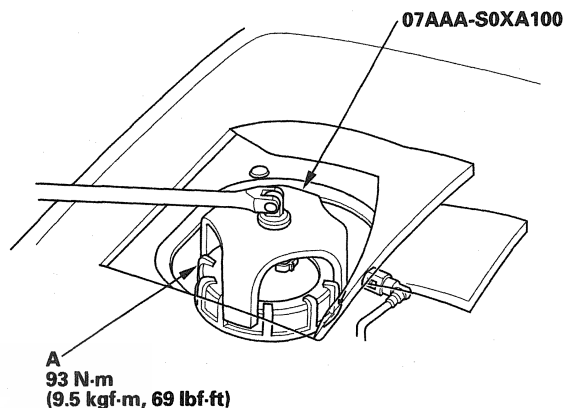
3. Align the marks (B) on the fuel tank and the fuel tank unit, then insert the fuel tank unit into the fuel tank until the fuel tank unit rest on top of the base gasket.

NOTE: To avoid a fuel leak, check the base gasket, visually or by hand, to make sure it is not pinched.

4. Using the special tool, tighten a new locknut (A).

NOTE:

- After tightening, make sure the marks are still aligned.
- After installation, check the base gasket, visually or by hand, to make sure it is not pinched.

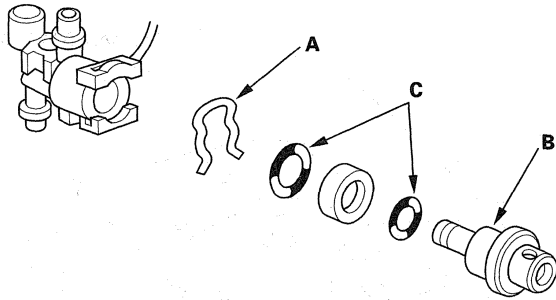


5. Connect the fuel tank unit 5P connector, then connect the quick-connect fitting.
6. Reconnect the negative cable to the battery, and turn the ignition switch ON (II) (but do not operate the starter motor). The fuel pump will run for about 2 seconds, and fuel pressure will rise. Repeat this two or three times, then check that there is no leakage in the fuel supply system.
7. Install the access panel.
8. Install the driver's side second row seat (see page 20-115).
9. Install the fuel fill cap.

Fuel Supply System

Fuel Pressure Regulator Replacement

1. Remove the fuel tank unit (see page 11-384).
2. Remove the clip (A).



3. Remove the fuel pressure regulator (B).
4. Install the parts in the reverse order of removal with new O-rings (C).

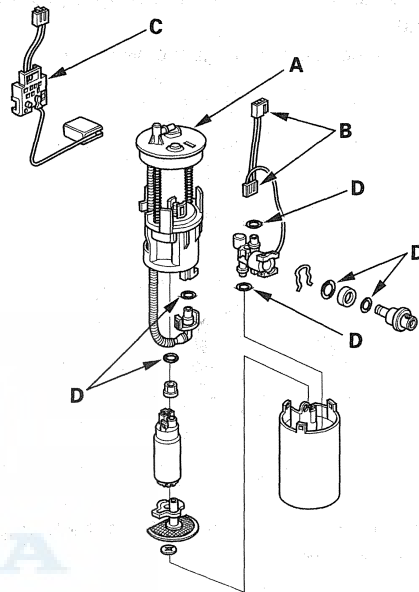
NOTE:

- Coat the O-rings with clean engine oil. Do not use any other oils.
- Be careful not to pinch the O-rings when you install the fuel pressure regulator.

Fuel Filter Replacement

The fuel filter should be replaced whenever the fuel pressure drops below the specified value (see page 11-375), after making sure that the fuel pump and the fuel pressure regulator are OK.

1. Remove the fuel tank unit (see page 11-384).
2. Remove the fuel filter set (A).



3. Check these items before installing the fuel tank unit:

- When connecting the wire harness, make sure the connection is secure and the connectors (B) are firmly locked into place.
- When installing the fuel gauge sending unit (C), make sure the connection is secure and the connector is firmly locked into place. Be careful not to bend or twist it excessively.

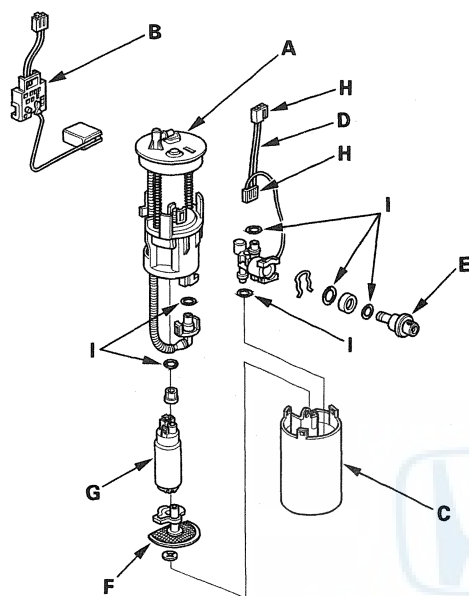
4. Install the parts in the reverse order of removal with new O-rings (D). When installing the fuel tank unit, align the marks on the unit and the fuel tank (see page 11-385).

NOTE: Coat the O-rings with clean engine oil. Do not use any other oils.



Fuel Pump/Fuel Gauge Sending Unit Replacement

1. Remove the fuel tank unit (see page 11-384).
2. Remove the fuel filter (A), the fuel level sensor (fuel gauge sending unit) (B), the case (C), the wire harness (D), and the fuel pressure regulator (E).



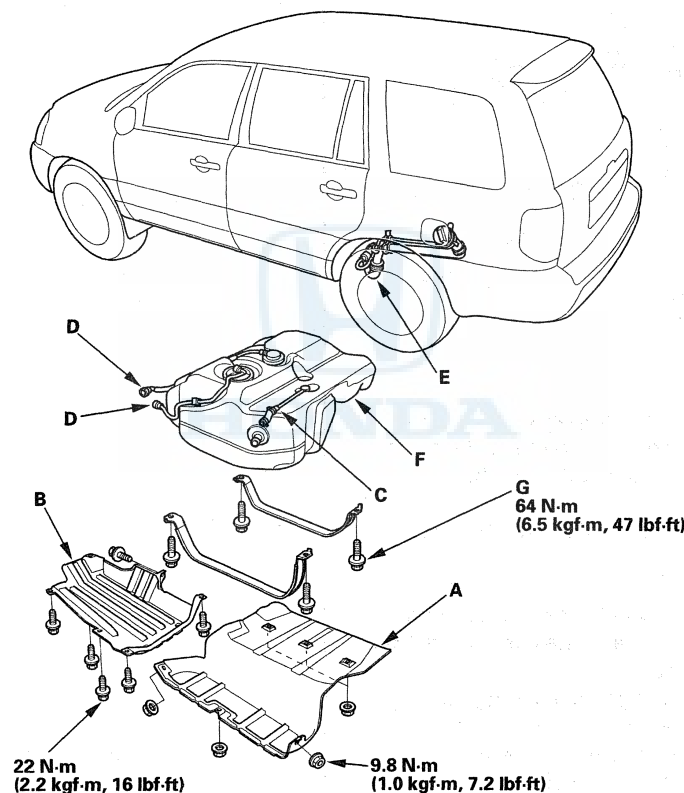
3. When connecting the fuel pump assembly, make sure the connection is secure and the suction filter (F) is firmly connected to the fuel pump (G).
4. Check these items before installing the fuel tank unit:
 - When connecting the wire harness, make sure the connection is secure and the connectors (H) is firmly locked into place.
 - When installing the fuel gauge sending unit, make sure the connection is secure and the connector is firmly locked into place. Be careful not to bend or twist it excessively.
5. Install the parts in the reverse order of removal with new O-rings (I). When installing the fuel tank unit, align the marks on the unit and the fuel tank (see page 11-385).

NOTE: Coat the O-rings with clean engine oil. Do not use any other oil.

Fuel Supply System

Fuel Tank Replacement

1. Relieve the fuel pressure (see page 11-372).
2. Drain the fuel tank (see page 11-375).
3. Reinstall the fuel tank unit (see page 11-385).
4. Raise the vehicle, and support it with jackstands.
5. Remove the exhaust muffler (see page 9-10).
6. 4WD: Remove the propeller shaft (see page 16-41).
7. Remove the fuel tank shield (A).



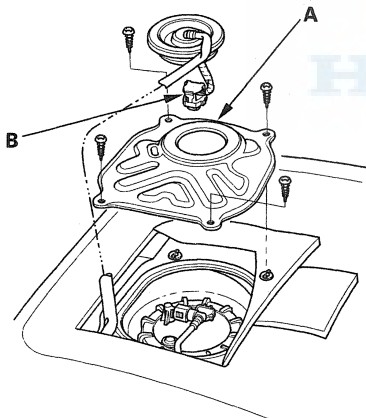
8. Remove the canister cover (B).
9. Disconnect the fuel vapor hose (C), and quick-connect fittings (D). Disconnect the filler neck hoses (E). Slide back the clamps, then twist the hoses as you pull to avoid damaging them.
10. Place a jack or other support under the fuel tank (F).
11. Remove the strap bolts (G).
12. Remove the fuel tank. If it sticks to the undercoated mounts, carefully pry it off the mounts.
13. Install the parts in the reverse order of removal.



Fuel Gauge Sending Unit Test

NOTE: For the fuel gauge system circuit diagram, refer to the Gauges Circuit Diagram (see page 22-92).

1. Check the No. 9 BACK UP LIGHT, INSTRUMENT LIGHT (10 A) fuse in the driver's under-dash fuse/relay box before testing.
2. Check for body electrical system DTCs (see page 22-6).
 - If no problem is found, go to step 3.
 - If DTC B1175 (see page 22-99) or B1176 (see page 22-100) is indicated, go to the indicated DTC's troubleshooting.
3. Turn the ignition switch OFF.
4. Remove the driver's side second row seat (see page 20-115).
5. Cut the carpet, being careful not to cut the wire harness underneath it, then remove the access panel from the floor (see step 4 on page 11-384).
6. Remove the access panel (A) from the floor.

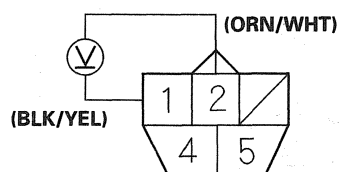


7. Disconnect the fuel tank unit 5P connector (B).

8. Measure voltage between fuel tank unit 5P connector terminals No. 1 and No. 2 with the ignition switch ON (II). There should be battery voltage.

- If the voltage is OK, go to step 8.
- If the voltage is not as specified, check for:
 - a short in the ORN/WHT wire to ground.
 - an open in the ORN/WHT or BLK/YEL wire.

FUEL TANK UNIT 5P CONNECTOR



Wire side of female terminals

9. Turn the ignition switch OFF.
10. Remove the fuel tank unit from the fuel tank (see page 11-384).

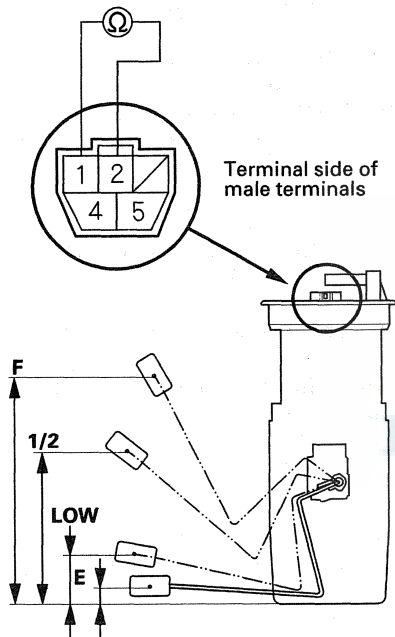
(cont'd)

Fuel Supply System

Fuel Gauge Sending Unit Test (cont'd)

11. Measure resistance between fuel tank unit 5P connector terminals No. 1 and No. 2 with the float at E (EMPTY), LOW (LOW FUEL INDICATOR), 1/2 (HALF FULL), and F (FULL) positions. If you do not get the following readings, replace the fuel gauge sending unit (see page 11-387).

Float Position	F 8.3 in. (211.4 mm)	1/2 5.6 in. (143.1 mm)	LOW 1.8 in. (45.2 mm)	E 0.6 in. (16.2 mm)
Resistance (Ω)	19 to 21	185 to 195	483.7 to 612.8	770 to 790



12. Reconnect the fuel tank unit 5P connector.
13. Remove the No. 13 BACK UP (7.5 A) fuse from the passenger's under-dash fuse/relay box for at least 10 seconds, then reinstall it.
14. Turn the ignition switch ON (II).
15. Check that the pointer of the fuel gauge indicates "F" with the float at F.
- If the pointer of the fuel gauge does not indicate "F", replace the gauge control module (see page 22-102).
 - If the gauge is OK, the test is complete.

NOTE:

- The pointer of the fuel gauge returns to the bottom of the gauge dial when the ignition switch is OFF, regardless of the fuel level.
- Remove the No. 13 BACK UP (7.5 A) fuse from the passenger's under-dash fuse/relay box for at least 10 seconds after completing troubleshooting, otherwise it may take up to 20 minutes for the fuel gauge to indicate the correct fuel level.



Low Fuel Indicator Test

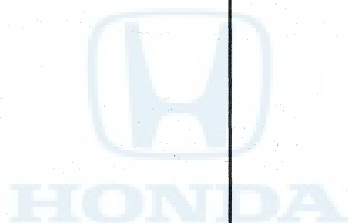
1. Do the gauge self-diagnostic test (see page 22-90).

- If the low fuel indicator flashes, go to step 2.
- If the low fuel indicator does not flash, replace the gauge control module (see page 22-102).

2. Check for body electrical system DTCs.

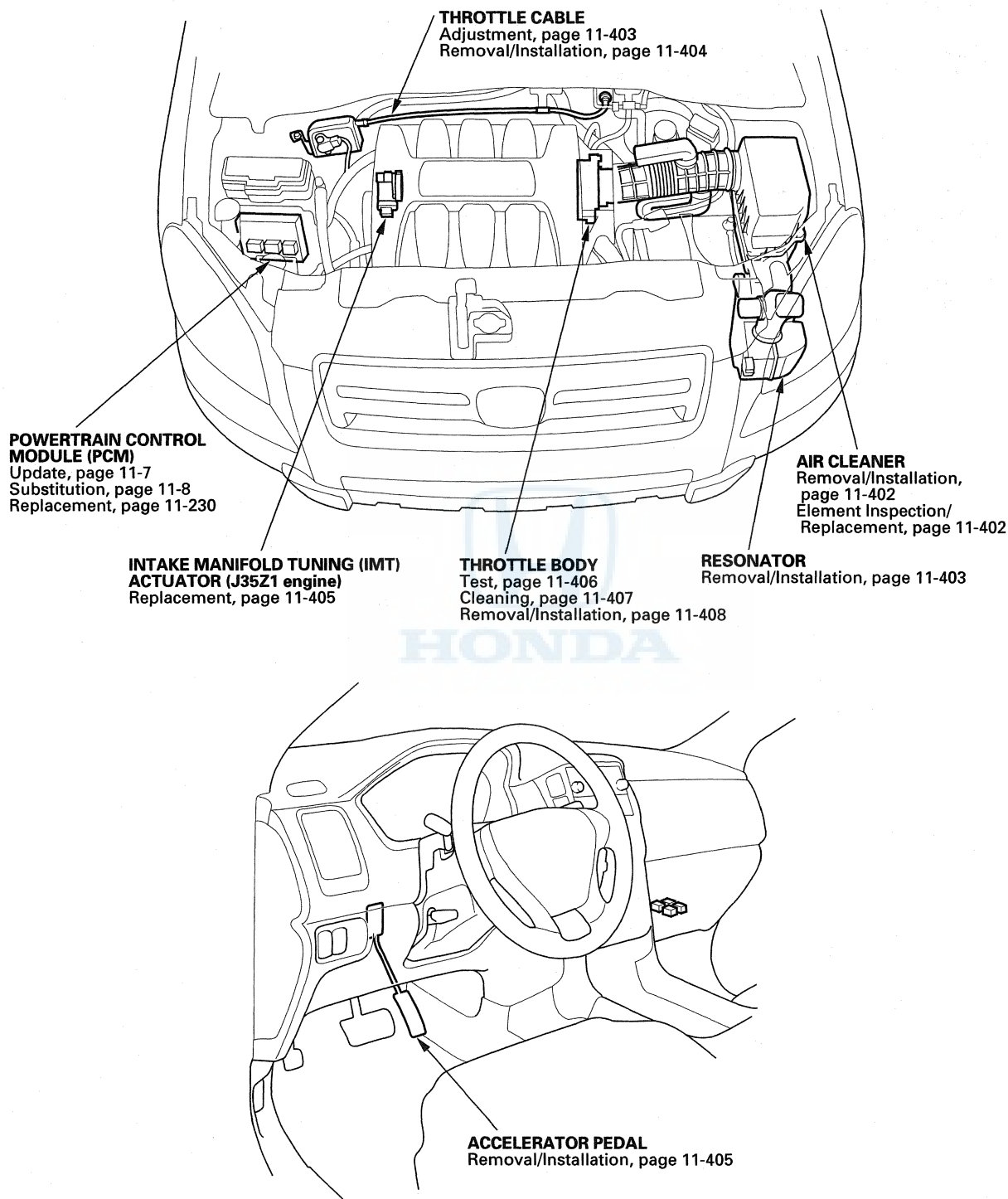
- If any DTCs are indicated, do the indicated DTC's troubleshooting.
- If no DTCs are indicated, go to step 3.

3. Do the fuel gauge sending unit test (see page 11-389).



Intake Air System

Component Location Index





DTC Troubleshooting

DTC P1077: IMT Valve Stuck in High RPM Position

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine, and let it idle.
4. Check the IMT VALVE CMD in the DATA LIST with the HDS.

Is CLOSE indicated?

YES—Go to step 5.

NO—Go to step 29.

5. Check the IMT VALVE SW in the DATA LIST with the HDS.

Is OPEN indicated?

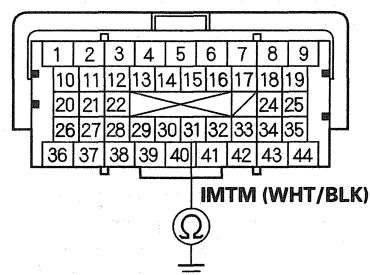
YES—Go to step 6.

NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the IMT actuator and the PCM. ■

6. Turn the ignition switch OFF.
 7. Disconnect the IMT actuator 5P connector.
 8. Turn the ignition switch ON (II).
 9. Check the IMT VALVE SW in the DATA LIST with the HDS.
- Is CLOSE indicated?*
- YES**—Go to step 14.
- NO**—Go to step 10.
10. Turn the ignition switch OFF.
 11. Jump the SCS line with the HDS.
 12. Disconnect PCM connector B (44P).

13. Check for continuity between PCM connector terminal B31 and body ground.

PCM CONNECTOR B (44P)



Terminal side of female terminals

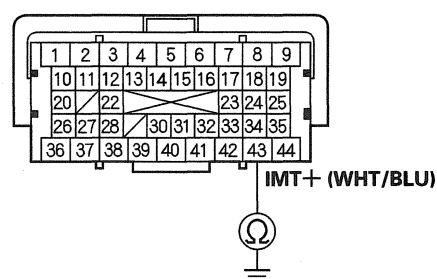
Is there continuity?

YES—Repair short in the wire between the PCM (B31) and the IMT actuator, then go to step 23.

NO—Go to step 30.

14. Turn the ignition switch OFF.
15. Jump the SCS line with the HDS.
16. Disconnect PCM connector C (44P).
17. Check for continuity between PCM connector terminal C43 and body ground.

PCM CONNECTOR C (44P)



Terminal side of female terminals

Is there continuity?

YES—Repair short in the wire between the PCM (C43) and the IMT actuator, then go to step 23.

NO—Go to step 18.

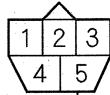
(cont'd)

Intake Air System

DTC Troubleshooting (cont'd)

18. Check for continuity between IMT actuator 5P connector terminal No. 5 and PCM connector terminal C43.

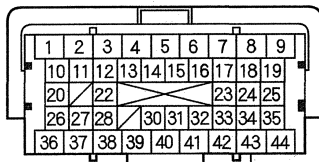
IMT ACTUATOR 5P CONNECTOR



IMT+ (WHT/BLU)

Wire side of female terminals

PCM CONNECTOR C (44P)



IMT+ (WHT/BLU)

Terminal side of female terminals

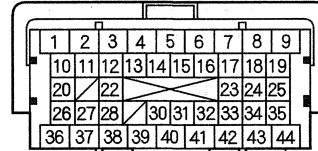
Is there continuity?

YES—Go to step 19.

NO—Repair open in the wire between the PCM (C43) and the IMT actuator, then go to step 23.

19. Check for continuity between PCM connector terminal C44 and body ground.

PCM CONNECTOR C (44P)



IMT- (WHT/RED)



Terminal side of female terminals

Is there continuity?

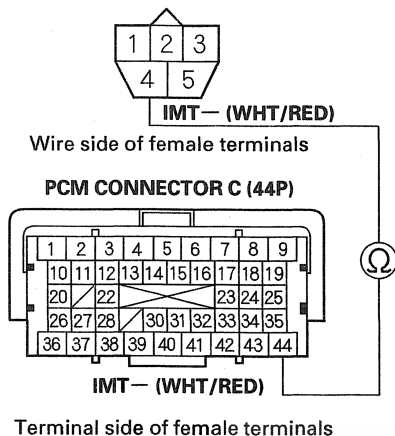
YES—Repair short in the wire between the PCM (C44) and the IMT actuator, then go to step 23.

NO—Go to step 20.



20. Check for continuity between IMT actuator 5P connector terminal No. 4 and PCM connector terminal C44.

IMT ACTUATOR 5P CONNECTOR



Is there continuity?

YES—Go to step 21.

NO—Repair short in the wire between the PCM (C44) and the IMT actuator, then go to step 23.

21. Remove the IMT actuator (see page 11-405).

22. Move the IMT valve by hand.

Does it move smoothly?

YES—Substitute a known-good IMT actuator (see page 11-405), then go to step 23 and recheck. If DTC P1077 is not indicated, replace the IMT actuator (see page 11-405), then go to step 23. If DTC P1077 is indicated, go to step 31.

NO—Remove the engine cover (see step 1 on page 9-4), and repair the stuck valve. If necessary, replace the intake manifold (see page 9-4), then go to step 23.

23. Reconnect all connectors.

24. Turn the ignition switch ON (II).

25. Reset the PCM with the HDS.

26. Do the PCM idle learn procedure (see page 11-359).

27. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P1077 indicated?

YES—Check for poor connections or loose terminals at the IMT actuator and the PCM, then go to step 1.

NO—Go to step 28.

28. Monitor the OBD STATUS for DTC P1077 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 27, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the IMT actuator and the PCM, then go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

(cont'd)

Intake Air System

DTC Troubleshooting (cont'd)

29. Turn the ignition switch OFF.
30. Reconnect all connectors.
31. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).
32. Start the engine, and let it idle.
33. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P1077 indicated?

YES—Check for poor connections or loose terminals at the IMT actuator and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then go to step 32. If the PCM was substituted, go to step 1.

NO—Go to step 34.

34. Monitor the OBD STATUS for DTC P1077 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-230). If any other Temporary DTCs or DTCs were indicated in step 33, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the IMT actuator and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then go to step 32. If the PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.



DTC P1078: IMT Valve Stuck in Low RPM Position

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine and hold the engine speed above 4,200 rpm.
4. Check the IMT VALVE CMD in the DATA LIST with the HDS.

Is OPEN indicated?

YES—Go to step 5.

NO—Go to step 32.

5. Check the IMT VALVE SW in the DATA LIST with the HDS.

Is CLOSE indicated?

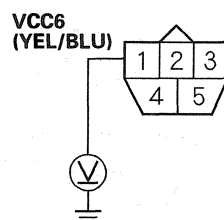
YES—Go to step 6.

NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the IMT actuator and the PCM. ■

6. Let the engine idle, then turn the ignition switch OFF.
7. Disconnect the IMT actuator 5P connector.
8. Turn the ignition switch ON (II).

9. Measure voltage between IMT actuator 5P connector terminal No. 1 and body ground.

IMT ACTUATOR 5P CONNECTOR



Wire side of female terminals

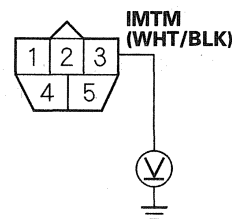
Is there about 5 V?

YES—Go to step 10.

NO—Repair open in the wire between the PCM (C12) and the IMT actuator, then go to step 25.

10. Measure voltage between IMT actuator 5P connector terminal No. 3 and body ground.

IMT ACTUATOR 5P CONNECTOR



Wire side of female terminals

Is there about 5 V?

YES—Go to step 11.

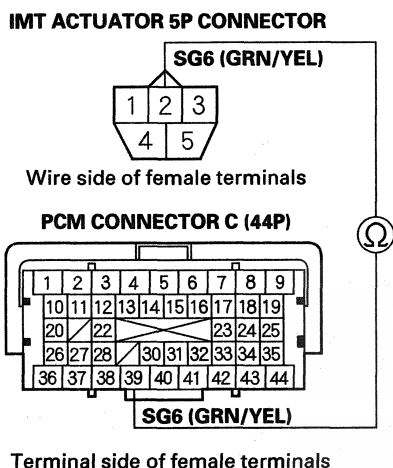
NO—Go to step 15.

(cont'd)

Intake Air System

DTC Troubleshooting (cont'd)

11. Turn the ignition switch OFF.
12. Jump the SCS line with the HDS.
13. Disconnect PCM connector C (44P).
14. Check for continuity between IMT actuator 5P connector terminal No. 2 and PCM connector terminal C39.

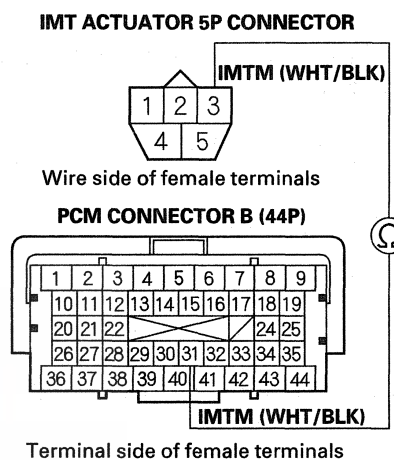


Is there continuity?

YES—Go to step 19.

NO—Repair open in the wire between the PCM (C39) and the IMT actuator, then go to step 25.

15. Turn the ignition switch OFF.
16. Jump the SCS line with the HDS.
17. Disconnect PCM connector B (44P).
18. Check for continuity between IMT actuator 5P connector terminal No. 3 and PCM connector terminal B31.



Is there continuity?

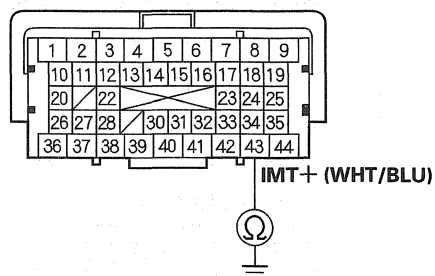
YES—Go to step 33.

NO—Repair open in the wire between the PCM (B31) and the IMT actuator, then go to step 25.



19. Check for continuity between PCM connector terminal C43 and body ground.

PCM CONNECTOR C (44P)



Terminal side of female terminals

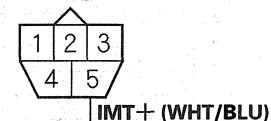
Is there continuity?

YES—Repair short in the wire between the PCM (C43) and the IMT actuator, then go to step 25.

NO—Go to step 20.

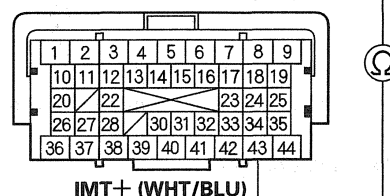
20. Check for continuity between IMT actuator 5P connector terminal No. 5 and PCM connector terminal C43.

IMT ACTUATOR 5P CONNECTOR



Wire side of female terminals

PCM CONNECTOR C (44P)



Terminal side of female terminals

Is there continuity?

YES—Go to step 21.

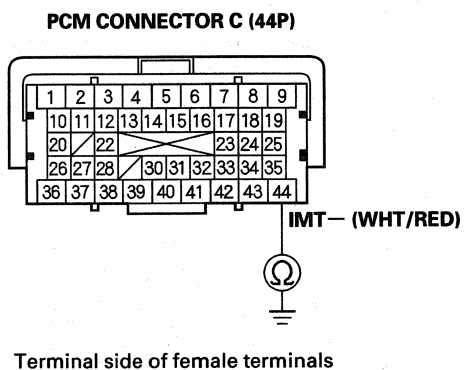
NO—Repair open in the wire between the PCM (C43) and the IMT actuator, then go to step 25.

(cont'd)

Intake Air System

DTC Troubleshooting (cont'd)

21. Check for continuity between PCM connector terminal C44 and body ground.

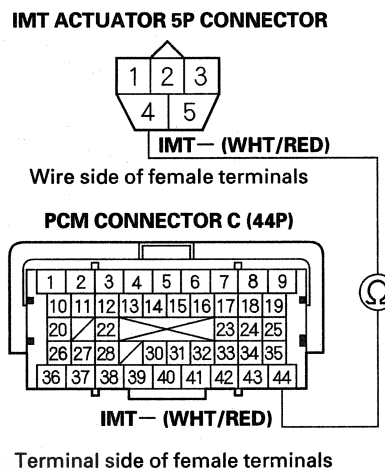


Is there continuity?

YES—Repair short in the wire between the PCM (C44) and the IMT actuator, then go to step 25.

NO—Go to step 22.

22. Check for continuity between IMT actuator 5P connector terminal No. 4 and PCM connector terminal C44.



Is there continuity?

YES—Go to step 23.

NO—Repair open in the wire between the PCM (C44) and the IMT actuator, go to step 25.

23. Remove the IMT actuator (see page 11-405).



24. Move the IMT valve by hand.

Does it move smoothly?

YES—Substitute a known-good IMT actuator (see page 11-405), then go to step 25 and recheck. If DTC P1078 is not indicated, replace the IMT actuator (see page 11-405), then go to step 25. If DTC P1078 is indicated, go to step 34.

NO—Remove the engine cover (see step 1 on page 9-4), and repair the stuck valve. If necessary, replace the intake manifold (see page 9-4), then go to step 25.

25. Reconnect all connectors.
26. Turn the ignition switch ON (II).
27. Reset the PCM with the HDS.
28. Do the PCM idle learn procedure (see page 11-359).
29. Start the engine. Hold the engine speed at 4,200 rpm for 10 seconds, then let it idle.
30. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P1078 indicated?

YES—Check for poor connections or loose terminals at the IMT actuator and the PCM, then go to step 1.

NO—Go to step 31.

31. Monitor the OBD STATUS for DTC P1078 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 30, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the IMT actuator and the PCM, then go to step 1. If the screen indicates NOT COMPLETED, go to step 29.

32. Turn the ignition switch OFF.

33. Reconnect all connectors.

34. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).

35. Start the engine. Hold the engine speed at 4,200 rpm for 10 seconds, then let it idle.

36. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P1078 indicated?

YES—Check for poor connections or loose terminals at the IMT actuator and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then go to step 35. If the PCM was substituted, go to step 1.

NO—Go to step 37.

37. Monitor the OBD STATUS for DTC P1078 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

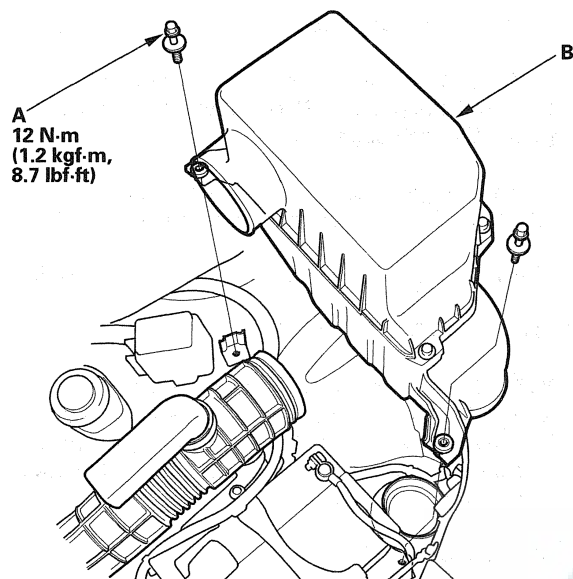
YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-230). If any other Temporary DTCs or DTCs were indicated in step 36, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the IMT actuator and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then go to step 35. If the PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, go to step 35.

Intake Air System

Air Cleaner Removal/Installation

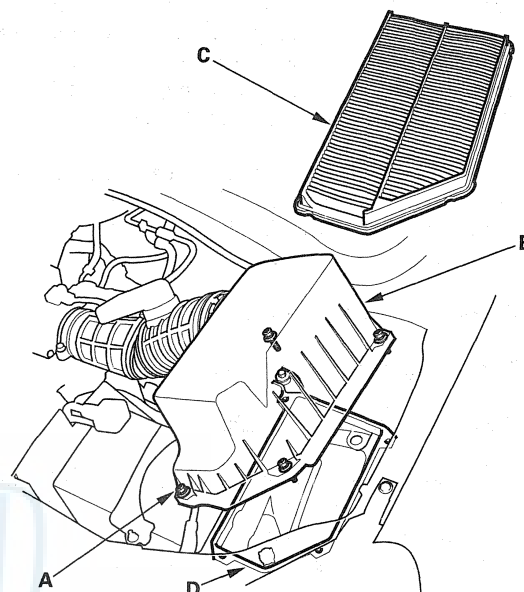
1. Remove the bolts (A).



2. Remove the air cleaner (B).
3. Install the parts in the reverse order of removal.

Air Cleaner Element Inspection/Replacement

1. Remove the air cleaner housing screws (A) and the cover (B).



2. Remove the air cleaner element (C) from the air cleaner housing (D).
3. Check the air cleaner element for damage or clogging. If it is damaged or clogged, replace it.

NOTE: Do not use compressed air to clean the air cleaner element.

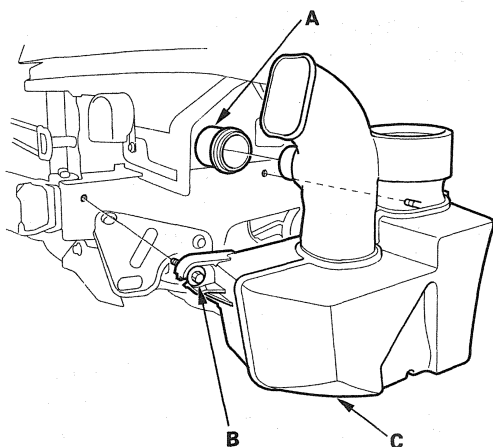
4. Clean and remove any debris from inside the air cleaner housing.
5. Install the parts in the reverse order of removal.
6. If the maintenance minder requires air cleaner replacement, reset the maintenance minder (see page 3-6).

NOTE: If the maintenance minder indicated the air cleaner element required replacement, check for other items that may also be displayed in the maintenance minder main items (see page 3-7) and the sub items (see page 3-8) before resetting the maintenance minder.



Resonator Removal/Installation

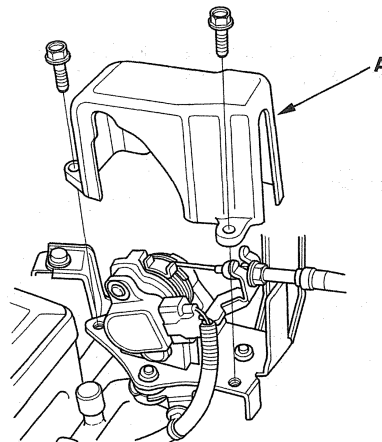
1. Remove the front bumper (see page 20-138).
2. Remove the side branch tube (A).



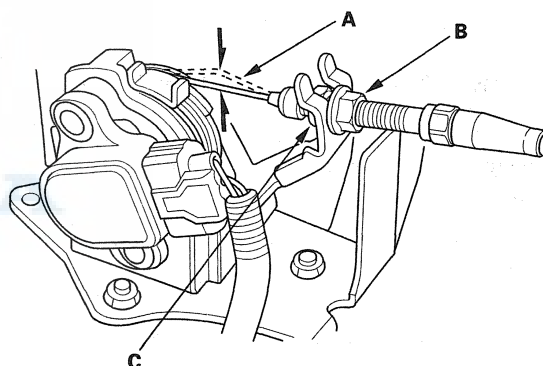
3. Remove the bolts (B).
4. Remove the resonator (C).
5. Install the parts in the reverse order of removal.

Throttle Cable Adjustment

1. Remove the bolts and the throttle cable cover (A).



2. Check cable free play at the throttle linkage. Cable free play (A) should be 10–12 mm (0.39–0.47 in.).

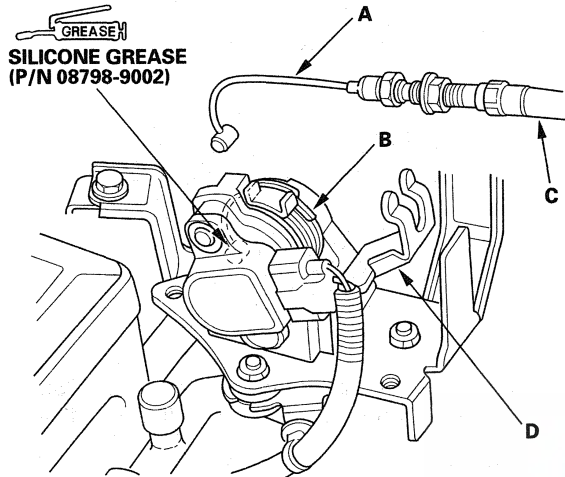


3. If the free play (A) is not within spec (10–12 mm, 0.39–0.47 in.), loosen the locknut (B), turn the adjusting nut (C) until the deflection is as specified, then retighten the locknut.
4. With the cable properly adjusted, check the throttle valve to be sure it opens fully when you push the accelerator pedal to the floor. Also check the throttle valve to be sure it returns to the idle position whenever you release the accelerator pedal.

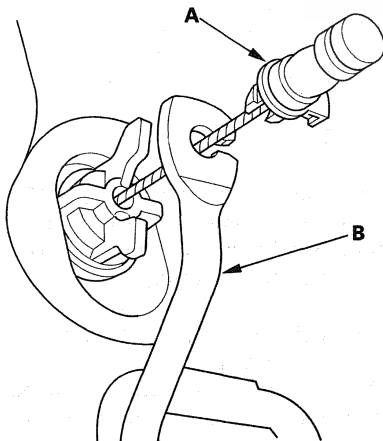
Intake Air System

Throttle Cable Removal/Installation

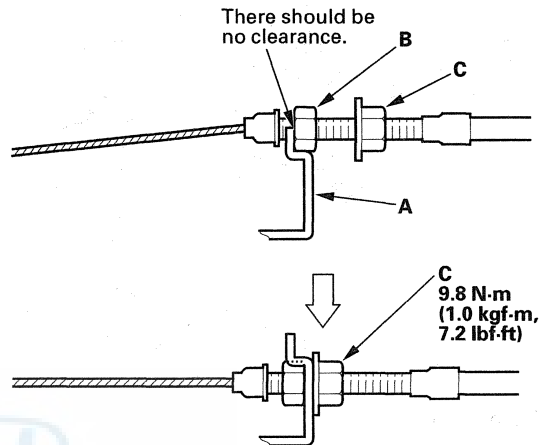
1. Remove the throttle cable cover (see step 1 on page 11-403).
2. Fully open the throttle link, then remove the throttle cable (A) from the throttle link (B).



3. Remove the cable housing (C) from the cable bracket (D).
4. Remove the throttle cable (A) from the accelerator pedal (B).



5. Install the parts in the reverse order of removal.
6. Hold the cable, removing all slack from it.
7. Set the cable on the bracket (A).
Turn the adjusting nut (B) until its free play is 0 mm.

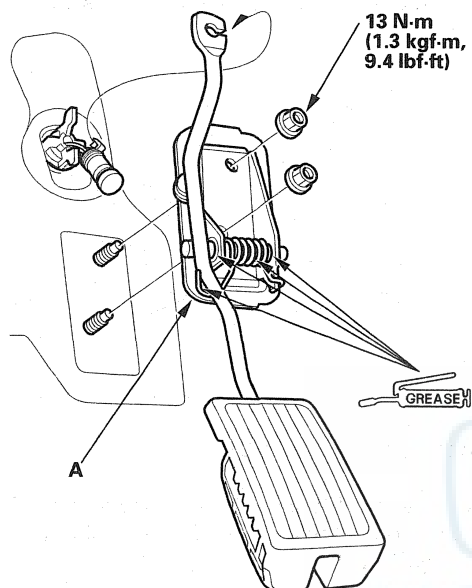


8. Position the adjusting nut on the other side of the bracket, then tighten the locknut (C).
9. Check the throttle cable free play (see step 2 on page 11-403).
10. With the cable properly adjusted, check the throttle link to be sure it opens fully when you push the accelerator pedal to the floor. Also check the throttle link to be sure it returns whenever you release the accelerator pedal.



Accelerator Pedal Removal/Installation

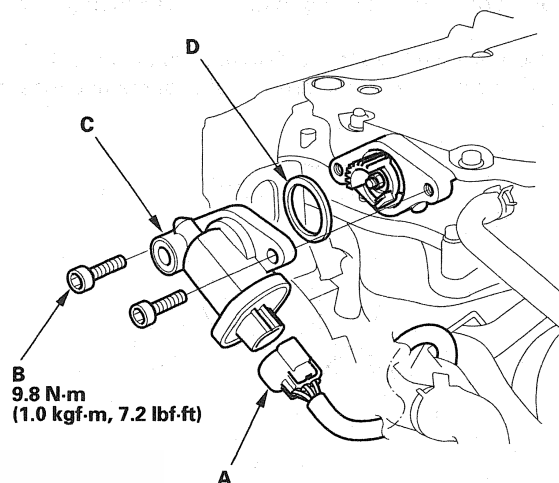
1. Remove the throttle cable from the accelerator pedal (see step 4 on page 11-404).
2. Remove the accelerator pedal bracket (A).



3. Install the parts in the reverse order of removal.

IMT Actuator Replacement

1. Remove the engine cover (see step 1 on page 9-4).
2. Disconnect the IMT actuator 5P connector (A).



3. Remove the bolts (B) and the IMT actuator (C).
4. Install the parts in the reverse order of removal with a new O-ring (D).

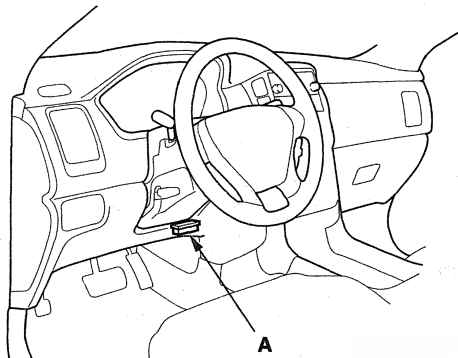
Intake Air System

Throttle Body Test

Carbon Accumulation Check

NOTE: If the malfunction indicator lamp (MIL) has been reported on, check for diagnostic trouble codes (DTCs).

1. Connect the HDS to the data link connector (DLC) (A) located under the driver's side of the dashboard.

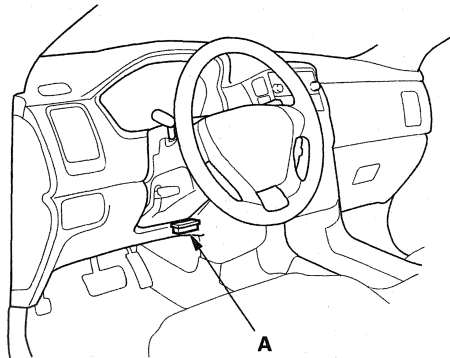


2. Turn the ignition switch ON (II).
3. Make sure the HDS communicates with the PCM. If it doesn't, go to the DLC circuit troubleshooting (see page 11-218).
4. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.
5. Check the REL TP SENSOR in the DATA LIST with the HDS. The reading should be below 2.46 deg. If it is not, clean the throttle body (see page 11-407).

Throttle Position Learning Check

NOTE: If the malfunction indicator lamp (MIL) has been reported on, check for diagnostic trouble codes (DTCs).

1. Connect the HDS to the data link connector (DLC) (A) located under the driver's side of the dashboard.



2. Turn the ignition switch ON (II).
3. Make sure the HDS communicates with the PCM. If it doesn't, go to the DLC circuit troubleshooting (see page 11-218).
4. Select the INSPECTION MENU with the HDS.
5. Do the TP LEARNING CHECK in the ETCS TEST. If needed, clean the throttle body (see page 11-407).



Throttle Body Cleaning

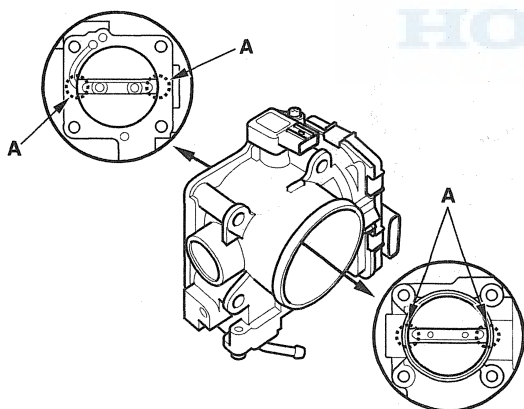
⚠ CAUTION

Do not insert your fingers into the installed throttle body when you turn the ignition switch ON (II) or while the ignition switch is ON (II). If you do, you will seriously injure your fingers if the throttle valve is activated.

1. Check for damage to the air cleaner. If the air cleaner is damaged, replace it (see page 11-402).
2. Remove the throttle body (see page 11-408).
3. Clean off the carbon from the throttle valve and inside the throttle body with a paper towel soaked in throttle plate and induction cleaner.

NOTE:

- Remove the throttle body to clean it.
- Be careful not to pinch your fingers.
- To avoid removing the molybdenum coating, do not clean the bearing area of the throttle shaft (A).
- Do not spray throttle plate and induction cleaner directly on the throttle body.
- Use Honda genuine throttle plate and induction cleaner.



4. Install the throttle body (see page 11-408).
5. Reset the PCM with the HDS (see page 11-4).
6. Turn the ignition switch ON (II), and wait for 2 seconds.
7. Do the PCM idle learn procedure (see page 11-359).

Intake Air System

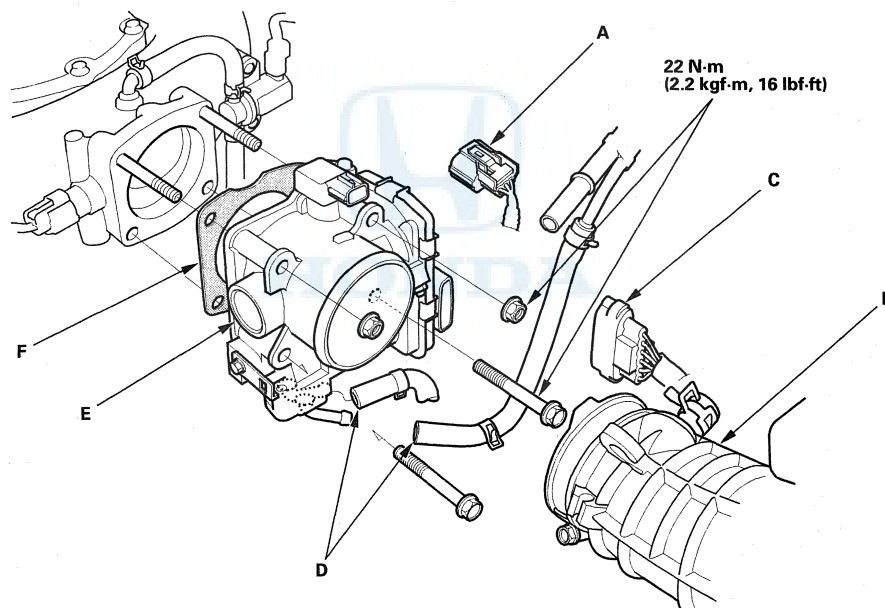
Throttle Body Removal/Installation

⚠ CAUTION

Do not insert your fingers into the installed throttle body when you turn the ignition switch ON (II) or while the ignition switch is ON (II). If you do, you will seriously injure your fingers if the throttle valve is activated.

NOTE: If you are replacing or cleaning the throttle body, start at step 1. If you are removing the throttle body start at step 4.

1. Connect the HDS while the engine is stopped.
2. Select the INSPECTION MENU with the HDS.
3. Do the TP POSITION CHECK in the ETCS TEST.
4. Turn the ignition switch OFF.
5. Disconnect the MAP sensor connector (A).

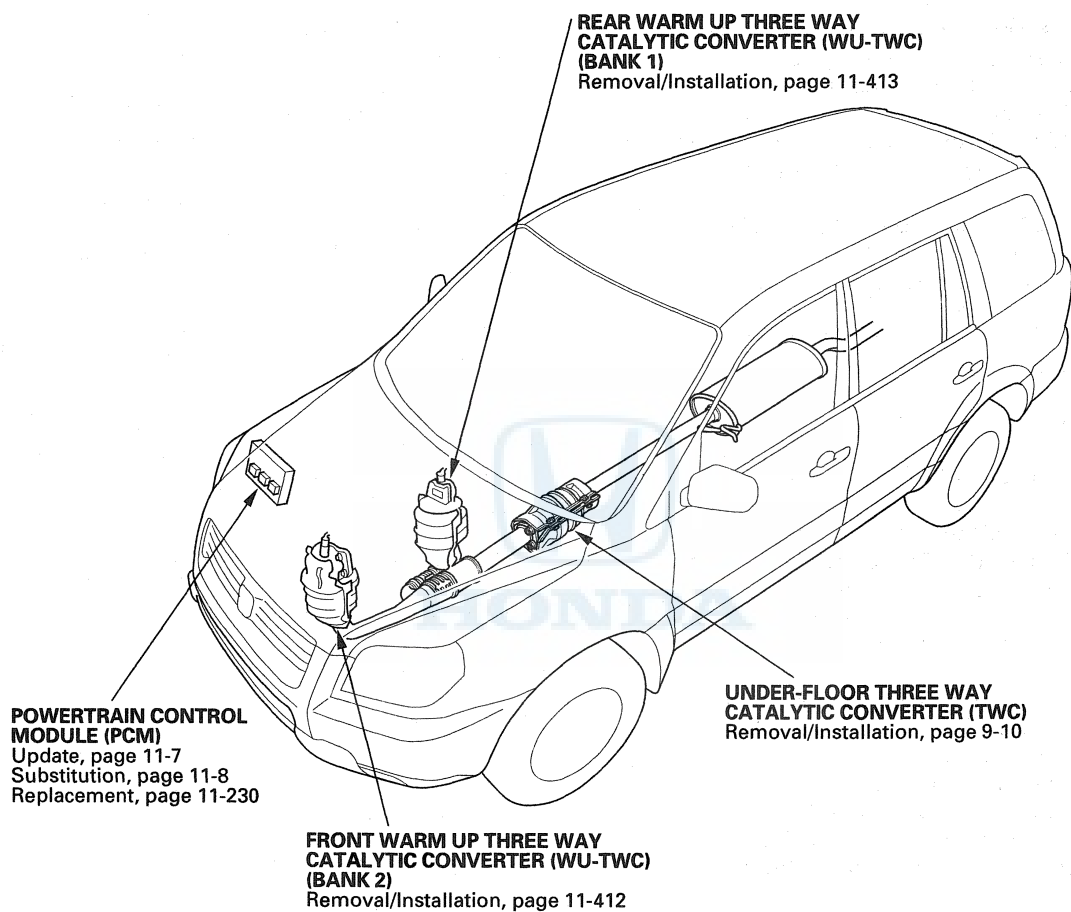


6. Remove the intake air duct (B).
7. Disconnect the throttle body connector (C).
8. Disconnect the water bypass hoses (D), and plug the water bypass hoses.
9. Remove the throttle body (E).
10. Install the parts in the reverse order of removal with a new gasket (F).
11. Check these items:
 - Do the PCM idle learn procedure after replacing the throttle body (see page 11-359).
 - Refill the radiator with engine coolant (see page 10-6).

Catalytic Converter System



Component Location Index



Catalytic Converter System

DTC Troubleshooting

DTC P0420: Rear Bank Catalyst System Efficiency Below Threshold (Bank 1)

DTC P0430: Front Bank Catalyst System Efficiency Below Threshold (Bank 2)

NOTE:

- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- If some of the DTCs listed below are stored at the same time as DTC P0420 and/or P0430*, troubleshoot those DTCs first, then recheck for DTC P0420 and/or P0430*.
P0137, P0138, P0157, P0158, P2270, P2271, P2272*, P2273*: Secondary HO2S (Sensor 2)
P0141, P0161: Secondary HO2S (Sensor 2) heater
- Poor quality fuel can cause these DTCs.
- Information marked with an asterisk (*) applies to the front bank (Bank 2).

1. Turn the ignition switch ON (II).

2. Clear the DTC with the HDS.

3. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.

4. Test-drive under these conditions:

- Engine coolant temperature (ECT SENSOR 1) above 158 °F (70 °C)
- Transmission in D position
- Vehicle speed between 45—75 mph (72—120 km/h) for 5 minutes or more
- Maintain the vehicle speed at 55 mph (88 km/h) for 5 minutes or more with cruise control set

5. Monitor the OBD STATUS for DTC P0420 and/or P0430* in the DTCs MENU with the HDS.

Does the screen indicate EXECUTING?

YES—Go to step 6.

NO—If the screen indicates PASSED, intermittent failure, the system is OK at this time. If the screen indicates EXECUTING, keep driving until a result comes on. If the screen indicates OUT OF CONDITION, go to step 4 and recheck.

6. Continue test driving until a result comes on.

7. Monitor the OBD STATUS for DTC P0420 and/or P0430* in the DTCs MENU with the HDS.

Does the screen indicate FAILED?

YES—Go to step 8.

NO—If the screen indicates PASSED, intermittent failure, the system is OK at this time. If the screen indicates EXECUTING, keep driving until a result comes on. If the screen indicates OUT OF CONDITION, go to step 4 and recheck.

8. Turn the ignition switch OFF.

9. Replace the WU-TWC:

- For DTC P0420, replace the rear WU-TWC (Bank 1) (see page 11-413).
- For DTC P0430, replace the front WU-TWC (Bank 2) (see page 11-412).

10. Turn the ignition switch ON (II).

11. Reset the PCM with the HDS.

12. Do the PCM idle learn procedure (see page 11-359).



13. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.

14. Test-drive for about 10 minutes, varying the vehicle speed.

15. Check the CAT MONITOR CONDITION B1 (B2)* in the DATA LIST with the HDS.

Is the temperature OK?

YES—Go to step 16.

NO—Go to step 13 and recheck.

16. Test-drive under these conditions:

- Engine coolant temperature (ECT SENSOR 1) above 158 °F (70 °C)
- Transmission in D position
- Vehicle speed between 45—75 mph (72—120 km/h) for 5 minutes or more
- Maintain the vehicle speed at 55 mph (88 km/h) for 5 minutes or more with cruise control set

17. Monitor the OBD STATUS for DTC P0420 and/or P0430* in the DTCs MENU with the HDS.

Does the screen indicate EXECUTING?

YES—Go to step 18.

NO—Go to step 16 and recheck.

18. Continue test driving until a result comes on.

19. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—Go to the indicated DTC's troubleshooting. ■

NO—Go to step 20.

20. Monitor the OBD STATUS for DTC P0420 and/or P0430* in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. ■

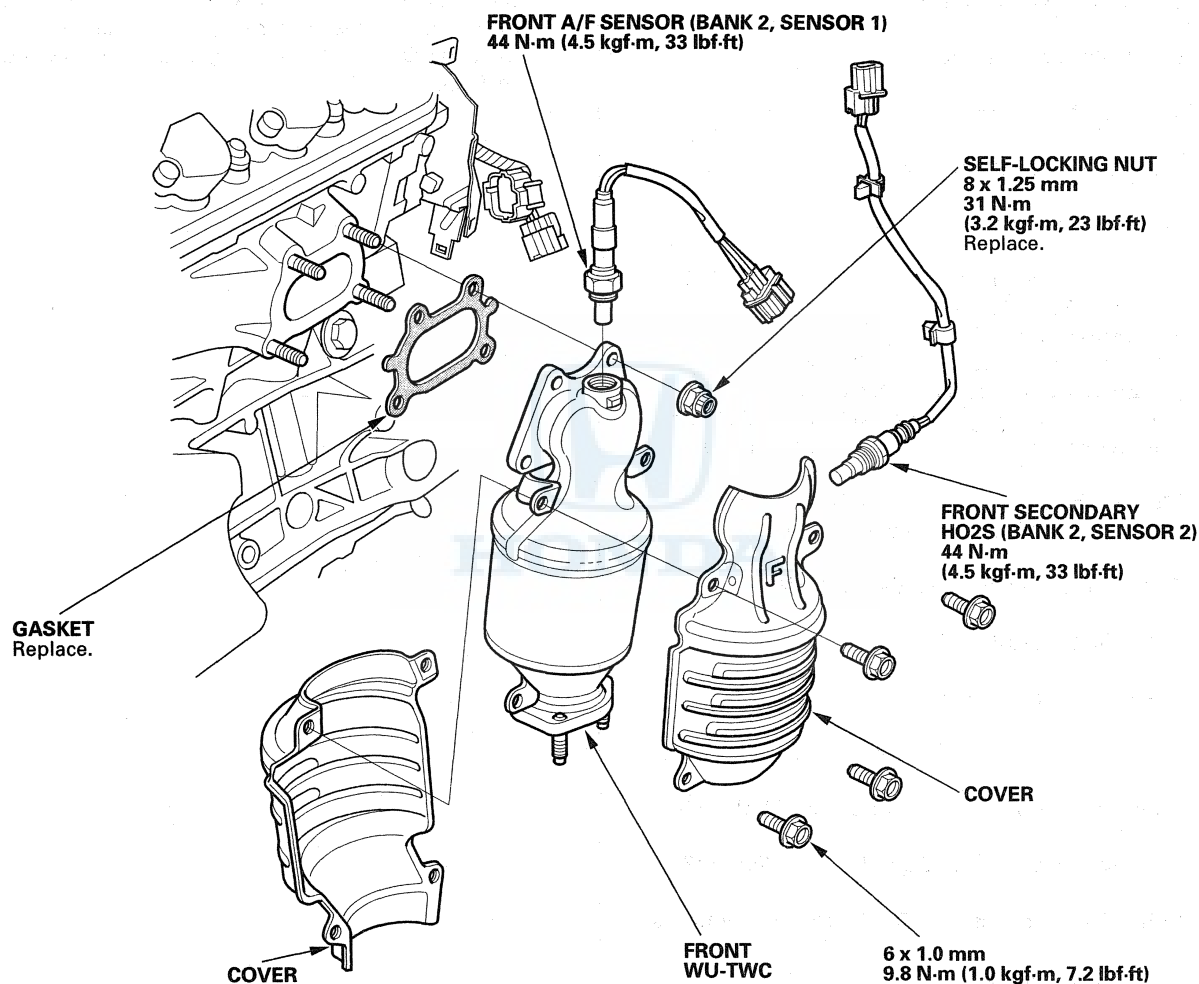
NO—If the screen indicates FAILED, check the fuel quality. If the screen indicates EXECUTING, keep driving until a result comes on. If the screen indicates OUT OF CONDITION, go to step 13 and recheck.

Catalytic Converter System

Warm Up TWC Removal/Installation

FRONT (BANK 2)

1. Remove the condenser fan shroud (see page 10-13).
2. Disconnect the front air fuel ratio (A/F) sensor connector and front secondary heated oxygen sensor (secondary HO2S) connector.
3. Remove the front WU-TWC.

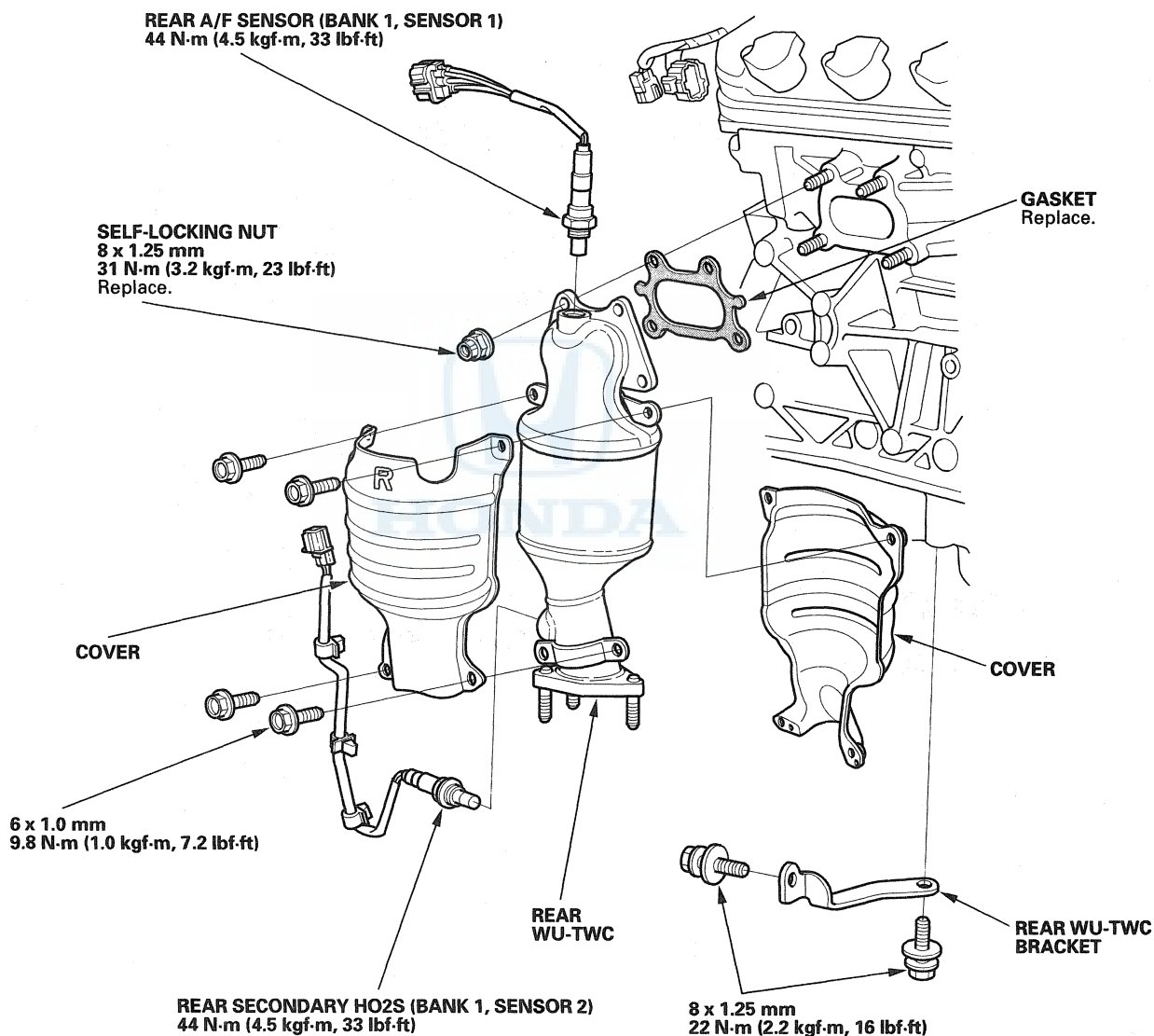


4. Install the front WU-TWC, and tighten the nuts in a crisscross pattern in two or three steps.
5. Install the parts in the reverse order of removal.



REAR (BANK 1)

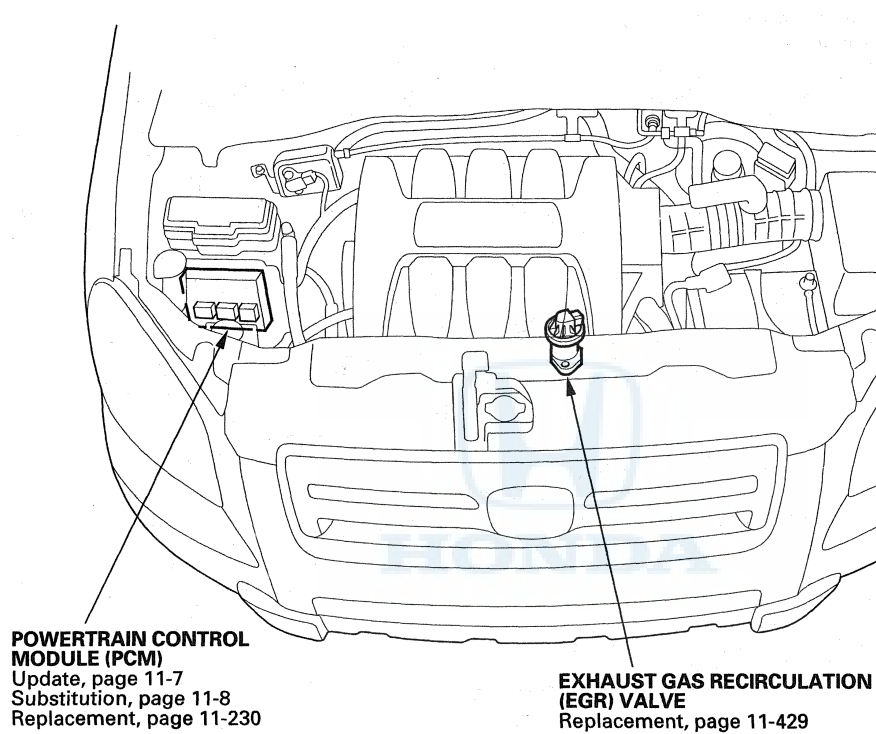
1. Remove the intermediate shaft (see page 16-21).
2. Disconnect the rear air fuel ratio (A/F) sensor connector and rear secondary heated oxygen sensor (secondary HO2S) connector.
3. Remove the rear WU-TWC bracket, then remove the rear WU-TWC.



4. Install the rear WU-TWC, and tighten the nuts in a crisscross pattern in two or three steps.
5. Install the parts in the reverse order of removal.

EGR System

Component Location Index





DTC Troubleshooting

DTC P0401: EGR Insufficient Flow

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.
4. Do the EGR TEST in the INSPECTION MENU with the HDS.

Is the result OK?

YES—Go to step 5.

NO—Go to step 7.

5. Test-drive under these conditions:

- Engine coolant temperature (ECT SENSOR 1) above 158 °F (70 °C)
- Transmission in D position
- Drive at a steady speed between 55—75 mph (88—120 km/h) for at least 10 seconds, then decelerate (with throttle fully closed) for 5 seconds.

6. Monitor the OBD STATUS for DTC P0401 in the DTCs MENU with the HDS.

Does the screen indicate FAILED?

YES—Remove the engine cover (see step 1 on page 9-4), clean the intake manifold, and EGR ports with throttle plate and induction cleaner, then go to step 9.

NO—If the screen indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the EGR valve and the PCM. If the screen indicates EXECUTING, keep driving until a result comes on. If the screen indicates OUT OF CONDITION, go to step 5 and recheck.

7. Turn the ignition switch OFF.
8. Replace the EGR valve (see page 11-429).

9. Turn the ignition switch ON (II).

10. Reset the PCM with the HDS.

11. Do the PCM idle learn procedure (see page 11-359).

12. Test-drive under these conditions:

- Engine coolant temperature (ECT SENSOR 1) above 158 °F (70 °C)
- Transmission in D position
- Drive at a steady speed between 55—75 mph (88—120 km/h) for at least 10 seconds, then decelerate (with throttle fully closed) for 5 seconds.

13. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0401 indicated?

YES—Check for poor connections or loose terminals at the EGR valve and the PCM, then go to step 1. If the connections are OK, go to step 15.

NO—Go to step 14.

14. Monitor the OBD STATUS for DTC P0401 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 13, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the EGR valve and the PCM, then go to step 1. If the screen indicates EXECUTING, keep driving until a result comes on. If the screen indicates OUT OF CONDITION, go to step 12.

(cont'd)

EGR System

DTC Troubleshooting (cont'd)

15. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).

16. Test-drive under these conditions:

- Engine coolant temperature (ECT SENSOR 1) above 158 °F (70 °C)
- Transmission in D position
- Drive at a steady speed between 55—75 mph (88—120 km/h) for at least 10 seconds, then decelerate (with throttle fully closed) for 5 seconds.

17. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0401 indicated?

YES—Check for poor connections or loose terminals at the EGR valve and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then go to step 16. If the PCM was substituted, go to step 1.

NO—Go to step 18.

18. Monitor the OBD STATUS for DTC P0401 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-230). If any other Temporary DTCs or DTCs were indicated in step 17, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the EGR valve and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then go to step 16. If the PCM was substituted, go to step 1. If the screen indicates EXECUTING, keep driving until a result comes on. If the screen indicates OUT OF CONDITION, go to step 16.



DTC P0404: EGR Valve Circuit Range/Performance Problem

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.
4. Do the EGR TEST in the INSPECTION MENU with the HDS.

Is the result OK?

YES—Intermittent failure, the system is OK at this time. Clean any carbon build-up on the EGR valve with throttle plate and induction cleaner. ■

NO—Go to step 5.

5. Turn the ignition switch OFF.
6. Disconnect the EGR valve 6P connector.
7. At the EGR valve side, measure resistance between EGR valve 6P connector terminals No. 1 and No. 2.

EGR VALVE 6P CONNECTOR



Terminal side of male terminals

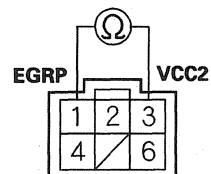
Is there 100 k Ω or more?

YES—Go to step 25.

NO—Go to step 8.

8. At the EGR valve side, measure resistance between EGR valve 6P connector terminals No. 1 and No. 3.

EGR VALVE 6P CONNECTOR



Terminal side of male terminals

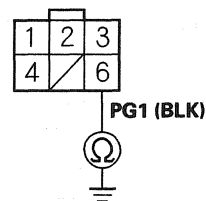
Is there 100 k Ω or more?

YES—Go to step 25.

NO—Go to step 9.

9. Check for continuity between EGR valve 6P connector terminal No. 6 and body ground.

EGR VALVE 6P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Go to step 10.

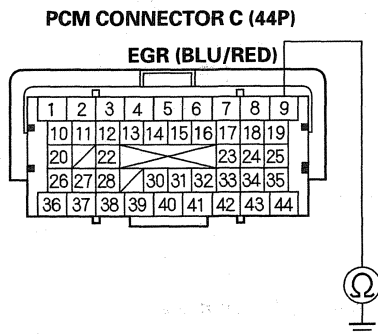
NO—Repair open in the wire between the EGR valve and G101, then go to step 26.

(cont'd)

EGR System

DTC Troubleshooting (cont'd)

10. Jump the SCS line with the HDS.
11. Disconnect PCM connector C (44P).
12. Check for continuity between PCM connector terminal C9 and body ground.



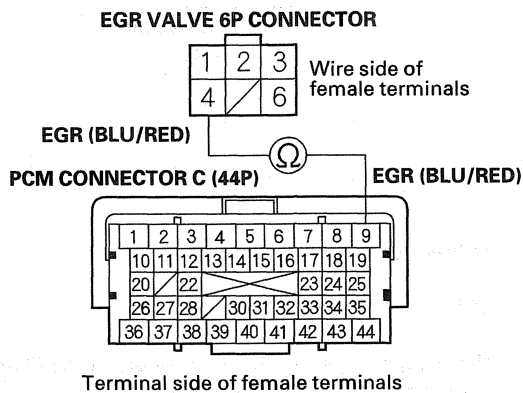
Terminal side of female terminals

Is there continuity?

YES—Repair short in the wire between the PCM (C9) and the EGR valve, then go to step 26.

NO—Go to step 13.

13. Check for continuity between PCM connector terminal C9 and EGR valve 6P connector terminal No. 4.



Is there continuity?

YES—Go to step 14.

NO—Repair open in the wire between the PCM (C9) and the EGR valve, then go to step 26.

14. Remove the EGR valve (see page 11-429).
15. Clean the intake manifold EGR port and the passage inside the EGR valve with throttle plate and induction cleaner.
16. Install the EGR valve (see page 11-429).
17. Reconnect the EGR valve 6P connector.
18. Reconnect PCM connector C (44P).
19. Turn the ignition switch ON (II).
20. Reset the PCM with the HDS.
21. Do the PCM idle learn procedure (see page 11-359).
22. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.
23. Do the EGR TEST in the INSPECTION MENU with the HDS.

Is the result OK?

YES—Go to step 32.

NO—Go to step 24.



24. Turn the ignition switch OFF.
25. Replace the EGR valve (see page 11-429).
26. Reconnect all connectors.
27. Turn the ignition switch ON (II).
28. Reset the PCM with the HDS.
29. Do the PCM idle learn procedure (see page 11-359).
30. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.
31. Do the EGR TEST in the INSPECTION MENU with the HDS.
32. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0404 indicated?

YES—Check for poor connections or loose terminals at the EGR valve and the PCM, then go to step 1. If the connections and terminals are OK, go to step 34.

NO—Go to step 33.

33. Monitor the OBD STATUS for DTC P0404 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 32, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the EGR valve and the PCM, then go to step 1. If the screen indicates EXECUTING, keep driving until a result comes on. If the screen indicates OUT OF CONDITION, go to step 30.

34. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).

35. Do the EGR TEST in the INSPECTION MENU with the HDS.

36. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0404 indicated?

YES—Check for poor connections or loose terminals at the EGR valve and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then go to step 35. If the PCM was substituted, go to step 1.

NO—Go to step 37.

37. Monitor the OBD STATUS for DTC P0404 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-230). If any other Temporary DTCs or DTCs were indicated in step 36, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the EGR valve and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then go to step 35. If the PCM was substituted, go to step 1. If the screen indicates EXECUTING, keep idling until a result comes on. If the screen indicates OUT OF CONDITION, go to step 35.

EGR System

DTC Troubleshooting (cont'd)

DTC P0406: EGR Valve Position Sensor Circuit High Voltage

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch ON (II).
2. Check the EGR VLS in the DATA LIST with the HDS.

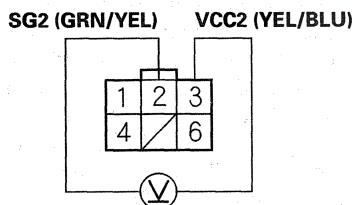
Is there 4.88 V or more?

YES—Go to step 3.

NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the EGR valve and the PCM. ■

3. Turn the ignition switch OFF.
4. Disconnect the EGR valve 6P connector.
5. Turn the ignition switch ON (II).
6. Measure voltage between EGR valve 6P connector terminals No. 2 and No. 3.

EGR VALVE 6P CONNECTOR



Wire side of female terminals

Is there about 5 V?

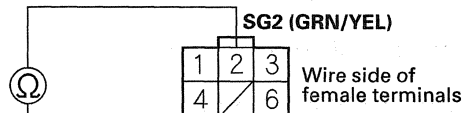
YES—Go to step 11.

NO—Go to step 7.

7. Turn the ignition switch OFF.
8. Jump the SCS line with the HDS.
9. Disconnect PCM connector C (44P).

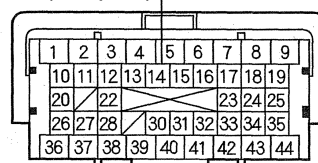
10. Check for continuity between PCM connector terminal C14 and EGR valve 6P connector terminal No. 2.

EGR VALVE 6P CONNECTOR



Wire side of female terminals

SG2 (GRN/YEL) PCM CONNECTOR C (44P)



Terminal side of female terminals

Is there continuity?

YES—Go to step 18.

NO—Repair open in the wire between the EGR valve and the PCM (C14), then go to step 13.

11. Turn the ignition switch OFF.
12. Replace the EGR valve (see page 11-429).
13. Reconnect all connectors.
14. Turn the ignition switch ON (II).
15. Reset the PCM with the HDS.
16. Do the PCM idle learn procedure (see page 11-359).
17. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0406 indicated?

YES—Check for poor connections or loose terminals at the EGR valve and the PCM, then go to step 1.

NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

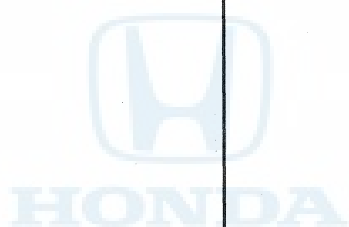


18. Reconnect all connectors.
19. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).
20. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0406 indicated?

YES—Check for poor connections or loose terminals at the EGR valve and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1.

NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-230). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■



EGR System

DTC Troubleshooting (cont'd)

DTC P2413: EGR System Malfunction

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.
4. Do the EGR TEST in the INSPECTION MENU with the HDS.

Is the result OK?

YES—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the EGR valve and the PCM. ■

NO—Go to step 5.

5. Turn the ignition switch OFF.
6. Turn the ignition switch ON (II).
7. Check the EGR VLS in the DATA LIST with the HDS.

Is there about 0 V?

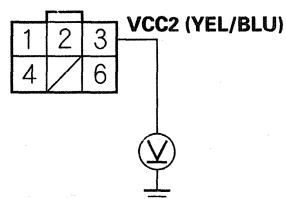
YES—Go to step 8.

NO—Go to step 21.

8. Turn the ignition switch OFF.
9. Disconnect the EGR valve 6P connector.
10. Turn the ignition switch ON (II).

11. Measure voltage between EGR valve 6P connector terminal No. 3 and body ground.

EGR VALVE 6P CONNECTOR



Wire side of female terminals

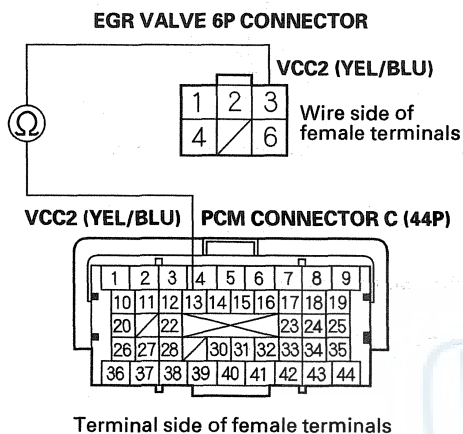
Is there about 5 V?

YES—Go to step 16.

NO—Go to step 12.



12. Turn the ignition switch OFF.
13. Jump the SCS line with the HDS.
14. Disconnect PCM connector C (44P).
15. Check for continuity between PCM connector terminal C13 and EGR valve 6P connector terminal No. 3.

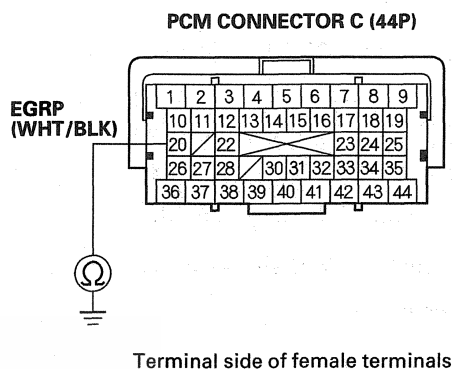


Is there continuity?

YES—Go to step 52.

NO—Repair open in the wire between the EGR valve and the PCM (C13), then go to step 44.

16. Turn the ignition switch OFF.
17. Jump the SCS line with the HDS.
18. Disconnect PCM connector C (44P).
19. Check for continuity between PCM connector terminal C20 and body ground.



Is there continuity?

YES—Repair short in the wire between the PCM (C20) and the EGR valve, then go to step 44.

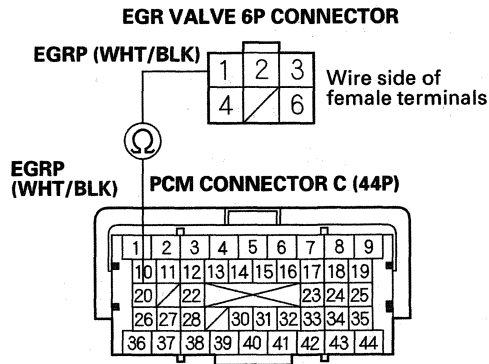
NO—Go to step 20.

(cont'd)

EGR System

DTC Troubleshooting (cont'd)

20. Check for continuity between PCM connector terminal C20 and EGR valve 6P connector terminal No. 1.



Is there continuity?

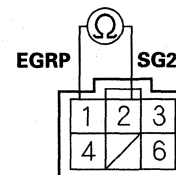
YES—Go to step 21.

NO—Repair open in the wire between the PCM (C20) and the EGR valve, then go to step 44.

21. Turn the ignition switch OFF.
22. If not already done, disconnect the EGR valve 6P connector.

23. At the EGR valve side, measure resistance between EGR valve 6P connector terminals No. 1 and No. 2.

EGR VALVE 6P CONNECTOR



Is there 100 k Ω or more?

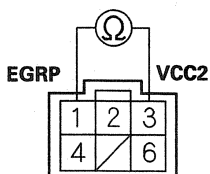
YES—Go to step 43.

NO—Go to step 24.



24. At the EGR valve side, measure resistance between EGR valve 6P connector terminals No. 1 and No. 3.

EGR VALVE 6P CONNECTOR



Terminal side of male terminals

Is there 100 k Ω or more?

YES—Go to step 43.

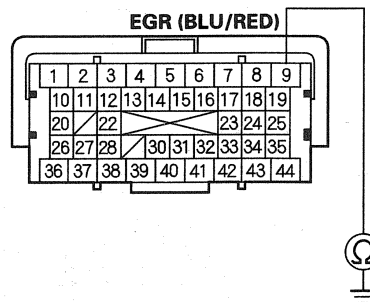
NO—Go to step 25.

25. If not already done, jump the SCS line with the HDS.

26. If not already done, disconnect PCM connector C (44P).

27. Check for continuity between PCM connector terminal C9 and body ground.

PCM CONNECTOR C (44P)



Terminal side of female terminals

Is there continuity?

YES—Repair short in the wire between the PCM (C9) and the EGR valve, then go to step 44.

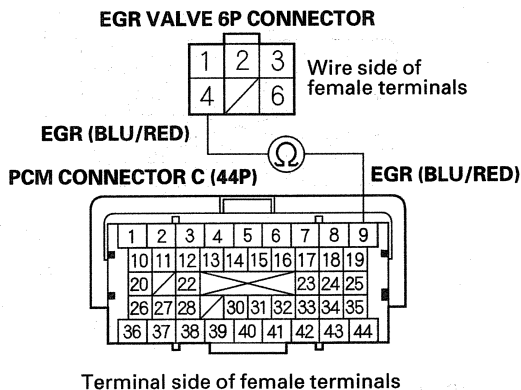
NO—Go to step 28.

(cont'd)

EGR System

DTC Troubleshooting (cont'd)

28. Check for continuity between PCM connector terminal C9 and EGR valve 6P connector terminal No. 4.



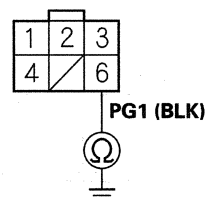
Is there continuity?

YES—Go to step 29.

NO—Repair open in the wire between the PCM (C9) and the EGR valve, then go to step 44.

29. Check for continuity between EGR valve 6P connector terminal No. 6 and body ground.

EGR VALVE 6P CONNECTOR



Wire side of female terminals

Is there continuity?

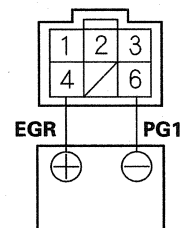
YES—Go to step 30.

NO—Repair open in the wire between the EGR valve and G101, then go to step 44.

30. Reconnect PCM connector C (44P).

31. At the EGR valve side, connect the battery positive terminal to EGR valve 6P connector terminal No. 4 with a jumper wire.

EGR VALVE 6P CONNECTOR



Terminal side of male terminals



32. Start the engine and let it idle, then connect the battery negative terminal to EGR valve 6P connector terminal No. 6 with a jumper wire.

Does the engine stall or run rough?

YES—Go to step 51.

NO—Go to step 33.

33. Turn the ignition switch OFF.
34. Remove the EGR valve (see page 11-429).
35. Clean the intake manifold EGR port and the passage inside the EGR valve with throttle plate and induction cleaner.
36. Install the EGR valve (see page 11-429).
37. Reconnect all connectors.
38. Turn the ignition switch ON (II).
39. Reset the PCM with the HDS.
40. Do the PCM idle learn procedure (see page 11-359).
41. Do the EGR TEST in the INSPECTION MENU with the HDS.

Is the result OK?

YES—Go to step 49.

NO—Go to step 42.

42. Turn the ignition switch OFF.
43. Replace the EGR valve (see page 11-429).
44. Reconnect all connectors.
45. Turn the ignition switch ON (II).
46. Reset the PCM with the HDS.
47. Do the PCM idle learn procedure (see page 11-359).
48. Do the EGR TEST in the INSPECTION MENU with the HDS.
49. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P2413 indicated?

YES—Check for poor connections or loose terminals at the EGR valve and the PCM, then go to step 1.

NO—Go to step 50.

50. Monitor the OBD STATUS for DTC P2413 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 49, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the EGR valve and valve the PCM, then go to step 1. If the screen indicates EXECUTING, keep idling until a result comes on. If the screen indicates OUT OF CONDITION, go to step 48.

(cont'd)

EGR System

DTC Troubleshooting (cont'd)

51. Turn the ignition switch OFF.
52. Reconnect all connectors.
53. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).
54. Do the EGR TEST in the INSPECTION MENU with the HDS.
55. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P2413 indicated?

YES—Check for poor connections or loose terminals at the EGR valve and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then go to step 54. If the PCM was substituted, go to step 1.

NO—Go to step 56.

56. Monitor the OBD STATUS for DTC P2413 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

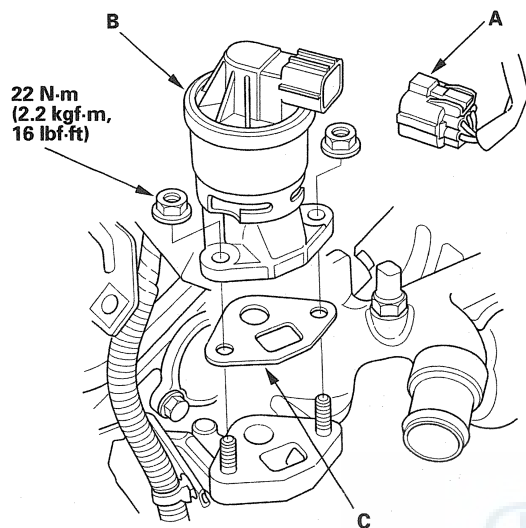
YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-230). If any other Temporary DTCs or DTCs were indicated in step 55, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the EGR valve and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then go to step 54. If the PCM was substituted, go to step 1. If the screen indicates EXECUTING, keep idling until a result comes on. If the screen indicates OUT OF CONDITION, go to step 54.



EGR Valve Replacement

1. Remove the engine cover (see step 1 on page 9-4).
2. Disconnect the EGR valve 6P connector (A).

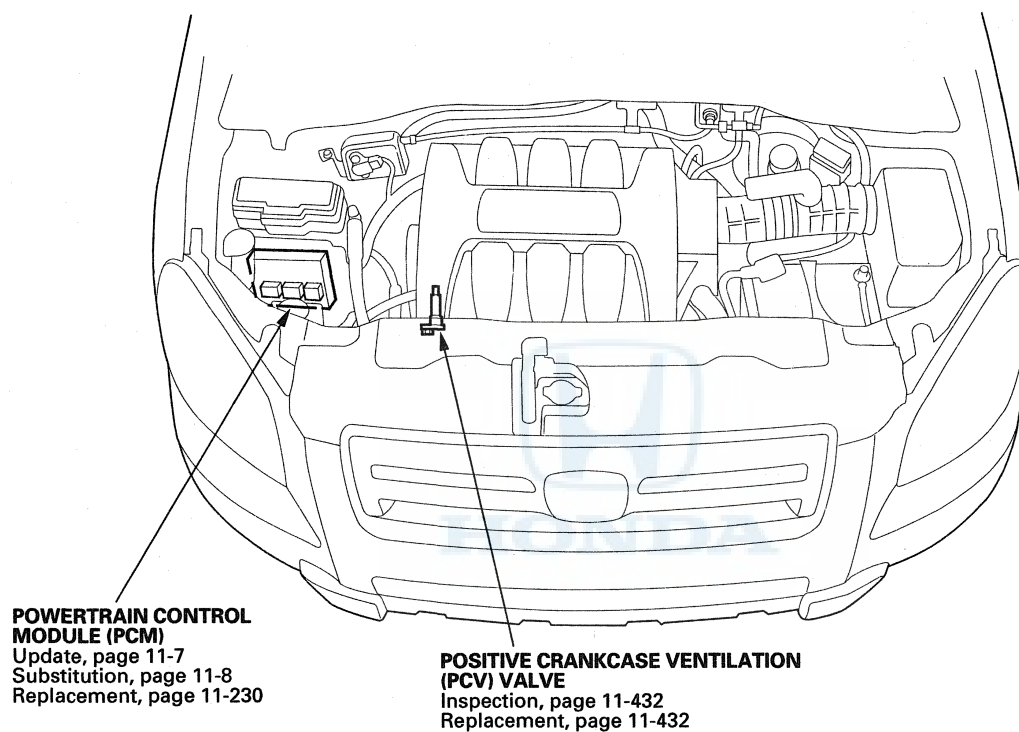


3. Remove the EGR valve (B).
4. Install the parts in the reverse order of removal with a new gasket (C).



PCV System

Component Location Index





DTC Troubleshooting

DTC P2279: Intake Air System Leak

NOTE:

- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- If DTC P0443 is stored at the same time as DTC P2279, troubleshoot DTC P0443 first, then recheck for DTC P2279.

1. Check for vacuum leaks at these parts:

- PCV valve
- PCV hose
- EVAP canister purge line
- Throttle body
- Intake manifold
- Brake booster and hose

Are the parts OK?

YES—Go to step 2.

NO—Repair or replace the leaking part(s), then go to step 4.

2. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle for 1 minute.

3. Monitor the OBD STATUS for DTC P2279 in the DTCs MENU with the HDS.

Does the screen indicate FAILED?

YES—Check the camshaft timing; J35A9 engine (see page 6-13), J35Z1 engine (see page 6-70), then go to step 4.

NO—If the screen indicates PASSED, intermittent failure, the system is OK at this time. If the screen indicates NOT COMPLETED, go to step 2 and recheck.

4. Reset the PCM with the HDS.

5. Do the PCM idle learn procedure (see page 11-359).

6. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle for 1 minute.

7. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P2279 indicated?

YES—Check for vacuum leaks at the PCV valve, the PCV hose, the EVAP canister purge line, the throttle body, the intake manifold, or the brake booster and hose, then go to step 1.

NO—Go to step 8.

8. Monitor the OBD STATUS for DTC P2279 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

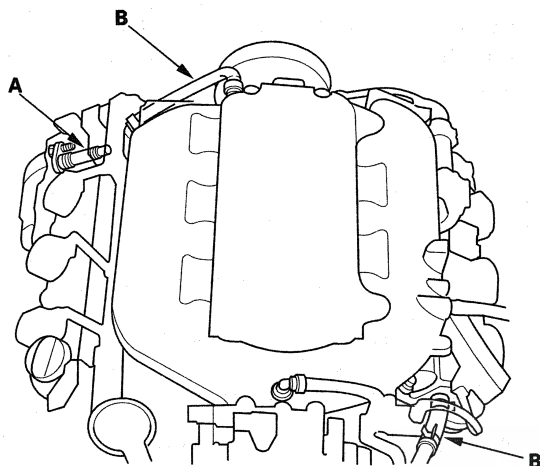
YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 7, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, go to step 1 and recheck. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

PCV System

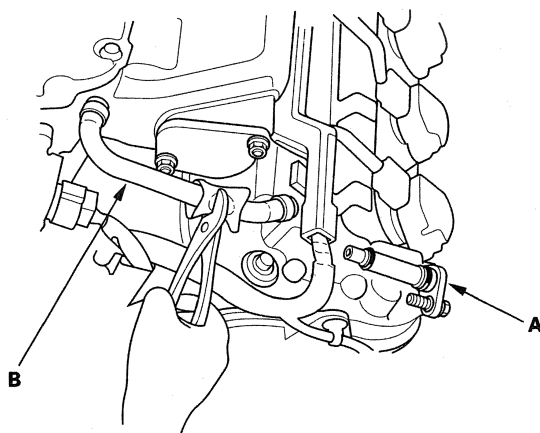
PCV Valve Inspection

1. Remove the engine cover (see step 1 on page 9-4).
2. Check the PCV valve (A), hoses (B), and connections for leaks or restrictions.



3. At idle, listen to the PCV valve (A) with a stethoscope as you lightly pinch the PCV hose (B) with your fingers or pliers several times. Each time the hose is pinched, the valve should click.

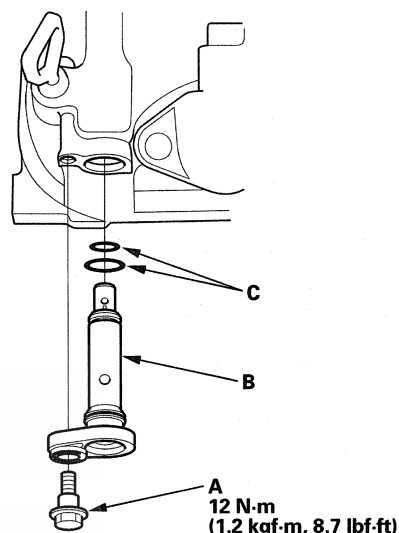
If there is no clicking sound, check the PCV valve grommet for cracks or damage. If the grommet is OK, replace the PCV valve and recheck.



PCV Valve Replacement

1. Remove the engine cover (see step 1 on page 9-4).
2. Disconnect the bolt (A).

NOTE: Take care not to spill oil on the hot exhaust manifold.



3. Remove the PCV valve (B).
4. Install the parts in the reverse order of removal.

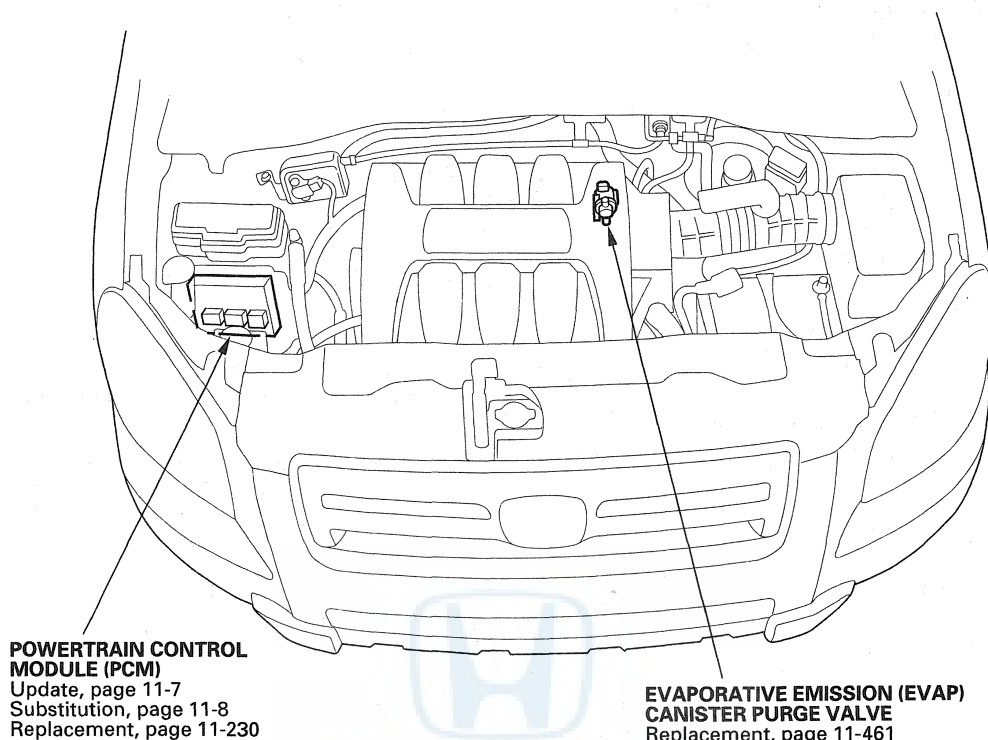
NOTE:

- When installing a new PCV valve, make sure the O-rings (C) are in place.
- When installing a used PCV valve, use new O-rings.

EVAP System

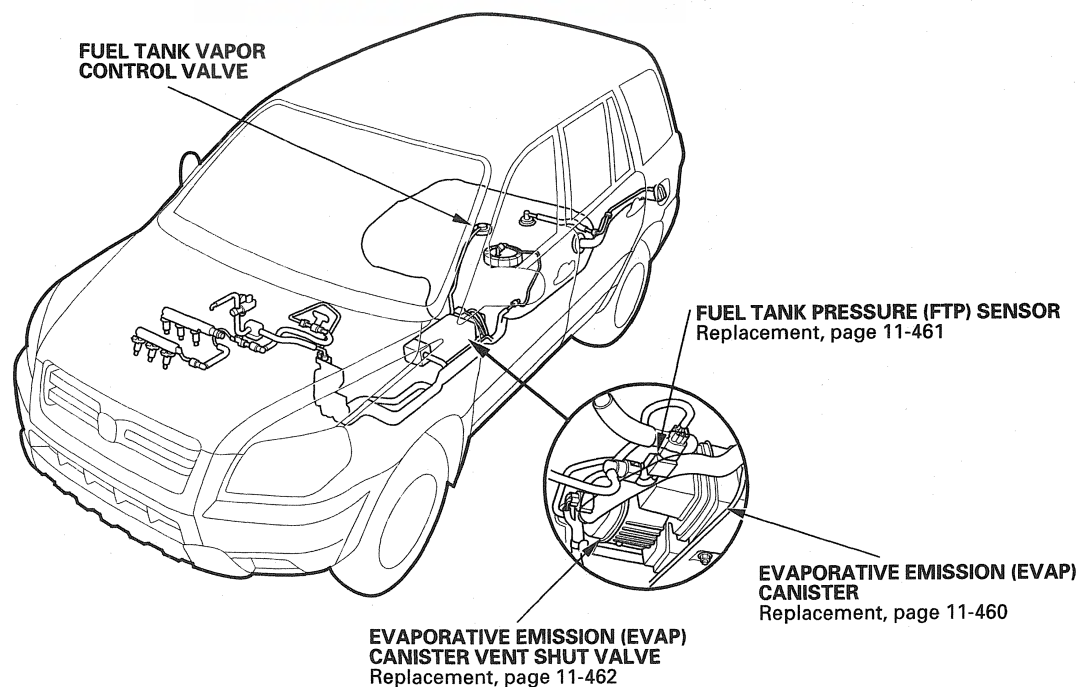


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**FUEL TANK VAPOR
CONTROL VALVE**

FUEL TANK PRESSURE (FTP) SENSOR
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CANISTER VENT SHUT VALVE**
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Replacement, page 11-460

EVAP System

DTC Troubleshooting

DTC P0443: EVAP Canister Purge Valve Circuit Malfunction

Special Tools Required

Vacuum pump/gauge, 0–30 in.Hg, Snap-on YA4000A or equivalent, commercially available

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

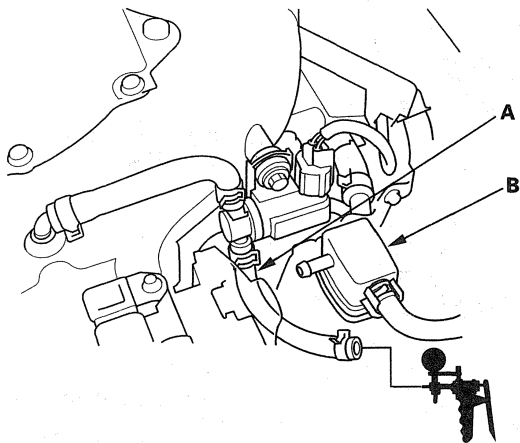
1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.
4. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0443 indicated?

YES—Go to step 5.

NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the EVAP canister purge valve and the PCM. ■

5. Turn the ignition switch OFF, and allow the engine to cool below 140 °F (60 °C).
6. Disconnect the vacuum hose (A) from the purge joint (B) in the engine compartment, and connect a vacuum pump/gauge, 0–30 in.Hg, to the hose.



7. Start the engine, and let it idle.

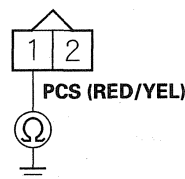
Is there vacuum?

YES—Go to step 8.

NO—Go to step 14.

8. Turn the ignition switch OFF.
9. Disconnect the EVAP canister purge valve 2P connector.
10. Check for continuity between EVAP canister purge valve 2P connector terminal No. 1 and body ground.

EVAP CANISTER PURGE VALVE 2P CONNECTOR



Wire side of female terminals

Is there continuity?

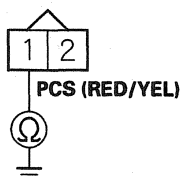
YES—Go to step 11.

NO—Go to step 23.



11. Jump the SCS line with the HDS.
12. Disconnect PCM connector C (44P).
13. Check for continuity between EVAP canister purge valve 2P connector terminal No. 1 and body ground.

**EVAP CANISTER PURGE VALVE
2P CONNECTOR**



Wire side of female terminals

Is there continuity?

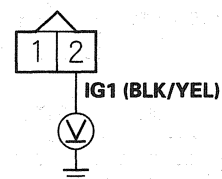
YES—Repair short in the wire between the EVAP canister purge valve and the PCM (C37), then go to step 24.

NO—Go to step 30.

14. Turn the ignition switch OFF.
15. Disconnect the EVAP canister purge valve 2P connector.
16. Turn the ignition switch ON (II).

17. Measure voltage between EVAP canister purge valve 2P connector terminal No. 2 and body ground.

**EVAP CANISTER PURGE VALVE
2P CONNECTOR**



Wire side of female terminals

Is there battery voltage?

YES—Go to step 18.

NO—Repair open in the wire between the EVAP canister purge valve and the No. 6 FI-ECU (15 A) fuse in the driver's under-dash fuse/relay box, then go to step 24.

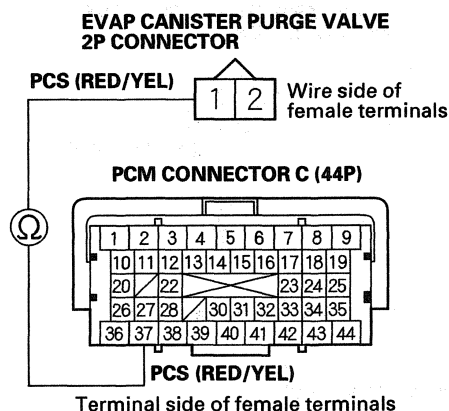
18. Turn the ignition switch OFF.
19. Jump the SCS line with the HDS.
20. Disconnect PCM connector C (44P).

(cont'd)

EVAP System

DTC Troubleshooting (cont'd)

21. Check for continuity between PCM connector terminal C37 and EVAP canister purge valve 2P connector terminal No. 1.



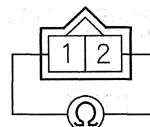
Is there continuity?

YES—Go to step 22.

NO—Repair open in the wire between the EVAP canister purge valve and the PCM (C37), then go to step 24.

22. At the purge valve side, measure resistance between EVAP canister purge valve 2P connector terminals No. 1 and No. 2.

EVAP CANISTER PURGE VALVE 2P CONNECTOR



Terminal side of male terminals

Is there about 26—30 Ω at room temperature?

YES—Go to step 30.

NO—Go to step 23.

23. Replace the EVAP canister purge valve (see page 11-461).
24. Reconnect all connectors.
25. Turn the ignition switch ON (II).
26. Reset the PCM with the HDS.
27. Do the PCM idle learn procedure (see page 11-359).



28. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0443 indicated?

YES—Check for poor connections or loose terminals at the EVAP canister purge valve and the PCM, then go to step 1.

NO—Go to step 29.

29. Monitor the OBD STATUS for DTC P0443 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 28, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the EVAP canister purge valve and the PCM, then go to step 1. If the screen indicates EXECUTING or OUT OF CONDITION, keep idling until a result comes on.

30. Reconnect all connectors.

31. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).

32. Start the engine, and let it idle.

33. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0443 indicated?

YES—Check for poor connections or loose terminals at the EVAP canister purge valve and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then go to step 32. If the PCM was substituted, go to step 1.

NO—Go to step 34.

34. Monitor the OBD STATUS for DTC P0443 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-230). If any other Temporary DTCs or DTCs were indicated in step 33, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the EVAP canister purge valve and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then go to step 32. If the PCM was substituted, go to step 1. If the screen indicates EXECUTING or OUT OF CONDITION, keep idling until a result comes on.

EVAP System

DTC Troubleshooting (cont'd)

DTC P0451: FTP Sensor Circuit Range/Performance Problem

NOTE:

- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- If DTC P2422 is stored at the same time as DTC P0451, troubleshoot DTC P2422 first, then recheck for DTC P0451.

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine, and let it idle 1 minute.
4. Monitor the OBD STATUS for DTC P0451 in the DTCs MENU with the HDS.

Does the screen indicate FAILED?

YES—Go to step 5.

NO—If the screen indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the FTP sensor and the PCM. If the screen indicates NOT COMPLETED, go to step 3 and recheck.

5. Turn the ignition switch OFF.
6. Replace the FTP sensor (see page 11-461).
7. Turn the ignition switch ON (II).
8. Reset the PCM with the HDS.
9. Do the PCM idle learn procedure (see page 11-359).
10. Start the engine, and let it idle 1 minute.

11. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0451 indicated?

YES—Check for poor connections or loose terminals at the FTP sensor and the PCM, then go to step 1.

NO—Go to step 12.

12. Monitor the OBD STATUS for DTC P0451 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 11, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the FTP sensor and the PCM, then go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.



DTC P0452: FTP Sensor Circuit Low Voltage

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch OFF.
4. Remove the fuel fill cap.
5. Turn the ignition switch ON (II).
6. Check the FTP SENSOR in the DATA LIST with the HDS.

Is about -7.3 kPa (-2.16 in.Hg, -55 mmHg), or 0.3 V or less indicated?

YES—Go to step 10.

NO—Go to step 7.

7. Install the fuel fill cap.
8. Start the engine.
9. Monitor the OBD STATUS for DTC P0452 in the DTCs MENU with the HDS.

Does the screen indicate FAILED?

YES—Go to step 10.

NO—If the screen indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the FTP sensor and the PCM. If the screen indicates NOT COMPLETED, go to step 4 and recheck.

10. Turn the ignition switch OFF.

11. Disconnect the FTP sensor 3P connector.

12. Turn the ignition switch ON (II).

13. Check the FTP SENSOR in the DATA LIST with the HDS.

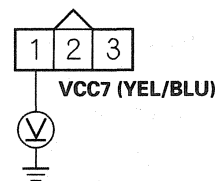
Is about 7.3 kPa (2.15 in.Hg, 54.7 mmHg), or 4.90 V indicated?

YES—Go to step 24.

NO—Go to step 14.

14. Measure voltage between FTP sensor 3P connector terminal No. 1 and body ground.

FTP SENSOR 3P CONNECTOR



Wire side of female terminals

Is there about 5 V?

YES—Go to step 20.

NO—Go to step 15.

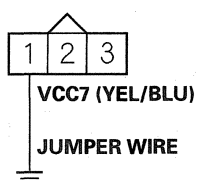
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EVAP System

DTC Troubleshooting (cont'd)

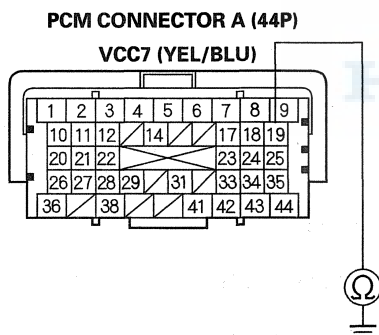
15. Turn the ignition switch OFF.
16. Jump the SCS line with the HDS.
17. Disconnect PCM connector A (44P).
18. Connect FTP sensor 3P connector terminal No. 1 to body ground with a jumper wire.

FTP SENSOR 3P CONNECTOR



Wire side of female terminals

19. Check for continuity between PCM connector terminal A19 and body ground.



Terminal side of female terminals

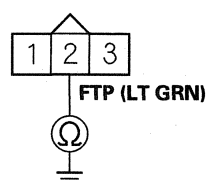
Is there continuity?

YES—Go to step 32.

NO—Repair open in the wire between the PCM (A19) and the FTP sensor, then go to step 26.

20. Turn the ignition switch OFF.
21. Jump the SCS line with the HDS.
22. Disconnect PCM connector A (44P).
23. Check for continuity between FTP sensor 3P connector terminal No. 2 and body ground.

FTP SENSOR 3P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair short in the wire between the PCM (A33) and the FTP sensor, then go to step 26.

NO—Go to step 32.



24. Turn the ignition switch OFF.
25. Replace the FTP sensor (see page 11-461).
26. Reconnect all connectors.
27. Turn the ignition switch ON (II).
28. Reset the PCM with the HDS.
29. Do the PCM idle learn procedure (see page 11-359).
30. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0452 indicated?

YES—Check for poor connections or loose terminals at the FTP sensor and the PCM, then go to step 1.

NO—Go to step 31.

31. Monitor the OBD STATUS for DTC P0452 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 30, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the FTP sensor and the PCM, then go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

32. Reconnect all connectors.
33. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).
34. Start the engine, and let it idle.
35. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0452 indicated?

YES—Check for poor connections or loose terminals at the FTP sensor and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then go to step 34. If the PCM was substituted, go to step 1.

NO—Go to step 36.

36. Monitor the OBD STATUS for DTC P0452 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-230). If any other Temporary DTCs or DTCs were indicated in step 35, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the FTP sensor and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then go to step 34. If the PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

EVAP System

DTC Troubleshooting (cont'd)

DTC P0453: FTP Sensor Circuit High Voltage

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch OFF.
4. Remove the fuel fill cap.
5. Turn the ignition switch ON (II).
6. Check the FTP SENSOR in the DATA LIST with the HDS.

Is about 7.3 kPa (2.16 in.Hg, 55 mmHg), or 4.7 V or more indicated?

YES—Go to step 10.

NO—Go to step 7.

7. Install the fuel fill cap.
8. Start the engine.
9. Monitor the OBD STATUS for DTC P0453 in the DTCs MENU with the HDS.

Does the screen indicate FAILED?

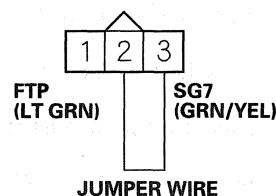
YES—Go to step 10.

NO—If the screen indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the FTP sensor and the PCM. If the screen indicates NOT COMPLETED, go to step 4 and recheck.

10. Turn the ignition switch OFF.
11. Disconnect the FTP sensor 3P connector.

12. Connect FTP sensor 3P connector terminals No. 2 and No. 3 with a jumper wire.

FTP SENSOR 3P CONNECTOR



Wire side of female terminals

13. Turn the ignition switch ON (II).
14. Check the FTP SENSOR in the DATA LIST with the HDS.

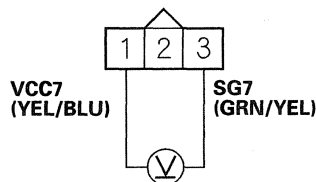
Is about 7.3 kPa (2.16 in.Hg, 55 mmHg), or 4.7 V or more indicated?

YES—Go to step 15.

NO—Go to step 26.

15. Measure voltage between FTP sensor 3P connector terminals No. 1 and No. 3.

FTP SENSOR 3P CONNECTOR



Wire side of female terminals

Is there about 5 V?

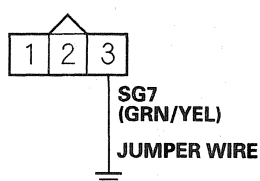
YES—Go to step 21.

NO—Go to step 16.



16. Turn the ignition switch OFF.
17. Jump the SCS line with the HDS.
18. Disconnect PCM connector A (44P).
19. Connect FTP sensor 3P connector terminal No. 3 to body ground with a jumper wire.

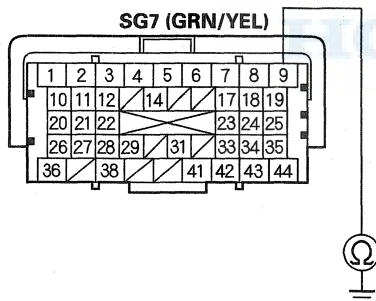
FTP SENSOR 3P CONNECTOR



Wire side of female terminals

20. Check for continuity between PCM connector terminal A9 and body ground.

PCM CONNECTOR A (44P)



Terminal side of female terminals

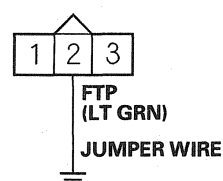
Is there continuity?

YES—Go to step 34.

NO—Repair open in the wire between the PCM (A9) and the FTP sensor, then go to step 28.

21. Turn the ignition switch OFF.
22. Jump the SCS line with the HDS.
23. Disconnect PCM connector A (44P).
24. Connect FTP sensor 3P connector terminal No. 2 to body ground with a jumper wire.

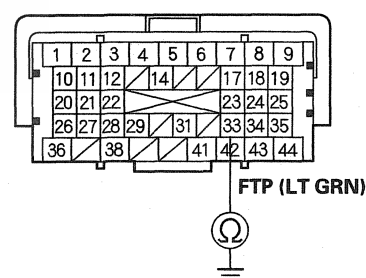
FTP SENSOR 3P CONNECTOR



Wire side of female terminals

25. Check for continuity between PCM connector terminal A33 and body ground.

PCM CONNECTOR A (44P)



Terminal side of female terminals

Is there continuity?

YES—Go to step 34.

NO—Repair open in the wire between the PCM (A33) and the FTP sensor, then go to step 28.

(cont'd)

EVAP System

DTC Troubleshooting (cont'd)

26. Turn the ignition switch OFF.
27. Replace the FTP sensor (see page 11-461).
28. Reconnect all connectors.
29. Turn the ignition switch ON (II).
30. Reset the PCM with the HDS.
31. Do the PCM idle learn procedure (see page 11-359).
32. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0453 indicated?

YES—Check for poor connections or loose terminals at the FTP sensor and the PCM, then go to step 1.

NO—Go to step 33.

33. Monitor the OBD STATUS for DTC P0453 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 32, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the FTP sensor and the PCM, then go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

34. Reconnect all connectors.
35. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).
36. Start the engine, and let it idle.
37. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0453 indicated?

YES—Check for poor connections or loose terminals at the FTP sensor and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then go to step 36. If the PCM was substituted, go to step 1.

NO—Go to step 38.

38. Monitor the OBD STATUS for DTC P0453 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-230). If any other Temporary DTCs or DTCs were indicated in step 37, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the FTP sensor and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then go to step 36. If the PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.



DTC P0455: EVAP System Large Leak Detected

DTC P0456: EVAP System Very Small Leak Detected

NOTICE

The fuel system is designed to allow specified maximum vacuum and pressure conditions. Do not deviate from the vacuum and pressure tests as indicated in these procedures. Excessive pressure/vacuum would damage the EVAP components or cause eventual fuel tank failure.

Special Tools Required

Vacuum pump/gauge, 0–30 in.Hg, Snap-on YA4000A or equivalent, commercially available

NOTE:

- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- Fresh fuel has a higher volatility that will create greater pressure/vacuum. The optimum condition for testing is less than a full tank of fresh fuel. If possible, to assist in leak detection, add 1 gallon of fresh fuel to the tank (as long as it will not fill the tank), just before starting these procedures.

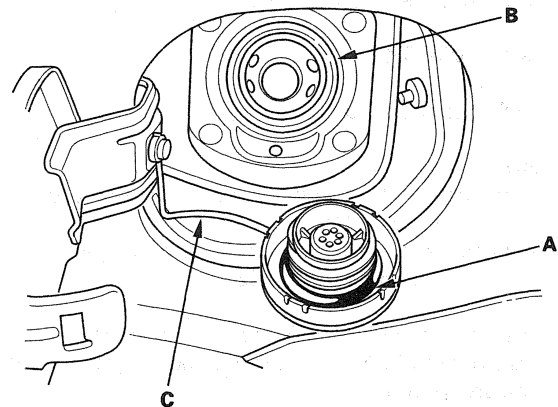
1. Check the fuel fill cap (the cap must say "TIGHTEN TO CLICK"). It should turn 1/4 turn after it's tight, then it clicks.

Is the correct fuel fill cap installed and properly tightened?

YES—Go to step 2.

NO—Replace or tighten the cap, then go to step 22.

2. Check the fuel fill cap seal (A) and the fuel fill pipe mating surface (B). Verify that the fuel fill cap tether cord (C) is not caught under the cap.



Is the fuel fill cap seal missing or damaged, is the fuel fill pipe damaged, or is the tether cord caught under the cap?

YES—Replace the fuel fill cap or the fuel fill pipe, then go to step 22.

NO—Go to step 3.

3. Turn the ignition switch ON (II).
4. Clear the DTC with the HDS.
5. Do the EVAP FUNCTION TEST in the INSPECTION MENU with the HDS.

Is the result OK?

YES—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the FTP sensor, the EVAP canister purge valve, or the EVAP canister vent shut valve, and the PCM. ■

NO—Go to step 6.

(cont'd)

EVAP System

DTC Troubleshooting (cont'd)

6. Turn the ignition switch OFF.
7. Check for a poor connection or damage at the fuel tank vapor recirculation tube.

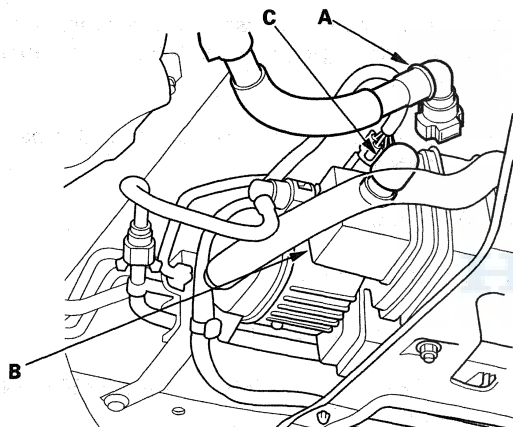
Is the tube OK?

YES—Go to step 9.

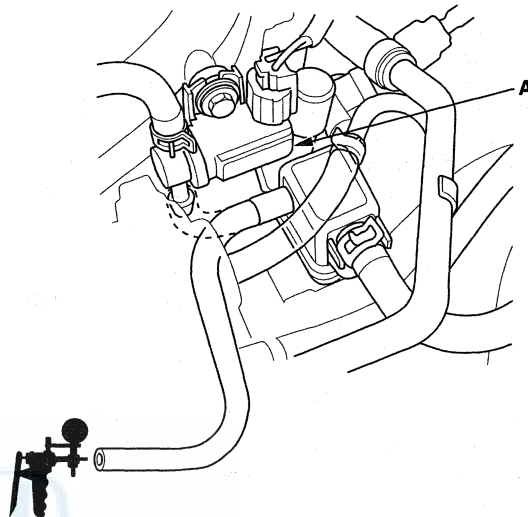
NO—

- Replace the fuel tank vapor recirculation tube, then go to step 22.
- If necessary, replace the fuel tank (see page 11-388), then go to step 22.

8. Disconnect the fuel tank vapor recirculation tube (A) from the EVAP canister (B), and plug the EVAP canister port (C).



9. Disconnect the vacuum hose (purge line) from the EVAP canister purge valve (A) in the engine compartment, and connect the vacuum pump/gauge, 0–30 in.Hg, to the vacuum hose as shown.



10. Turn the ignition switch ON (II).
11. Select EVAP CVS ON in the INSPECTION MENU with the HDS.
12. Apply vacuum to the hose until the FTP reads 1.90 V (−0.59 in.Hg, −15.1 mmHg).

NOTE: Be careful not to exceed the vacuum. If you do, the FTP sensor can be damaged.

13. Monitor the FTP SENSOR in the DATA LIST for 1 minute with the HDS.

Does the voltage increase more than 0.2 V (0.1 in.Hg, 0.5 mmHg)?

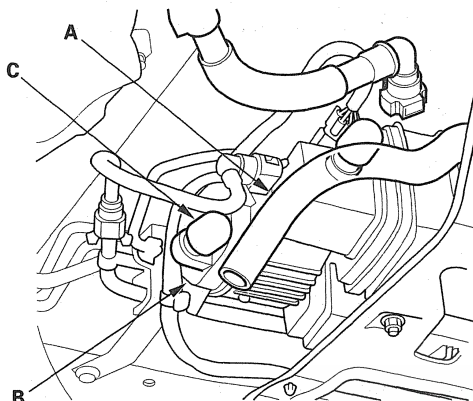
YES—Go to step 14.

NO—Go to step 19.



14. Select EVAP CVS OFF in the INSPECTION MENU with the HDS.

15. Disconnect the fresh air hose (A) from the EVAP canister vent shut valve (B), and plug the EVAP canister vent shut valve port (C).



16. Apply vacuum to the EVAP system until the FTP reads 1.90 V (−0.59 in.Hg, −15.1 mmHg).

NOTE: Be careful not to exceed the vacuum. If you do, the FTP sensor can be damaged.

17. Monitor the FTP SENSOR in the DATA LIST for 1 minute with the HDS.

Does the voltage increase more than 0.2 V (0.1 in.Hg, 2.5 mmHg)?

YES—Go to step 18.

NO—Replace the EVAP canister vent shut valve, then go to step 21.

18. Check for a loose or damaged EVAP canister purge line between the EVAP canister and the EVAP canister purge valve.

Is the line OK?

YES—Replace the following parts, then go to step 21:

- FTP sensor O-ring (see page 11-461)
- EVAP canister vent shut valve case and O-ring (see page 11-462)
- EVAP canister (see page 11-460)

NO—Reconnect or repair the EVAP canister purge hose, then go to step 21.

19. Select EVAP CVS OFF in the INSPECTION MENU with the HDS.

20. Check these parts for looseness or damage:

- Fuel fill pipe
- Fuel vapor return pipe

Are the parts OK?

YES—Check the fuel tank unit base gasket (see page 11-384), and check the fuel tank, then go to step 21.

NO—Repair or replace the damaged parts, then go to step 21.

21. Reconnect all hoses and connectors.

22. Turn the ignition switch ON (II).

23. Reset the PCM with the HDS.

24. Do the PCM idle learn procedure (see page 11-359).

25. Do the EVAP FUNCTION TEST in the INSPECTION MENU with the HDS.

Is the result OK?

YES—Troubleshooting is complete. ■

NO—Check for poor connections or loose terminals at the FTP sensor, the EVAP canister purge valve, the EVAP canister vent shut valve, and the PCM, then go to step 1.

EVAP System

DTC Troubleshooting (cont'd)

DTC P0457: EVAP System Leak Detected/Fuel Fill Cap Loose or Missing

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

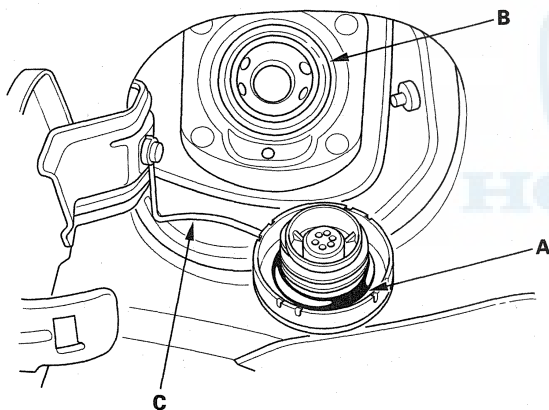
1. Check the fuel fill cap (the cap must say "TIGHTEN TO CLICK"). It should turn 1/4 turn after it's tight, then it clicks.

Is the correct fuel fill cap installed and properly tightened?

YES—Go to step 2.

NO—Replace or tighten the cap, then go to step 19.

2. Check the fuel fill cap seal (A) and the fuel fill pipe mating surface (B). Verify that the fuel fill cap tether cord (C) is not caught under the cap.



Is the fuel fill cap seal missing or damaged, is the fuel fill pipe damaged, or is the tether cord caught under the cap?

YES—Replace the fuel fill cap or the fuel fill pipe, then go to step 19.

NO—Go to step 3.

3. Turn the ignition switch ON (II).
4. Clear the DTC with the HDS.

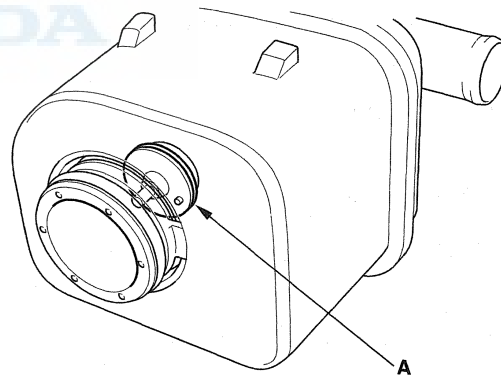
5. Do the EVAP FUNCTION TEST in the INSPECTION MENU with the HDS.

Is the result OK?

YES—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the FTP sensor, or the EVAP canister vent shut valve, and the PCM. ■

NO—Go to step 6.

6. Turn the ignition switch OFF.
7. Remove the EVAP canister vent shut valve from the EVAP canister (see page 11-462).
8. Connect the 2P connector to the EVAP canister vent shut valve.
9. Turn the ignition switch ON (II).
10. Select EVAP CVS ON in the INSPECTION MENU with the HDS.
11. Check the EVAP canister vent shut valve (A) operation.



Does the valve operate?

YES—Check the routing of the EVAP canister vent tube, then go to step 18.

NO—Go to step 12.



12. Turn the ignition switch OFF.
13. Replace the EVAP canister vent shut valve (see page 11-462).
14. Turn the ignition switch ON (II).
15. Reset the PCM with the HDS.
16. Do the PCM idle learn procedure (see page 11-359).
17. Do the EVAP FUNCTION TEST in the INSPECTION MENU with the HDS.

Is the result OK?

YES—Troubleshooting is complete. ■

NO—Check for poor connections or loose terminals at the FTP sensor, the EVAP canister vent shut valve, and the PCM, then go to step 1.

18. Reinstall the EVAP canister vent shut valve (see page 11-462).
19. Turn the ignition switch ON (II).
20. Reset the PCM with the HDS.
21. Do the PCM idle learn procedure (see page 11-359).
22. Do the EVAP FUNCTION TEST in the INSPECTION MENU with the HDS.

Is the result OK?

YES—Troubleshooting is complete. ■

NO—Check for poor connections or loose terminals at the FTP sensor, the EVAP canister vent shut valve, and the PCM, then go to step 1.

EVAP System

DTC Troubleshooting (cont'd)

DTC P0496: EVAP System High Purge Flow Detected

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Do the EVAP FUNCTION TEST in the INSPECTION MENU with the HDS.

Is the result OK?

YES—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the FTP sensor, the EVAP canister purge valve, the EVAP canister vent shut valve, and the PCM. ■

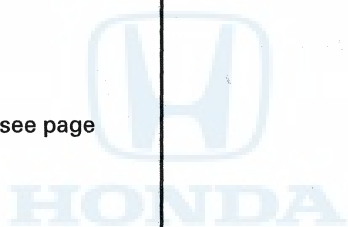
NO—Go to step 4.

4. Turn the ignition switch OFF.
5. Replace the EVAP canister purge valve (see page 11-461).
6. Turn the ignition switch ON (II).
7. Reset the PCM with the HDS.
8. Do the PCM idle learn procedure (see page 11-359).
9. Do the EVAP FUNCTION TEST in the INSPECTION MENU with the HDS.

Is the result OK?

YES—Troubleshooting is complete. ■

NO—Check for poor connections or loose terminals at the FTP sensor, the EVAP canister purge valve, the EVAP canister vent shut valve, and the PCM, then go to step 1.





DTC P0497: EVAP System Low Purge Flow Detected

Special Tools Required

- Vacuum pump/gauge, 0–30 in.Hg, Snap-on YA4000A or equivalent, commercially available
- Vacuum/pressure gauge, 0–4 in.Hg 07JAZ-001000B

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Check the fuel fill cap installation (The cap must say "TIGHTEN TO CLICK". The cap should tighten 1/4 turn after it is tight.).

Is the fuel fill cap installed and properly tightened?

YES—Go to step 2.

NO—Properly install the fuel fill cap, then go to step 23.

2. Turn the ignition switch ON (II).
3. Clear the DTC with the HDS.
4. Do the EVAP FUNCTION TEST in the INSPECTION MENU with the HDS.

Is the result OK?

YES—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the FTP sensor, the EVAP canister purge valve, or the EVAP canister vent shut valve, and the PCM. ■

NO—Go to step 5.

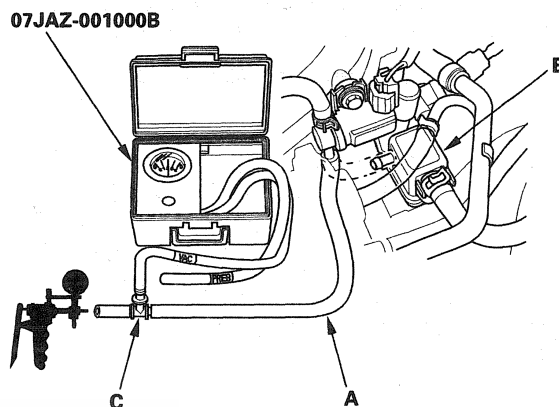
5. Check for a loose or damaged EVAP canister purge line between the intake manifold and the EVAP canister purge valve.

Is the line OK?

YES—Go to step 6.

NO—Reconnect or repair the EVAP canister purge line, then go to step 23.

6. Disconnect the vacuum hose (A) from the purge joint (B) in the engine compartment, and connect a T-fitting (C) from the vacuum gauge and the vacuum pump/gauge, 0–30 in.Hg, to the hose as shown.



7. Select EVAP PCS ON in the INSPECTION MENU with the HDS.
8. Slowly apply about 0.6 in.Hg (15 mmHg) of vacuum to the hose.

Does it hold vacuum?

YES—Replace the EVAP canister purge valve, then go to step 22.

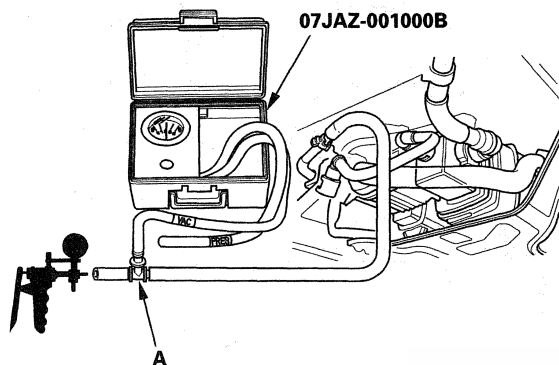
NO—Go to step 9.

(cont'd)

EVAP System

DTC Troubleshooting (cont'd)

9. Reconnect the vacuum hose to the EVAP canister purge valve.
10. Disconnect the vacuum hose from the purge line (at the EVAP canister side), and connect a T-fitting (A) from the vacuum gauge and the vacuum pump/gauge, 0—30 in.Hg, to the hose as shown.



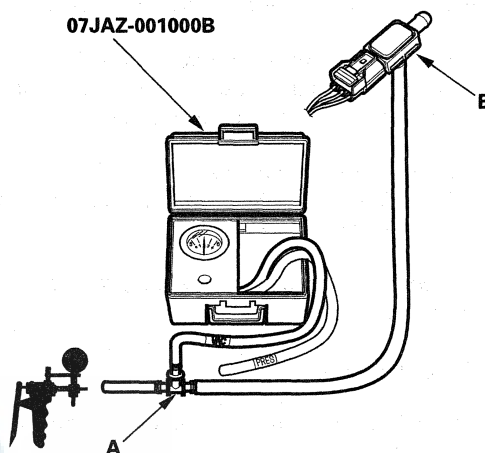
11. Select EVAP PCS ON in the INSPECTION MENU with the HDS.
12. Slowly apply about 2 kPa (0.6 in.Hg, 15 mmHg) of vacuum to the hose.

Does it hold vacuum?

YES—Check for a restricted EVAP canister purge line between the EVAP canister purge valve and the EVAP canister, then go to step 22.

NO—Go to step 13.

13. Remove the FTP sensor with its connector connected (see page 11-461).
14. Connect a T-fitting (A) from the vacuum pump/gauge, 0—30 in.Hg, and the vacuum gauge to the FTP sensor (B) as shown.



15. Check and record the FTP SENSOR reading in the DATA LIST with the HDS.
16. Slowly apply no more than 1.3 kPa (0.4 in.Hg, 10 mmHg) of vacuum to the hose.



17. Check the FTP SENSOR in the DATA LIST with the HDS.

Is the difference more than 1.1 kPa (0.31 in.Hg, 8 mmHg) before and after applying vacuum?

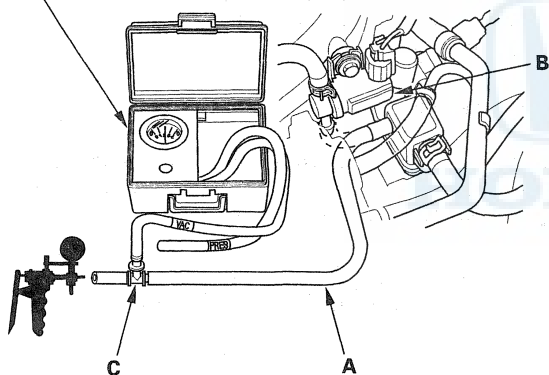
YES—Go to step 18.

NO—Replace the FTP sensor (see page 11-461), then go to step 22.

18. Reconnect the vacuum hoses to the EVAP canister purge line (EVAP canister side), and reinstall the FTP sensor.

19. Disconnect the vacuum hose (purge line) (A) from the EVAP canister purge valve (B), and connect a T-fitting (C) from the vacuum gauge and the vacuum pump/gauge, 0–30 in.Hg, to the hose as shown.

07JAZ-001000B



20. Select EVAP CVS ON in the INSPECTION MENU with the HDS.

21. Slowly apply about 2 kPa (0.6 in.Hg, 15 mmHg) of vacuum to the hose.

Does the hose hold vacuum?

YES—Check for blockage at the EVAP canister port, then go to step 22.

NO—Replace the EVAP canister vent shut valve (see page 11-462), then go to step 22.

22. Reconnect all hoses.

23. Turn the ignition switch ON (II).

24. Reset the PCM with the HDS.

25. Do the PCM idle learn procedure (see page 11-359).

26. Do the EVAP FUNCTION TEST in the INSPECTION MENU with the HDS.

Is the result OK?

YES—Troubleshooting is complete. ■

NO—Check for poor connections or loose terminals at the FTP sensor, the EVAP canister purge valve, the EVAP canister vent shut valve, and the PCM, then go to step 1.

EVAP System

DTC Troubleshooting (cont'd)

DTC P0498: EVAP Canister Vent Shut Valve Circuit Low Voltage

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS, then wait 5 seconds.
3. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0498 indicated?

YES—Go to step 6.

NO—Go to step 4.

4. Select EVAP CVS ON in the INSPECTION MENU with the HDS.
5. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0498 indicated?

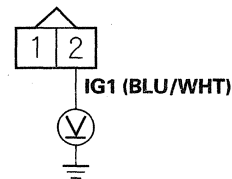
YES—Go to step 6.

NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the EVAP canister vent shut valve and the PCM. ■

6. Turn the ignition switch OFF.
7. Disconnect the EVAP canister vent shut valve 2P connector.
8. Turn the ignition switch ON (II).

9. Measure voltage between EVAP canister vent shut valve 2P connector terminal No. 2 and body ground.

EVAP CANISTER VENT SHUT VALVE 2P CONNECTOR



Wire side of female terminals

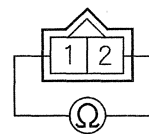
Is there battery voltage?

YES—Go to step 10.

NO—Repair open in the wire between the EVAP canister vent shut valve and the A/F sensor relay (LAF), then go to step 18.

10. Turn the ignition switch OFF.
11. At the valve side, measure resistance between EVAP canister vent shut valve 2P connector terminals No. 1 and No. 2.

EVAP CANISTER VENT SHUT VALVE 2P CONNECTOR



Terminal side of male terminals

Is there about 25—30 Ω at room temperature?

YES—Go to step 12.

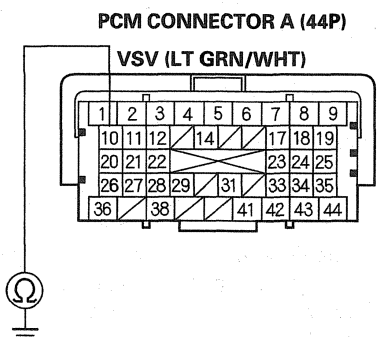
NO—Go to step 17.



12. Jump the SCS line with the HDS.

13. Disconnect PCM connector A (44P).

14. Check for continuity between PCM connector terminal A10 and body ground.



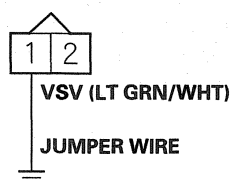
Is there continuity?

YES—Repair short in the wire between the EVAP canister vent shut valve and the PCM (A10), then go to step 18.

NO—Go to step 15.

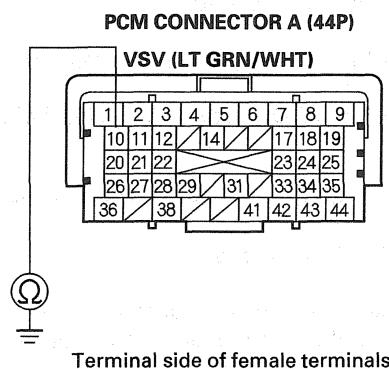
15. Connect EVAP canister vent shut valve 2P connector terminal No. 1 to body ground with a jumper wire.

EVAP CANISTER VENT SHUT VALVE
2P CONNECTOR



Wire side of female terminals

16. Check for continuity between PCM connector terminal A10 and body ground.



Is there continuity?

YES—Go to step 25.

NO—Repair open in the wire between the EVAP canister vent shut valve and the PCM (A10), then go to step 18.

17. Replace the EVAP canister vent shut valve (see page 11-462).

18. Reconnect all connectors.

(cont'd)

EVAP System

DTC Troubleshooting (cont'd)

19. Turn the ignition switch ON (II).
20. Reset the PCM with the HDS.
21. Do the PCM idle learn procedure (see page 11-359).
22. Select EVAP CVS ON in the INSPECTION MENU with the HDS.
23. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0498 indicated?

YES—Check for poor connections or loose terminals at the EVAP canister vent shut valve and the PCM, then go to step 1.

NO—Go to step 24.

24. Monitor the OBD STATUS for DTC P0498 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 23, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the EVAP canister vent shut valve and the PCM, then go to step 1. If the screen indicates NOT COMPLETED, go to step 22.

25. Reconnect all connectors.
26. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).
27. Select EVAP CVS ON in the INSPECTION MENU with the HDS.
28. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0498 indicated?

YES—Check for poor connections or loose terminals at the EVAP canister vent shut valve and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then go to step 27. If the PCM was substituted, go to step 1.

NO—Go to step 29.

29. Monitor the OBD STATUS for DTC P0498 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-230). If any other Temporary DTCs or DTCs were indicated in step 28, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the EVAP canister vent shut valve and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then go to step 27. If the PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, go to step 27.



DTC P0499: EVAP Canister Vent Shut Valve Circuit High Voltage

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Select EVAP CVS ON in the INSPECTION MENU with the HDS.
4. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0499 indicated?

YES—Go to step 5.

NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the EVAP canister vent shut valve and the PCM. ■

5. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).
6. Select EVAP CVS ON in the INSPECTION MENU with the HDS.
7. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0499 indicated?

YES—Check for poor connections or loose terminals at the EVAP canister vent shut valve and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then go to step 6. If the PCM was substituted, go to step 1.

NO—Go to step 8.

8. Monitor the OBD STATUS for DTC P0499 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-230). If any other Temporary DTCs or DTCs were indicated in step 7, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the EVAP canister vent shut valve and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then go to step 6. If the PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, go to step 6.

EVAP System

DTC Troubleshooting (cont'd)

DTC P1454: FTP Sensor Range/Performance Problem

DTC P2422: EVAP Canister Vent Shut Valve Stuck Closed Malfunction

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch OFF.
4. Remove the fuel fill cap, and wait 1 minute.
5. Check the FTP SENSOR in the DATA LIST with the HDS.

Is it between -0.67 and 0.67 kPa (-0.2 and 0.2 in.Hg, -5 and 5 mmHg), or 2.4 and 2.6 V?

YES—Go to step 6.

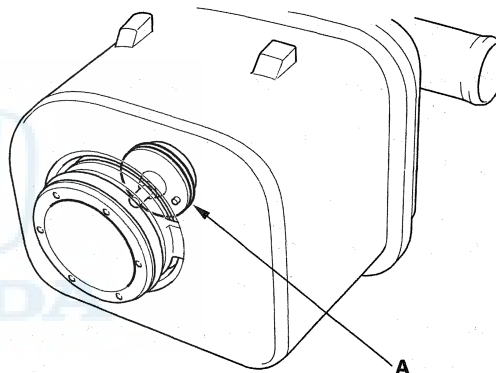
NO—Go to step 17.
6. Install the fuel fill cap.
7. Clear the DTC with the HDS.
8. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park on neutral) until the radiator fan comes on, then let it idle.
9. Monitor the OBD STATUS for DTC P1454 in the DTCs MENU with the HDS.

Does the screen indicate FAILED?

YES—Go to step 10.

NO—If the screen indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the FTP sensor, the EVAP canister vent shut valve, and the PCM. If the screen indicates NOT COMPLETED, go to step 8 and recheck.

10. Clear the DTC with the HDS.
11. Turn the ignition switch OFF.
12. Remove the EVAP canister vent shut valve from the EVAP canister (see page 11-462).
13. Connect the 2P connector to the EVAP canister vent shut valve.
14. Turn the ignition switch ON (II).
15. Select EVAP CVS ON in the INSPECTION MENU with the HDS.
16. Check the EVAP canister vent shut valve (A) operation.



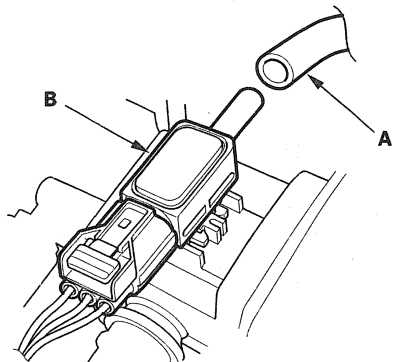
Does the valve operate?

YES—Check for a blockage in the EVAP canister, canister filter, vent hoses, and drain joint, then install the EVAP canister vent shut valve, and go to step 23.

NO—Replace the EVAP canister vent shut valve (see page 11-462), then go to step 23.



17. Disconnect the air tube (A) from the FTP sensor (B).



18. Check the FTP SENSOR in the DATA LIST with the HDS.

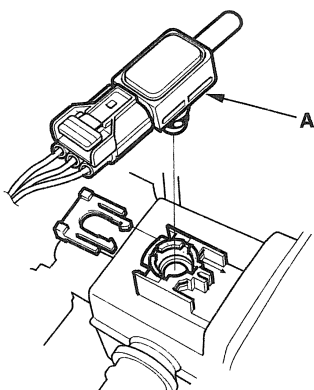
Is it between -0.67 and 0.67 kPa (-0.2 and 0.2 in.Hg, -5 and 5 mmHg), or 2.4 and 2.6 V?

YES—Check for a blockage in the FTP sensor air tube or vent, then go to step 23.

NO—Go to step 19.

19. Turn the ignition switch OFF.

20. Remove the FTP sensor (A) from the EVAP canister with its connector connected (see page 11-461).



21. Turn the ignition switch ON (II).

22. Check the FTP SENSOR in the DATA LIST with the HDS.

Is it between -0.67 and 0.67 kPa (-0.2 and 0.2 in.Hg, -5 and 5 mmHg), or 2.4 and 2.6 V?

YES—Check for debris or clogging at the EVAP canister and the FTP sensor port, then go to step 23.

NO—Replace the FTP sensor (see page 11-461), then go to step 23.

23. Turn the ignition switch ON (II).

24. Reset the PCM with the HDS.

25. Do the PCM idle learn procedure (see page 11-359).

26. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.

27. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P1454 and/or P2422 indicated?

YES—Check for poor connections or loose terminals at the FTP sensor, the EVAP canister vent shut valve, and the PCM, then go to step 1.

NO—Go to step 28.

28. Monitor the OBD STATUS for DTC P1454 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

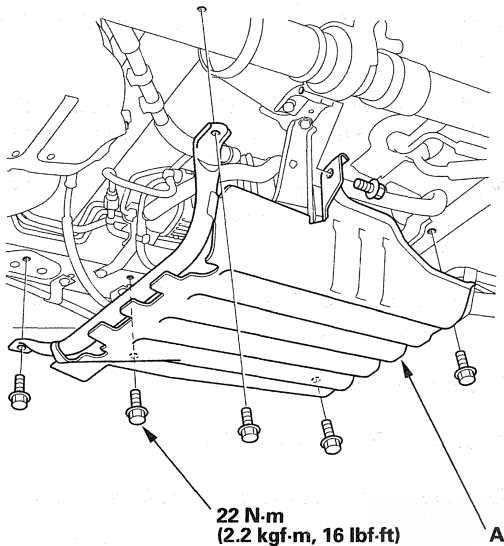
YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 27, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the FTP sensor, the EVAP canister vent shut valve, and the PCM, then go to step 1. If the screen indicates NOT COMPLETED, go to step 26.

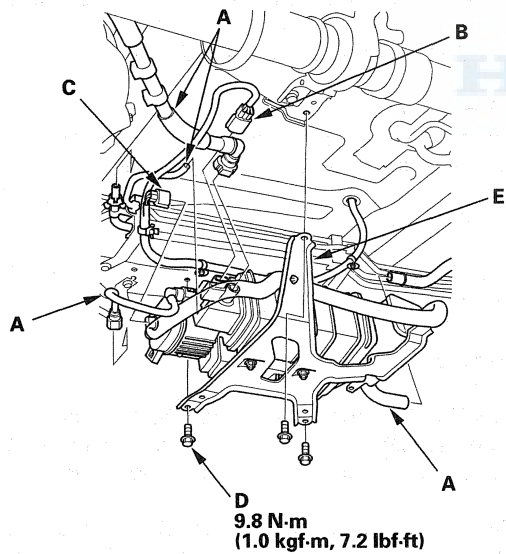
EVAP System

EVAP Canister Replacement

1. Remove the EVAP canister cover (A).



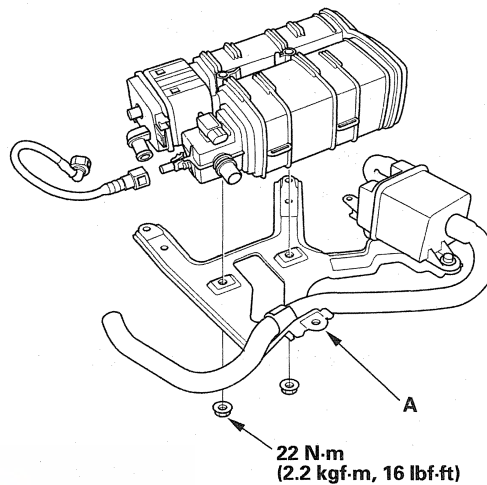
2. Remove the hoses (A), the FTP sensor 3P connector (B), and EVAP canister vent shut valve 2P connector (C).



3. Remove the bolts (D).
4. Remove the EVAP canister assembly (E).

5. Remove the EVAP canister bracket (A).

NOTE: The canister filter remains on the bracket.

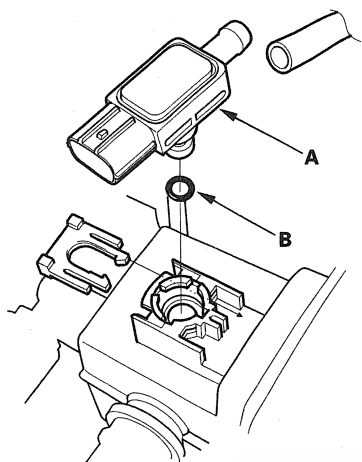


6. Install the parts in the reverse order of removal.



FTP Sensor Replacement

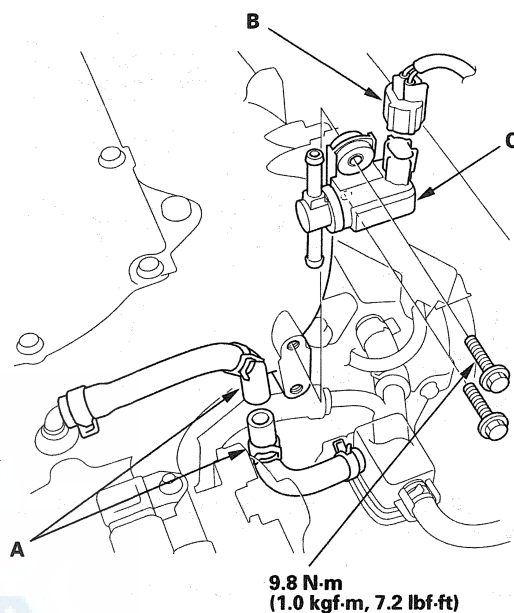
1. Remove the EVAP canister (see page 11-460).
2. Remove the FTP sensor (A).



3. Install the parts in the reverse order of removal with a new O-ring (B).

EVAP Canister Purge Valve Replacement

1. Remove the engine cover (see step 1 on page 9-4).
2. Disconnect the hoses (A) and the EVAP canister purge valve 2P connector (B).



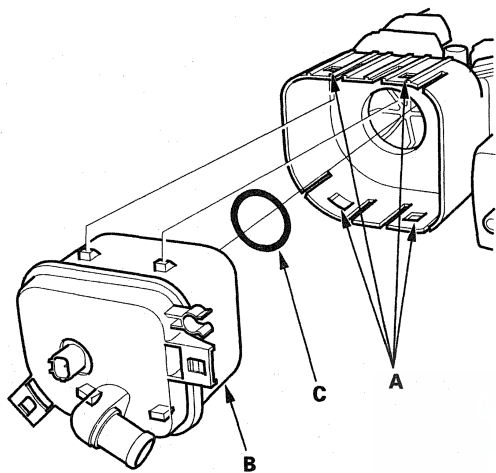
3. Remove the EVAP canister purge valve (C).
4. Install the parts in the reverse order of removal.

EVAP System

EVAP Canister Vent Shut Valve Replacement

1. Remove the EVAP canister (see page 11-460).
2. Release the lock tabs (A), then remove the EVAP canister vent shut valve (B).

NOTE: Be careful not to damage the lock tabs.



3. Install the parts in the reverse order of removal with a new O-ring (C).

NOTE: Do not coat the O-ring with engine oil.

Transaxle

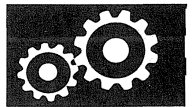
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SUPPLEMENTAL RESTRAINT SYSTEM (SRS) (If automatic transmission maintenance is required)

The Pilot SRS includes a driver's airbag in the steering wheel hub, a passenger's airbag in the dashboard above the glove box, seat belt tensioners in the front seat belt retractors, side curtain airbags in the side of the roof, and side airbags in the front seat-backs. Information necessary to safely service the SRS is included in this Service Manual. Items marked with an asterisk (*) on the contents page include or are located near SRS components. Servicing, disassembling, or replacing these items requires special precautions and tools, and should be done by an authorized Honda dealer.

- To avoid rendering the SRS inoperative, which could lead to personal injury or death in the event of a severe frontal or side collision, all SRS service work should be done by an authorized Honda dealer.
- Improper service procedures, including incorrect removal and installation of the SRS, could lead to personal injury caused by unintentional deployment of the airbags and/or side airbags.
- Do not bump or impact the SRS unit, front impact sensors, or side impact sensors when the ignition switch is ON (II), or for at least 3 minutes after the ignition switch is turned OFF; otherwise, the system may fail in a collision, or the airbags may deploy.
- SRS electrical connectors are identified by yellow color coding. Related components are located in the steering column, front console, dashboard, dashboard lower panel, in the dashboard above the glove box, in the front seats, in the roof side, and around the floor. Do not use electrical test equipment on these circuits.



Automatic Transmission

Automatic Transmission

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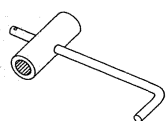


Automatic Transmission

Special Tools

Ref. No.	Tool Number	Description	Qty
①	07GAB-PF50101 or 07GAB-PF50100	Mainshaft Holder	1
②	07GAD-PG40100	Oil Seal Driver Attachment	1
③	07GAD-SD40101	Attachment, 78 x 90 mm	1
④	07GAE-PG40200 or 07GAE-PG4020A	Clutch Spring Compressor Bolt Assembly	1
⑤	07HAD-SG00100	Attachment, 83 mm	1
⑥	07JAD-PH80101	Oil Seal Driver Attachment	1
⑦	07JAD-SH30100	Attachment, 65 mm	1
⑧	07LAD-PW50601	Attachment, 40 x 50 mm	1
⑨	07LAE-PX40100	Clutch Spring Compressor Attachment	2
⑩	07MAD-PR90100	Attachment, 45 x 55 mm	1
⑪	07MAF-SP0011A	Tapered Bearing Race Installer	1
⑫	07MAF-SP0013A	Installer Shaft	1
⑬	07MAJ-PY4011A	A/T Pressure Hose, 2,210 mm	3
⑭	07MAJ-PY40120	A/T Pressure Hose Adapter	3
⑮	07NAD-PX40100	Attachment, 78 x 80 mm	1
⑯	07XAA-002010A	Wrench, 40 x 42 mm	1
⑰	07XAB-0020100	Companion Flange Holder	1
⑱	07ZAE-PRP0100	Clutch Compressor Attachment	1
⑲	070AJ-0020101	Preload Inspection Tool	1
⑳	07406-0020400 or 07406-0020401	A/T Oil Pressure Gauge Set/Panel	1

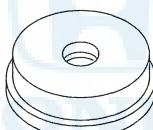
⑨: 07HAE-PL50101 may be used to substitute one of these tools.



①



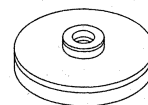
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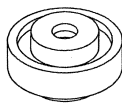
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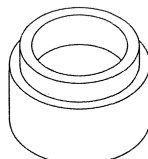
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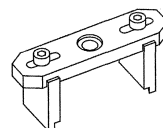
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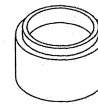
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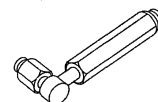
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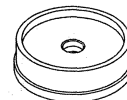
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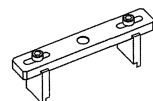
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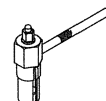
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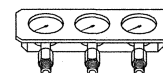
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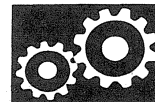
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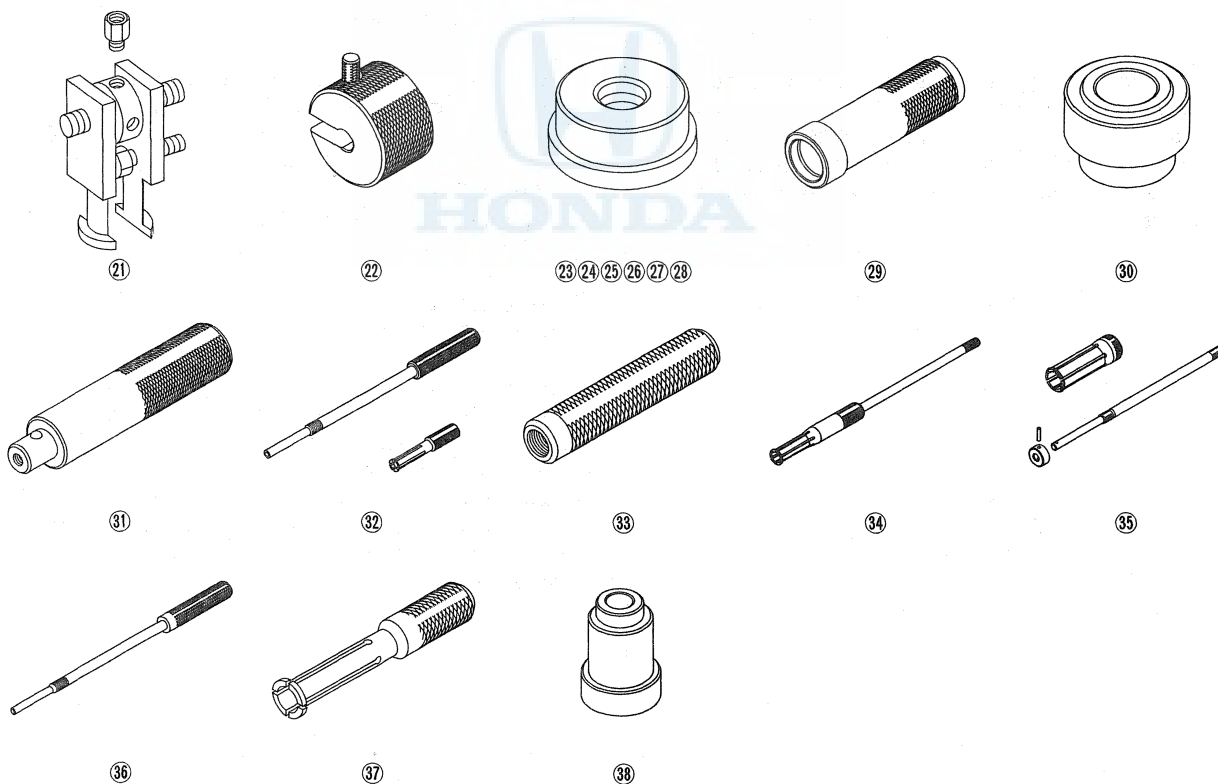


⑳



Ref. No.	Tool Number	Description	Qty
(21)	07736-A01000B or 07736-A01000A	Adjustable Bearing Puller, 25—40 mm	1
(22)	07741-0010201	Sliding Hammer Weight	1
(23)	07746-0010200	Attachment, 37 x 40 mm	1
(24)	07746-0010300	Attachment, 42 x 47 mm	1
(25)	07746-0010400	Attachment, 52 x 55 mm	1
(26)	07746-0010500	Attachment, 62 x 68 mm	1
(27)	07746-0010600	Attachment, 72 x 75 mm	1
(28)	07746-0010800	Attachment, 22 x 24 mm	1
(29)	07746-0030100	Driver, 40 mm I.D.	1
(30)	07746-0030300	Attachment, 30 mm I.D.	1
(31)	07749-0010000	Driver	1
(32)	07936-1660101	Bearing Remover Shaft Set, 12 mm	1
(33)	07936-3710100	Bearing Remover Shaft Handle	1
(34)	07936-3710600	Bearing Remover Shaft Set, 20 mm	1
(35)	07936-8890300	Bearing Remover Shaft Set, 30 mm	1
(36)	07936-GE00100	Bearing Remover Shaft, 10 mm	1
(37)	07936-GE00200	Bearing Remover Head, 10 mm	1
(38)	07947-6340500	Driver Attachment	1

(21): Must be used with commercially available 3/8"-16 slide hammer.

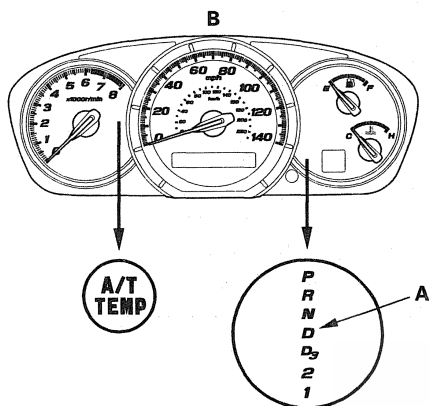


Automatic Transmission

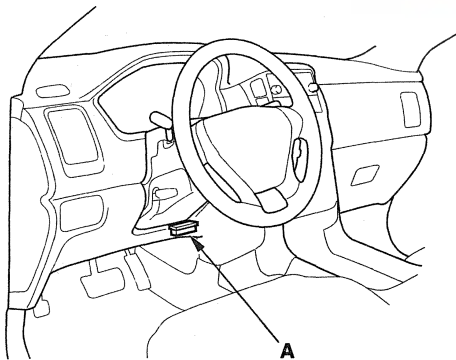
General Troubleshooting Information

How to Check for DTCs with the Honda Diagnostic System (HDS)

When the powertrain control module (PCM) senses an abnormality in the input or output system, the D indicator (A) in the gauge control module (B) will usually blink.



When the Honda Diagnostic System (HDS) is connected to the data link connector (DLC) (A) (located under the steering column lower cover) and the SCS mode is selected, it will indicate the diagnostic trouble code (DTC) when the ignition switch is turned ON (II) and the appropriate menu is selected.



If the D indicator or malfunction indicator lamp (MIL) has been reported on, or if a driveability problem is suspected, follow this procedure:

1. Connect the HDS to the DLC. (See the HDS user's manual for specific instructions.)
2. Turn the ignition switch ON (II), select A/T system, and observe the DTC in the DTCs MENU on the HDS screen.
3. Record all fuel and emissions DTCs, and A/T DTCs, and freeze data.
4. If there is a fuel and emissions DTC, first check the fuel and emissions system as indicated by the DTC (except for DTC P0700, DTC P0700 means there is one or more A/T DTCs, and no problems were detected in the fuel and emissions circuit of the PCM).
5. Clear the DTC and data.
6. Drive the vehicle for several minutes under the same conditions as those indicated by the freeze data, and then recheck for a DTC. If the A/T DTC returns, go to the indicated DTC's troubleshooting. If the DTC does not return, there was an intermittent problem within the circuit. Make sure all pins and terminals in the circuit are tight.

Symptom Troubleshooting Versus DTC Troubleshooting

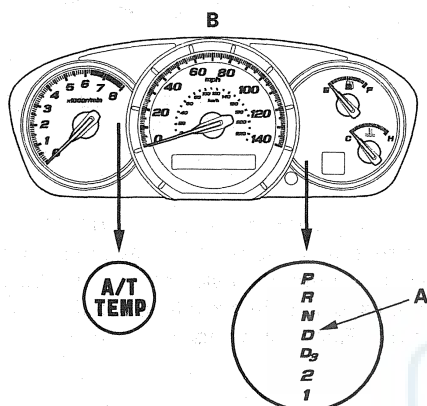
Some symptoms will not trigger diagnostic trouble codes (DTCs) or cause the D indicator to blink. If the malfunction indicator lamp (MIL) was reported ON or the D indicator has been blinking, check for DTCs. If the vehicle has abnormal symptom, and there are no DTCs stored, do the symptom troubleshooting. Check the list of probable cause(s) for the symptom, in the sequence listed, until you find the problem.



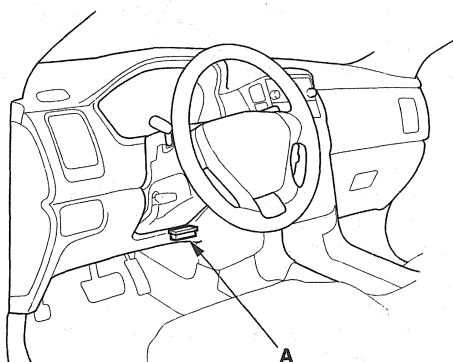
How to Check for DTCs with the SCS Mode (retrieving the flash codes)

NOTE: The preferred method is to use the HDS to retrieve the DTCs.

When the PCM senses an abnormality in the input or output system, the D indicator (A) in the gauge control module (B) will usually blink.



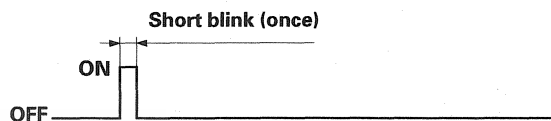
When the D indicator has been reported on, connect the HDS to the DLC (A) (located under the steering column lower cover). Turn the ignition switch ON (II), select SCS mode, then the D indicator will indicate flash the DTC.



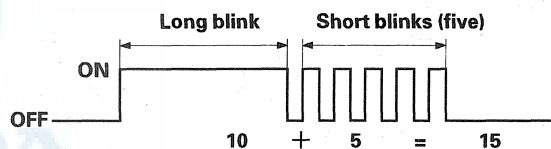
If the D indicator and the MIL come on at the same time, or if a driveability problem is suspected, follow this:

1. Connect the HDS to the DLC. (See the HDS user's manual for specific instructions.)
2. Turn the ignition switch ON (II), select SCS mode, then observe the D indicator in the gauge control module.
Codes 1 through 9 are indicated by individual short blinks. Codes 10 and above are indicated by a series of long and short blinks. One long blink equals 10 short blinks. Add the long and short blinks together to determine the code.

Example: DTC 1-1



Example: DTC 15-5



3. Record all fuel and emissions DTCs and A/T DTCs.
4. If there is a fuel and emissions DTC, first check the fuel and emissions system as indicated by the DTC (except DTC 70, DTC 70 means there is one or more A/T DTCs, and no problems were detected in the fuel and emissions circuit of the PCM).
5. Clear the DTC and data.
6. Drive the vehicle for several minutes under the same conditions as those indicated by the freeze data, and then recheck for DTC. If the A/T DTC returns, go to the indicated DTC's troubleshooting. If the DTC does not return, there was an intermittent problem within the circuit. Make sure all pins and terminals in the circuit are tight.

(cont'd)

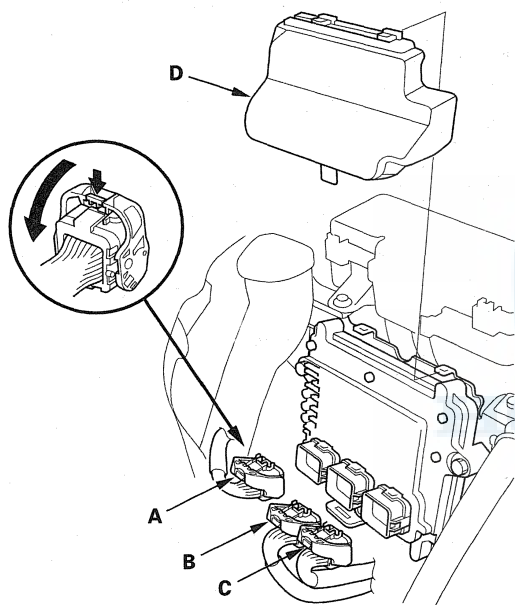
Automatic Transmission

General Troubleshooting Information (cont'd)

How to Troubleshoot Circuits at the PCM Connectors

NOTE: The PCM overwrites data and monitors the EVAP system for up to 15 minutes after the ignition switch is turned OFF. Jumping the SCS line after turning the ignition switch OFF cancels this function. Disconnecting the PCM during this function, without jumping the SCS line first, can damage the PCM.

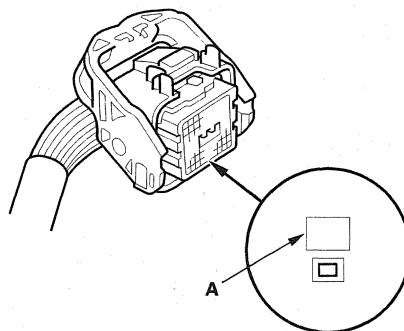
1. Jump the SCS line with the HDS.
2. Remove the cover (D) from the PCM.



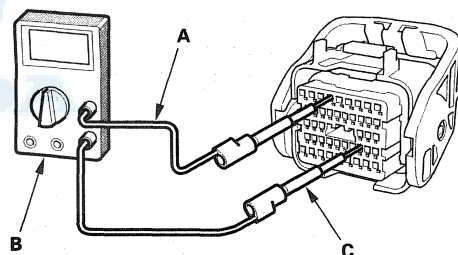
3. Disconnect PCM connectors A, B, and C.

NOTE: PCM connectors A, B, and C have symbols (A=□, B=△, C=○) embossed on them for identification.

4. When diagnosis/troubleshooting is done at a PCM connector, use the measurement test port (A) above the terminal you need to check.



5. Connect one side of the patch cord (A) terminals to a commercially available digital multimeter (B), and connect the other side of the patch cord terminals to a commercially available banana jack (Pomona Electronics Tool No. 3563 or equivalent) (C).



6. Gently slide the pin probe (male) at the terminal test port from the terminal side. Do not force the tips into the terminals.

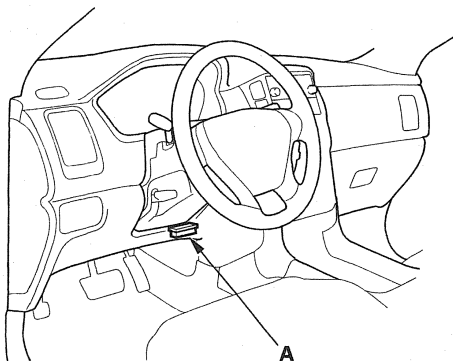
NOTICE

- For accurate results, always use the pin probe (male).
- To prevent damage to the connector terminals, do not insert test equipment probes, paper clips, or other substitutes as they can damage the terminals. Damaged terminals cause a poor connection and an incorrect measurement.
- Do not puncture the insulation on a wire. Punctures can cause poor or intermittent electrical connections.



Clear A/T DTCs Procedures

1. Connect the HDS to the DLC (A).



2. Turn the ignition switch ON (II).
3. Clear the DTC(s) on the HDS screen.

PCM Reset

This command clears stored specific data from the PCM such as DTCs freeze data, and readiness codes. It does not clear CKP PATTERN data.

1. Reset the PCM with the HDS when the engine is stopped.
2. Turn the ignition switch OFF.
3. Turn the ignition switch ON (II), and wait for 30 seconds.
4. Turn the ignition switch OFF, and disconnect the HDS from the DLC.
5. Do the PCM idle learn procedure (see page 11-359).

OBD Status

The OBD status shows the current system status of each DTC and all of the parameters. This function is used to see if the technician's repair was successfully finished. The results of diagnostic tests for the DTC are displayed as:

- PASSED: On-board diagnosis is successfully finished.
- FAILED: On-board diagnosis has finished but failed.
- NOT COMPLETED: The on-board diagnosis was running but is out of the enable conditions of the DTC.

How to End a Troubleshooting Session

This procedure must be done after any troubleshooting.

1. Reset the PCM with the HDS while the engine is stopped.
2. Turn the ignition switch OFF.
3. Turn the ignition switch ON (II), and wait for 30 seconds.
4. Turn the ignition switch OFF, and disconnect the HDS from the DLC.
5. Do the PCM idle learn procedure (see page 11-359).
6. Start the engine in the P or N position, and warm it to normal operating temperature (the radiator fan comes on).
7. Check the problem is repaired, test-drive the vehicle for several minutes at speeds over 31 mph (50 km/h) or in freeze data range.

(cont'd)

Automatic Transmission

General Troubleshooting Information (cont'd)

Updating the PCM

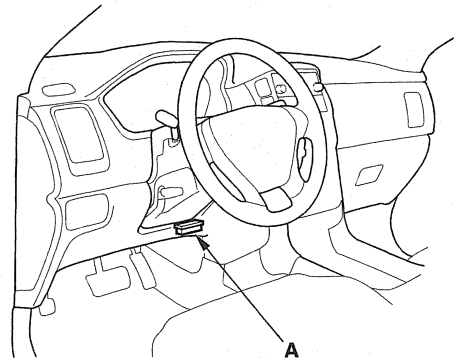
Special Tools Required

- Honda diagnostic system (HDS) tablet tester
- Honda interface module (HIM) and an iN workstation with HDS and CM update software
- HDS pocket tester
- GNA600 and an iN workstation with HDS and CM update software

NOTE:

- Use this procedure when you have to update the PCM during troubleshooting procedure.
- Make sure the HDS/HIM has the latest software version downloaded from the iN (interactive network).
- Before you update the PCM, make sure the battery in the vehicle is fully charged, and connect a jumper battery (not a battery charger) to maintain system voltage.
- Never turn the ignition switch OFF during the update. If there is a problem with the update, leave the ignition switch ON.
- To prevent PCM damage, do not operate anything electrical (headlights, audio system, brakes, A/C, power windows, moonroof (if equipped), door locks, etc.) during the update.
- To ensure the latest program is installed, do an PCM update whenever the PCM is substituted or replaced.
- You cannot update an PCM with a program it already has. It will only accept a new program.
- High temperature in the engine compartment might cause the PCM to become too hot to run the update. If the engine has been running before this procedure, open the hood and cool the engine compartment.
- If you need to diagnose the Honda interface module (HIM) because the HIM's red (#3) light came on or was flashed during the update, leave the ignition switch in the ON (II) position when you disconnect the HIM from the data link connector (DLC). This will prevent PCM damage.

1. Turn the ignition switch ON (II), but do not start the engine.
2. Connect the HDS to the data link connector (DLC) (A) located under the driver's side of the dashboard.



3. Make sure the HDS communicates with the PCM. If it do not, go to the DLC circuit troubleshooting (see page 11-218). If you are returning from the DLC circuit troubleshooting, skip steps 4 to 5, and clean the throttle body after updating the PCM (see page 11-407).
 4. Select the INSPECTION MENU with the HDS.
 5. Select the ETCS TEST, then select the TP POSITION CHECK, and follow the screen prompts with the HDS.
- NOTE: If the TP POSITION CHECK indicates FAILED, continue this procedure.
6. Exit the HDS, then select the CM Update, and follow the screen prompts to update the PCM.



7. If the software in the PCM is the latest, disconnect the HDS/HIM from the DLC, and go back to the procedure that you were doing. If the software in the PCM is not the latest, follow the instructions on the screen. If prompted to select the PGM-FI system or the A/T system, make sure you update both.

NOTE: If the PCM update system requires you to cool the PCM, follow the instructions on screen. If you run into a problem during the update procedure, (programming takes over 15 minutes, status bar goes over 100 %, D or immobilizer light flashes, HDS tablet freezes, etc.), follow these steps to minimize the chance of damaging the PCM:

- Leave the ignition switch in the ON (II) position.
- Connect a jumper battery (do not connect a battery charger).
- Shut down the HDS.
- Disconnect the HDS from the DLC.
- Reboot the HDS.
- Reconnect the HDS to the DLC, and try the update procedure again.

8. If the TP POSITION CHECK failed in step 6, clean the throttle body (see page 11-407).
9. Do the PCM idle learn procedure (see page 11-359).
10. Do the crank (CKP) pattern learn procedure (see page 11-5).

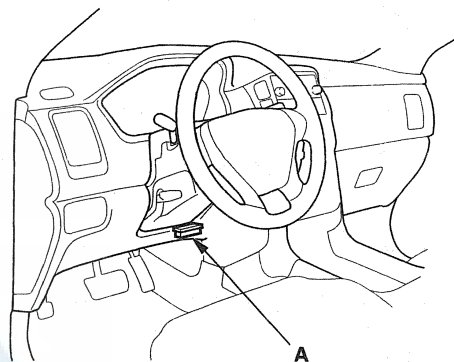
Substituting the PCM

Special Tools Required

- Honda diagnostic system (HDS) tablet tester
- Honda interface module (HIM) and an iN workstation with HDS and CM update software
- HDS pocket tester
- GNA600 and an iN workstation with HDS and CM update software

NOTE: Use this procedure when you have to substitute a known-good PCM during troubleshooting procedures.

1. Connect the HDS to the data link connector (DLC) (A) located under the driver's side of the dashboard.



2. Turn the ignition switch ON (II).
3. Make sure the HDS communicates with the PCM. If it do not, go to the DLC circuit troubleshooting (see page 11-218). If you are returning from the DLC circuit troubleshooting, skip steps 4 to 9, and clean the throttle body after substituting the PCM (see page 11-407).
4. Select the INSPECTION MENU with the HDS.
5. Select the ETCS TEST, then select the TP POSITION CHECK, and follow the screen prompts with the HDS.

NOTE: If the TP POSITION CHECK indicates FAILED, continue this procedure.

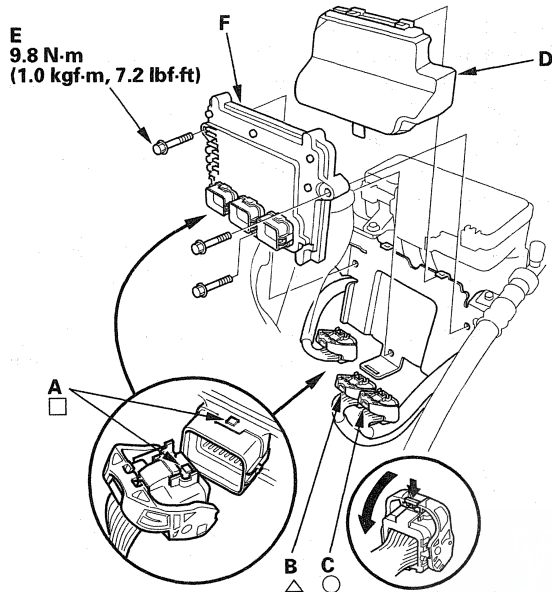
6. Turn the ignition switch OFF.
7. Jump the SCS line with the HDS.

(cont'd)

Automatic Transmission

General Troubleshooting Information (cont'd)

8. Remove the cover (D).



9. Disconnect PCM connectors A, B, and C.

NOTE: PCM connectors A, B, and C have symbols (A=□, B=△, C=○) embossed on them for identification.

10. Remove the mounting bolts (E), then remove the PCM (F).
11. Install the PCM in the reverse order of removal.
12. Open the SCS with the HDS.

13. Turn the ignition switch ON (II).


NOTE: DTC P0630 "VIN Not Programmed or Mismatch" may be stored because the VIN has not been programmed into the PCM; ignore it, and continue this procedure.

14. Manually input the VIN to the PCM with the HDS.
15. Update the PCM if it does not have the latest software.
16. Select the IMMOBI SYSTEM with the HDS.
17. Enter the immobilizer code using the PCM replacement procedure in the HDS; this allows you to start the engine.
18. Reset the PCM with the HDS.
19. If the TP POSITION CHECK failed in step 5, clean the throttle body (see page 11-407).
20. Do the PCM idle learn procedure (see page 11-359).
21. Do the crank (CKP) pattern learn procedure (see page 11-5).



DTC Troubleshooting Index

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review General Troubleshooting Information (see page 14-4).

DTC ^{*(1)}	D Indicator	MIL 	Detection Item	Page
P0705 (5-2) ^{*(2)}	Blinks	ON	Short in Transmission Range Switch Circuit (Multiple Shift-position Input)	(see page 14-77)
P0706 (6-2) ^{*(2)}	OFF	ON	Open in Transmission Range Switch Circuit	(see page 14-87)
P0711 (28-5) ^{*(2)}	Blinks	OFF	Problem in ATF Temperature Sensor Circuit	(see page 14-91)
P0712 (28-3) ^{*(2)}	Blinks	OFF	Short in ATF Temperature Sensor Circuit	(see page 14-93)
P0713 (28-4) ^{*(2)}	Blinks	OFF	Open in ATF Temperature Sensor Circuit	(see page 14-95)
P0716 (15-5) ^{*(2)}	Blinks	ON	Problem in Input Shaft (Mainshaft) Speed Sensor Circuit	(see page 14-97)
P0717 (15-3) ^{*(2)}	Blinks	ON	Problem in Input Shaft (Mainshaft) Speed Sensor Circuit (No Signal Input)	(see page 14-97)
P0718 (15-6) ^{*(2)}	Blinks	ON	Input Shaft (Mainshaft) Speed Sensor Intermittent Failure	(see page 14-101)
P0721 (9-5) ^{*(2)}	Blinks	ON	Problem in Output Shaft (Countershaft) Speed Sensor Circuit	(see page 14-104)
P0722 (9-3) ^{*(2)}	Blinks	ON	Problem in Output Shaft (Countershaft) Speed Sensor Circuit (No Signal Input)	(see page 14-104)
P0723 (9-6) ^{*(2)}	Blinks	ON	Output Shaft (Countershaft) Speed Sensor Intermittent Failure	(see page 14-108)
P0731 (64-1)	Blinks	OFF	Problem in 1st Clutch and 1st Clutch Hydraulic Circuit (1st gear incorrect ratio)	(see page 14-111)
P0732 (64-2)	Blinks	OFF	Problem in 2nd Clutch and 2nd Clutch Hydraulic Circuit (2nd gear incorrect ratio)	(see page 14-113)
P0733 (64-3)	Blinks	OFF	Problem in 3rd Clutch and 3rd Clutch Hydraulic Circuit (3rd gear incorrect ratio)	(see page 14-115)
P0734 (64-4)	Blinks	OFF	Problem in 4th Clutch and 4th Clutch Hydraulic Circuit (4th gear incorrect ratio)	(see page 14-117)
P0735 (64-5)	Blinks	OFF	Problem in 5th Clutch and 5th Clutch Hydraulic Circuit (5th gear incorrect ratio)	(see page 14-119)
P0741 (40-3)	OFF	ON	Torque Converter Clutch Hydraulic Circuit Stuck OFF	(see page 14-121)
P0746 (76-3)	Blinks	ON	A/T Clutch Pressure Control Solenoid Valve A Stuck OFF	(see page 14-123)
P0747 (76-4)	Blinks	ON	A/T Clutch Pressure Control Solenoid Valve A Stuck ON	(see page 14-123)
P0751 (70-3)	Blinks	ON	Shift Solenoid Valve A Stuck OFF	(see page 14-125)
P0752 (70-4)	Blinks	ON	Shift Solenoid Valve A Stuck ON	(see page 14-125)
P0756 (71-3)	Blinks	ON	Shift Solenoid Valve B Stuck OFF	(see page 14-127)
P0757 (71-4)	Blinks	ON	Shift Solenoid Valve B Stuck ON	(see page 14-127)
P0761 (72-3)	Blinks	ON	Shift Solenoid Valve C Stuck OFF	(see page 14-129)
P0762 (72-4)	Blinks	ON	Shift Solenoid Valve C Stuck ON	(see page 14-129)

NOTE:


- * (1): The DTC in parentheses is the flash code (Honda code) the D indicator indicates when the data link connector (DLC) is connected to the HDS, and in the SCS mode.
- * (2): This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

(cont'd)

Automatic Transmission

DTC Troubleshooting Index (cont'd)

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review General Troubleshooting Information (see page 14-4).

DTC ^{*(1)}	D Indicator	MIL 	Detection Item	Page
P0776 (77-3)	Blinks	ON	A/T Clutch Pressure Control Solenoid Valve B Stuck OFF	(see page 14-131)
P0777 (77-4)	Blinks	ON	A/T Clutch Pressure Control Solenoid Valve B Stuck ON	(see page 14-131)
P0780 (45-1)	Blinks	ON	Problem in Shift Control System	(see page 14-133)
P0847 (26-3) ^{*(2)}	Blinks	OFF	Short in 3rd Clutch Transmission Fluid Pressure Switch Circuit, or 3rd Clutch Transmission Fluid Pressure Switch Stuck ON	(see page 14-135)
P0848 (26-4) ^{*(2)}	Blinks	OFF	Open in 3rd Clutch Transmission Fluid Pressure Switch Circuit, or 3rd Clutch Transmission Fluid Pressure Switch Stuck OFF	(see page 14-137)
P0872 (27-3)	Blinks	OFF	Short in 4th Clutch Transmission Fluid Pressure Switch Circuit, or 4th Clutch Transmission Fluid Pressure Switch Stuck ON	(see page 14-140)
P0873 (27-4)	Blinks	OFF	Open in 4th Clutch Transmission Fluid Pressure Switch Circuit, or 4th Clutch Transmission Fluid Pressure Switch Stuck OFF	(see page 14-142)
P0962 (16-3) ^{*(2)}	Blinks	ON	Problem in A/T Clutch Pressure Control Solenoid Valve A Circuit	(see page 14-145)
P0963 (16-4) ^{*(2)}	Blinks	ON	Problem in A/T Clutch Pressure Control Solenoid Valve A	(see page 14-148)
P0966 (23-3) ^{*(2)}	Blinks	ON	Problem in A/T Clutch Pressure Control Solenoid Valve B Circuit	(see page 14-150)
P0967 (23-4) ^{*(2)}	Blinks	ON	Problem in A/T Clutch Pressure Control Solenoid Valve B	(see page 14-153)
P0970 (29-3) ^{*(2)}	Blinks	ON	Problem in A/T Clutch Pressure Control Solenoid Valve C Circuit	(see page 14-155)
P0971 (29-4) ^{*(2)}	Blinks	ON	Problem in A/T Clutch Pressure Control Solenoid Valve C	(see page 14-158)
P0973 (7-3) ^{*(2)}	Blinks	ON	Short in Shift Solenoid Valve A Circuit	(see page 14-160)
P0974 (7-4) ^{*(2)}	Blinks	ON	Open in Shift Solenoid Valve A Circuit	(see page 14-163)
P0976 (8-3) ^{*(2)}	Blinks	ON	Short in Shift Solenoid Valve B Circuit	(see page 14-166)
P0977 (8-4) ^{*(2)}	Blinks	ON	Open in Shift Solenoid Valve B Circuit	(see page 14-169)
P0979 (22-3) ^{*(2)}	Blinks	ON	Short in Shift Solenoid Valve C Circuit	(see page 14-172)
P0980 (22-4) ^{*(2)}	Blinks	ON	Open in Shift Solenoid Valve C Circuit	(see page 14-175)
P2769 (1-3) ^{*(2)}	Blinks	ON	Short in Torque Converter Clutch Solenoid Valve Circuit	(see page 14-178)
P2770 (1-4) ^{*(2)}	Blinks	ON	Open in Torque Converter Clutch Solenoid Valve Circuit	(see page 14-181)

NOTE:

- * (1): The DTC in parentheses is the flash code (Honda code) the D indicator indicates when the data link connector (DLC) is connected to the HDS, and in the SCS mode.
- * (2): This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.



Symptom Troubleshooting Index

Symptom	Probable cause(s)	Notes
When you turn the ignition switch ON (II), the D indicator comes on and stays on in all shift lever positions, or it never comes on at all	<ul style="list-style-type: none"> F-CAN communication line error Gauge control module defective PCM defective 	<ul style="list-style-type: none"> Check the F-CAN communication line for a DTC (see page 22-91). Check the indicator drive circuit in the gauge control module by using the gauge control module self-diagnostic function (see page 22-90).
A/T gear position indicator does not come on while the shift lever is in that position	<ul style="list-style-type: none"> F-CAN communication line error Gauge control module defective PCM defective Transmission range switch defective 	<ul style="list-style-type: none"> Check the F-CAN communication line for a DTC (see page 22-91). Check the indicator drive circuit in the gauge control module by using the gauge control module self-diagnostic function (see page 22-90). Inspect the transmission range switch (see page 14-261).
Shift lever cannot be moved from P while you are pressing on the brake pedal	<ul style="list-style-type: none"> Accelerator pedal position sensor circuit Accelerator pedal position sensor defective Brake pedal position switch circuit Brake pedal position switch defective Shift lock solenoid defective Shift lock solenoid control circuit Shift lock mechanism defective Throttle body defective Transmission range switch ATP P switch stuck OFF Transmission range switch ATP P switch line opened 	<ul style="list-style-type: none"> Inspect the APP sensor signal (see page 11-274). Troubleshoot the shift lock system circuit (see page 14-267). Test the shift lock solenoid (see page 14-274). Inspect the transmission range switch (see page 14-261).
Ignition switch cannot be moved from ACC (I) to LOCK (0) (key is pushed in, shift lever in P)	<ul style="list-style-type: none"> Interlock control system circuit Key interlock solenoid stuck ON Park pin switch stuck OFF Transmission range switch 	<ul style="list-style-type: none"> Troubleshoot the key interlock system circuit (see page 14-272). Inspect the transmission range switch (see page 14-261).
When you turn the ignition switch ON (II), the A/T TEMP indicator comes on and stays on or never comes on at all (4WD)	<ul style="list-style-type: none"> F-CAN communication line error Gauge control module defective PCM defective 	<ul style="list-style-type: none"> Check the F-CAN communication line for a DTC (see page 22-91). Check the indicator drive circuit in the gauge control module by using the gauge control module self-diagnostic function (see page 22-90).

(cont'd)

Automatic Transmission

Symptom Troubleshooting Index (cont'd)

Symptom	Probable cause(s)	Notes
Engine runs, but vehicle does not move in any gear	<ol style="list-style-type: none"> 1. Low ATF level 2. Shift cable broken or out of adjustment 3. Connection between shift cable and transmission or body is worn 4. ATF pump worn or binding 5. Regulator valve stuck or spring worn 6. ATF strainer clogged 7. Mainshaft worn or damaged 8. Final gears worn or damaged 9. Park mechanism defective 10. Transmission-to-engine assembly error 11. Axle disengaged 	<ul style="list-style-type: none"> • Check the ATF level and check the ATF cooler lines for leakage and loose connections. If necessary, clean the ATF cooler lines. • Check for a loose shift cable at the shift lever and the transmission control lever. • Improper alignment of ATF pump and torque converter housing may cause ATF pump seizure. The symptoms are mostly an rpm-related ticking noise or a high pitched squeak. • Check the line pressure. • Check the ATF strainer for debris. If the strainer is clogged, find the damaged components that caused the debris. • Inspect the differential pinion gears for wear. If the differential pinion gears are worn, replace the differential assembly, replace the ATF strainer, and thoroughly clean the transmission, and clean the cooler and lines. Replace the torque converter. • Be careful not to damage the torque converter housing when replacing the main ball bearing. You may also damage the ATF pump when you torque down the main valve body. This will result in ATF pump seizure if not detected. Use the proper tools. • Install the main seal flush with the torque converter housing. If you push it into the torque converter housing until it bottoms out, it will block the fluid return passage and result in damage.
Vehicle moves in R, but not in D, D3, 2, or 1	<ol style="list-style-type: none"> 1. 1st accumulator defective 2. Idler gears worn or damaged 3. 1st clutch defective 	<ul style="list-style-type: none"> • Check the 1st clutch pressure. • Inspect the secondary shaft and 1st/1st-hold clutch assembly for wear and damage. • Inspect the clutch piston, clutch piston check valve, and O-rings. Check the spring retainer for wear and damage. Inspect the clearance between the clutch end-plate and the top disc. If the clearance is out of tolerance, inspect the clutch discs and plates for wear and damage, and inspect the clutch wave-plate height. If the discs and plates are worn or damaged, replace them as a set. If the wave-plate height is out of tolerance, replace the wave-plate. If they are OK, adjust the clearance with the clutch end-plate.
Vehicle moves in 2 and R, but not in D, D3, or 1	<ol style="list-style-type: none"> 1. 1st gear one-way clutch defective 2. 1st gears worn or damaged 3. 1st clutch defective 	<ul style="list-style-type: none"> • Check the 1st clutch pressure. • Inspect the secondary shaft and 1st/1st-hold clutch assembly for wear and damage. • Inspect the clutch piston, clutch piston check valve, and O-rings. Check the spring retainer for wear and damage. Inspect the clearance between the clutch end-plate and the top disc. If the clearance is out of tolerance, inspect the clutch discs and plates for wear and damage, and inspect the clutch wave-plate height. If the discs and plates are worn or damaged, replace them as a set. If the wave-plate height is out of tolerance, replace the wave-plate. If they are OK, adjust the clearance with the clutch end-plate.



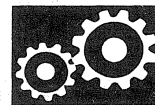
Symptom	Probable cause(s)	Notes
Vehicle moves in D, D3, 2, and R, but not in 1	<ol style="list-style-type: none"> 1st-hold accumulator defective 1st-hold clutch defective 	<ul style="list-style-type: none"> Check the 1st-hold clutch pressure. Inspect the secondary shaft and 1st/1st-hold clutch assembly for wear and damage. Inspect the clutch piston, clutch piston check valve, and O-rings. Check the spring retainer for wear and damage. Inspect the clutch plate-to-top disc clearance. If the clearance is out of tolerance, inspect the clutch discs and plates for wear and damage, and inspect the clutch wave-plate height. If the discs and plates are worn or damaged, replace them as a set. If the wave-plate height is out of tolerance, replace the wave-plate. If the discs and plates are OK, adjust the clearance with the clutch end-plate.
Vehicle moves in D, D3, 1, and R, but not in 2	<ol style="list-style-type: none"> 2nd accumulator defective 2nd clutch defective 	<ul style="list-style-type: none"> Check the 2nd clutch pressure. Inspect the secondary shaft and 2nd clutch assembly for wear and damage. Inspect the clutch piston, clutch piston check valve, and O-rings. Check the spring retainer for wear and damage. Inspect the clearance between the clutch end-plate and the top disc. If the clearance is out of tolerance, inspect the clutch discs and plates for wear and damage, and inspect the clutch wave-plate height. If the discs and plates are worn or damaged, replace the discs and plates as a set. If the wave-plate height is out of tolerance, replace the wave-plate. If the discs and plates are OK, adjust the clearance with the clutch end-plate.
Vehicle moves in D, D3, 2, and 1, but not in R (or moves forward in R)	<ol style="list-style-type: none"> Shift fork shaft stuck Modulator valve defective Reverse CPC valve defective 5th accumulator defective 5th clutch defective Reverse gears worn or damaged 	<ul style="list-style-type: none"> Check the line pressure and 5th clutch pressure. Check for a missing shift fork bolt on the shift fork shaft. Check the ATF strainer for debris. If the ATF strainer is clogged with particles of steel or aluminum, inspect the ATF pump. If the ATF pump is OK, find the damaged components that caused the debris. If no cause for the contamination is found, replace the torque converter. Inspect the reverse selector gear teeth chamfers, and inspect the engagement teeth chamfers of the countershaft 5th gear and reverse gear. Replace the reverse gears and the reverse selector if they are worn or damaged. If the transmission makes clicking, grinding, or whirring noises, also replace the mainshaft 5th gear, reverse idler gear, and countershaft 5th gear. Inspect the clutch piston, clutch piston check valve, and O-rings. Check the spring retainer for wear and damage. Inspect the clearance between the clutch end-plate and the top disc. If the clearance is out of tolerance, inspect the clutch discs and plates for wear and damage, and inspect the clutch wave-plate height. If the discs and plates are worn or damaged, replace the discs and plates as a set. If the wave-plate height is out of tolerance, replace the wave-plate. If the discs and plates are OK, adjust the clearance with the clutch end-plate.

(cont'd)

Automatic Transmission

Symptom Troubleshooting Index (cont'd)

Symptom	Probable cause(s)	Notes
Poor acceleration; flares when starting off in D, D3, and R	<ol style="list-style-type: none"> 1. Low ATF level 2. Shift cable broken or out of adjustment 3. ATF pump worn or binding 4. Regulator valve stuck or spring worn 5. ATF strainer clogged 6. Torque converter check valve defective 	<ul style="list-style-type: none"> • Check the ATF level and check the ATF cooler lines for leakage and loose connections. If necessary, clean the ATF cooler lines. • Check for a loose shift cable at the shift lever and the transmission control lever. • Check the line pressure. • Check the ATF strainer for debris. If the strainer is clogged, find the damaged components that caused the debris. • Improper alignment of ATF pump and torque converter housing may cause ATF pump seizure. The symptom is mostly an rpm-ticking noise or a high pitched squeak. • Be careful not to damage the torque converter housing when replacing the main ball bearing. You may also damage the ATF pump when you torque down the main valve body. This will result in ATF pump seizure if not detected. Use the proper tools.
Poor acceleration; flares when starting off in D, D3, and R; stall speed high in D, D3, 2, and 1	<ol style="list-style-type: none"> 1. One-way check ball defective 2. 1st clutch defective 	<ul style="list-style-type: none"> • Check the 1st clutch pressure. • Inspect the clutch piston, clutch piston check valve, and O-rings. Check the spring retainer for wear and damage. Inspect the clutch end-plate-to-top disc clearance. If the clearance is out of tolerance, inspect the clutch discs and plates for wear and damage, and inspect the clutch wave-plate height. If the discs and plates are worn or damaged, replace them as a set. If the wave-plate height is out of tolerance, replace the wave-plate. If they are OK, adjust the clearance with the clutch end-plate.
Poor acceleration; flares when starting off in D, D3, and R; stall speed high in 2	<ol style="list-style-type: none"> 1. 2nd accumulator defective 2. 2nd clutch defective 	<ul style="list-style-type: none"> • Check the 2nd clutch pressure. • Inspect the clutch piston, clutch piston check valve, and O-rings. Check the spring retainer for wear and damage. Inspect the clutch end-plate-to-top disc clearance. If the clearance is out of tolerance, inspect the clutch discs and plates for wear and damage, and inspect the clutch wave-plate height. If the discs and plates are worn or damaged, replace the discs and plates as a set. If the wave-plate height is out of tolerance, replace the wave-plate. If the discs and plates are OK, adjust the clearance with the clutch end-plate.



Symptom	Probable cause(s)	Notes
Poor acceleration; flares when starting off in D and R; stall speed high in R	<ol style="list-style-type: none"> 1. Shift solenoid valve C defective 2. Shift cable broken or out of adjustment 3. Reverse CPC valve defective 4. 5th accumulator defective 5. 5th clutch defective 	<ul style="list-style-type: none"> • Check for a stored DTC, and check for loose connectors. • Inspect the O-ring, and check the shift solenoid valve seizure. • Check for a loose shift cable at the shift lever and the transmission control lever. • Check the 5th clutch pressure. • Inspect the clutch piston, clutch piston check valve, and O-rings. Check the spring retainer for wear and damage. Inspect the clutch end-plate-to-top disc clearance. If the clearance is out of tolerance, inspect the clutch discs and plates for wear and damage, and inspect the clutch wave-plate height. If the discs and plates are worn or damaged, replace the discs and plates as a set. If the wave-plate height is out of tolerance, replace the wave-plate. If the discs and plates are OK, adjust the clearance with the clutch end-plate.
Poor acceleration; flares when starting off in D, D3, and R; stall speed low	<ol style="list-style-type: none"> 1. Torque converter clutch solenoid valve defective 2. Torque converter one-way clutch defective 3. Engine output low 4. Torque converter clutch piston defective 5. Lock-up shift valve defective 	<ul style="list-style-type: none"> • Check for a stored DTC, and check for loose connectors. • Inspect the O-ring, and check the solenoid valve seizure. • Replace torque converter. • Check for a stuck lock-up valve in the valve body.
Engine idle vibration	<ol style="list-style-type: none"> 1. Low ATF level 2. Torque converter clutch solenoid valve defective 3. Drive plate defective or transmission misassembled 4. Engine output low 5. Torque converter clutch piston defective 6. ATF pump worn or binding 7. Lock-up shift valve defective 	<ul style="list-style-type: none"> • Adjust the engine and transmission mounts. • Check the ATF level and check the ATF cooler lines for leakage and loose connections. If necessary, clean the ATF cooler lines. • Improper alignment of ATF pump and torque converter housing may cause ATF pump seizure. The symptom is mostly an rpm-related ticking noise or a high pitched squeak. • Be careful not to damage the torque converter housing when replacing the main ball bearing. You may also damage the ATF pump when you torque down the main valve body. This will result in ATF pump seizure if not detected. Use the proper tools.

(cont'd)

Automatic Transmission

Symptom Troubleshooting Index (cont'd)

Symptom	Probable cause(s)	Notes
Vehicle moves in N	<ol style="list-style-type: none"> Excessive ATF Foreign material in separator plate orifice Relief valve defective Lubrication control valve defective 1st-hold clutch defective 1st clutch defective 2nd clutch defective 3rd clutch defective 4th clutch defective 5th clutch defective Clutch end-plate clearance incorrect Needle bearing seized up, worn, or damaged Thrust washer seized up, worn, or damaged 	<ul style="list-style-type: none"> Check the ATF level, and drain the ATF if necessary. Check all clutch pressures. Inspect the clutch piston, clutch piston check valve, and O-rings. Check the spring retainer for wear and damage. Inspect the clutch end-plate-to-top disc clearance. If the clearance is out of tolerance, inspect the clutch discs and plates for wear and damage, and inspect the clutch wave-plate height. If the discs and plates are worn or damaged, replace the discs and plates as a set. If the wave-plate height is out of tolerance, replace the wave-plate. If the discs and plates are OK, adjust the clearance with the clutch end-plate.
Late shift after shifting from N to D or D3, or excessive shock when shifting	<ol style="list-style-type: none"> Shift solenoid valve C defective A/T clutch pressure control solenoid valve A defective A/T clutch pressure control solenoid valve B defective A/T clutch pressure control solenoid valve C defective Shift cable broken or out of adjustment Connection between shift cable and transmission or body is worn Input shaft (mainshaft) speed sensor defective Output shaft (countershaft) speed sensor defective ATF temperature sensor defective CPC valve C defective Foreign material in separator plate orifice Shift valve C defective Shift valve E defective Servo control valve defective 1st accumulator defective 1st check ball stuck One-way check ball defective 1st clutch defective 	<ul style="list-style-type: none"> Check for a stored DTC, and check for loose connectors. Inspect the O-ring, and check the shift solenoid valve for seizure. Inspect the A/T clutch pressure control solenoid valve body gasket and ATF feed pipes for wear and damage. If the A/T clutch pressure control solenoid valve is stuck, inspect the CPC valves. Check for a loose shift cable at the shift lever and the transmission control lever. Check the 1st clutch pressure. Inspect the clutch piston, clutch piston check valve, and O-rings. Check the spring retainer for wear and damage. Inspect the clutch end-plate-to-top disc clearance. If the clearance is out of tolerance, inspect the clutch discs and plates for wear and damage, and inspect the clutch wave-plate height. If the discs and plates are worn or damaged, replace them as a set. If the wave-plate height is out of tolerance, replace the wave-plate. If they are OK, adjust the clearance with the clutch end-plate.



Symptom	Probable cause(s)	Notes
Late shift after shifting from N to R, or excessive shock when shifting	<ol style="list-style-type: none"> 1. Shift solenoid valve C defective 2. A/T clutch pressure control solenoid valve A defective 3. A/T clutch pressure control solenoid valve B defective 4. A/T clutch pressure control solenoid valve C defective 5. Shift cable broken or out of adjustment 6. Connection between shift cable and transmission or body is worn 7. Input shaft (mainshaft) speed sensor defective 8. Output shaft (countershaft) speed sensor defective 9. ATF temperature sensor defective 10. Shift fork shaft stuck 11. CPC valve C defective 12. Reverse CPC valve defective 13. Foreign material in separator plate orifice 14. Shift valve E defective 15. 5th accumulator defective 16. 5th clutch defective 	<ul style="list-style-type: none"> • Check for a stored DTC, and check for loose connectors. • Inspect the O-ring, and check the shift solenoid valve for seizure. • Inspect the A/T clutch pressure control solenoid valve body gasket and ATF feed pipes for wear and damage. If the A/T clutch pressure control solenoid valve is stuck, inspect the CPC valves. • Check for a loose shift cable at the shift lever and the transmission control lever. • Check the 5th clutch pressure. • Inspect the clutch piston, clutch piston check valve, and O-rings. Check the spring retainer for wear and damage. Inspect the clutch end-plate-to-top disc clearance. If the clearance is out of tolerance, inspect the clutch discs and plates for wear and damage, and inspect the clutch wave-plate height. If the discs and plates are worn or damaged, replace the discs and plates as a set. If the wave-plate height is out of tolerance, replace the wave-plate. If the discs and plates are OK, adjust the clearance with the clutch end-plate.

(cont'd)

Automatic Transmission

Symptom Troubleshooting Index (cont'd)

Symptom	Probable cause(s)	Notes
Transmission does not shift	<ol style="list-style-type: none"> 1. Input shaft (mainshaft) speed sensor defective 2. Output shaft (countershaft) speed sensor defective 3. Modulator valve defective 	<ul style="list-style-type: none"> • Check for a stored DTC, and check for loose connectors. • Check the line pressure.
Erratic shifting: fails to shift in D; starts off in 5th	<ol style="list-style-type: none"> 1. Shift solenoid valve B defective 2. Shift valve B defective 	<ul style="list-style-type: none"> • Check for a stored DTC, and check for loose connectors. • Inspect the O-ring, and check the shift solenoid valve for seizure.
Erratic shifting: fails to shift in 2; starts off in 4th	<ol style="list-style-type: none"> 1. Shift solenoid valve B defective 2. Shift valve B defective 	<ul style="list-style-type: none"> • Check for a stored DTC, and check for loose connectors. • Inspect the O-ring, and check the shift solenoid valve for seizure.
Erratic shifting: fails to shift in D; starts off in 3rd	<ol style="list-style-type: none"> 1. Shift solenoid valve A defective 2. Shift valve A defective 	<ul style="list-style-type: none"> • Check for a stored DTC, and check for loose connectors. • Inspect the O-ring, and check the shift solenoid valve for seizure.
Erratic shifting: fails to shift in 2; starts off in 1st	<ol style="list-style-type: none"> 1. Shift solenoid valve A defective 2. Shift valve A defective 	<ul style="list-style-type: none"> • Check for a stored DTC, and check for loose connectors. • Inspect the O-ring, and check the shift solenoid valve for seizure.
Excessive shock or flares on all upshifts and downshifts	<ol style="list-style-type: none"> 1. A/T clutch pressure control solenoid valve A defective 2. A/T clutch pressure control solenoid valve B defective 3. Input shaft (mainshaft) speed sensor defective 4. Output shaft (countershaft) speed sensor defective 5. ATF temperature sensor defective 6. CPC valve A defective 7. Foreign material in separator plate orifice 	<ul style="list-style-type: none"> • Check for a stored DTC, and check for loose connectors. • Inspect the A/T clutch pressure control solenoid valve body gasket and ATF feed pipes for wear and damage. If the A/T clutch pressure control solenoid valve is stuck, inspect the CPC valves. • Inspect the sensor O-rings.
Excessive shock or flares on 1-2 upshift or 2-1 downshift	<ol style="list-style-type: none"> 1. Foreign material in separator plate orifice 2. 2nd accumulator defective 3. 2nd check ball stuck 4. 2nd clutch defective 	<ul style="list-style-type: none"> • Check the 1st and 2nd clutch pressures. • Inspect the clutch piston, clutch piston check valve, and O-rings. Check the spring retainer for wear and damage. Inspect the clutch end-plate-to-top disc clearance. If the clearance is out of tolerance, inspect the clutch discs and plates for wear and damage, and inspect the clutch wave-plate height. If the discs and plates are worn or damaged, replace the discs and plates as a set. If the wave-plate height is out of tolerance, replace the wave-plate. If the discs and plates are OK, adjust the clearance with the clutch end-plate.



Symptom	Probable cause(s)	Notes
Excessive shock or flares on 2-3 upshift or 3-2 downshift	<ol style="list-style-type: none"> 1. Shift solenoid valve C defective 2. A/T clutch pressure control solenoid valve A defective 3. A/T clutch pressure control solenoid valve B defective 4. 3rd clutch transmission fluid pressure switch defective 5. CPC valve B defective 6. Foreign material in separator plate orifice 7. Shift valve C defective 8. 2nd accumulator defective 9. 3rd accumulator defective 10. 2nd check ball stuck 11. 2nd clutch defective 12. 3rd clutch defective 	<ul style="list-style-type: none"> • Check for a stored DTC, and check for loose connectors. • Inspect the O-rings, and check the shift solenoid valve for seizure. • Check for clogged orifice in the transmission fluid pressure switch connector. If the orifice is clogged, remove it and clean the connector. • Check the 2nd and 3rd clutch pressures. • Inspect the clutch piston, clutch piston check valve, and O-rings. Check the spring retainer for wear and damage. Inspect the clutch end-plate-to-top disc clearance. If the clearance is out of tolerance, inspect the clutch discs and plates for wear and damage, and inspect the clutch wave-plate height. If the discs and plates are worn or damaged, replace the discs and plates as a set. If the wave-plate height is out of tolerance, replace the wave-plate. If the discs and plates are OK, adjust the clearance with the clutch end-plate.
Excessive shock or flares on 3-4 upshift or 4-3 downshift	<ol style="list-style-type: none"> 1. Shift solenoid valve C defective 2. A/T clutch pressure control solenoid valve A defective 3. A/T clutch pressure control solenoid valve B defective 4. 4th clutch transmission fluid pressure switch defective 5. CPC valve B defective 6. Foreign material in separator plate orifice 7. Shift valve C defective 8. 3rd accumulator defective 9. 4th accumulator defective 10. 3rd clutch defective 11. 4th clutch defective 	<ul style="list-style-type: none"> • Check for a stored DTC, and check for loose connectors. • Inspect the O-rings, and check the shift solenoid valve for seizure. • Check for clogged orifice in the transmission fluid pressure switch connector. If the orifice is clogged, remove it and clean the connector. • Check the 3rd and 4th clutch pressures. • Inspect the clutch piston, clutch piston check valve, and O-rings. Check the spring retainer for wear and damage. Inspect the clutch end-plate-to-top disc clearance. If the clearance is out of tolerance, inspect the clutch discs and plates for wear and damage, and inspect the clutch wave-plate height. If the discs and plates are worn or damaged, replace the discs and plates as a set. If the wave-plate height is out of tolerance, replace the wave-plate. If the discs and plates are OK, adjust the clearance with the clutch end-plate.

(cont'd)

Automatic Transmission

Symptom Troubleshooting Index (cont'd)

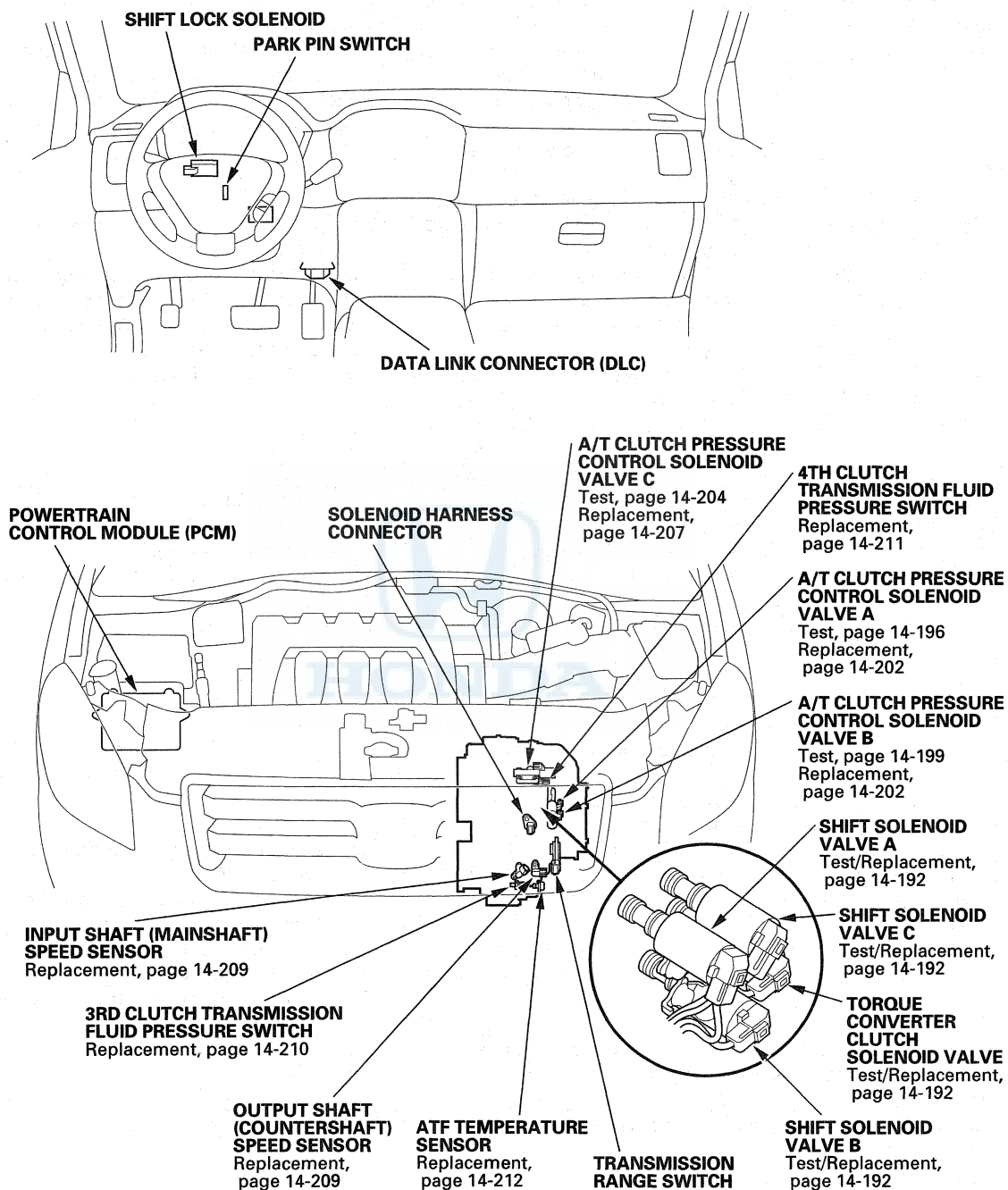
Symptom	Probable cause(s)	Notes
Excessive shock or flares on 4-5 upshift or 5-4 downshift	<ol style="list-style-type: none"> 1. Shift solenoid valve C defective 2. A/T clutch pressure control solenoid valve A defective 3. A/T clutch pressure control solenoid valve B defective 4. A/T clutch pressure control solenoid valve C defective 5. CPC valve B defective 6. CPC valve C defective 7. Foreign material in separator plate orifice 8. Shift valve C defective 9. Shift valve E defective 10. Kick-down valve or kick-down short valve defective 11. 4th accumulator defective 12. 5th accumulator defective 13. 4th clutch defective 14. 5th clutch defective 	<ul style="list-style-type: none"> • Check for a stored DTC, and check for loose connectors. • Inspect the O-rings, and check the shift solenoid valve for seizure. • Check the 4th and 5th clutch pressures. • Inspect the clutch piston, clutch piston check valve, and O-rings. Check the spring retainer for wear and damage. Inspect the clutch end-plate-to-top disc clearance. If the clearance is out of tolerance, inspect the clutch discs and plates for wear and damage, and inspect the clutch wave-plate height. If the discs and plates are worn or damaged, replace the discs and plates as a set. If the wave-plate height is out of tolerance, replace the wave-plate. If the discs and plates are OK, adjust the clearance with the clutch end-plate.
Noise from transmission in all shift lever positions	<ol style="list-style-type: none"> 1. ATF pump worn or binding 2. Idler gears worn or damaged 3. Thrust washer seized up, worn, or damaged 	Improper alignment of ATF pump and torque converter housing may cause ATF pump seizure. The symptoms are mostly an rpm-related ticking noise or a high pitched squeak.
Vehicle does not accelerate above 31 mph (50 km/h)	Torque converter one-way clutch defective	Replace the torque converter.
Vibration in all shift lever positions	Drive plate defective or transmission misassembled	<ul style="list-style-type: none"> • Adjust the engine and transmission mounts. • Check the stall speed.
Shift lever does not operate smoothly	<ol style="list-style-type: none"> 1. Transmission range switch defective or out of adjustment 2. Shift cable broken or out of adjustment 3. Connection between shift cable and transmission or body is worn 	<ul style="list-style-type: none"> • Check for a stored DTC, and check for loose connectors. • Inspect the transmission range switch. If the transmission range switch is faulty, replace it. If the transmission range switch is out of adjustment, adjust it and the shift cable. • Check for a loose shift cable at the shift lever and the transmission control lever.
Transmission does not shift into P	<ol style="list-style-type: none"> 1. Shift cable broken or out of adjustment 2. Connection between shift cable and transmission or body is worn 3. Park mechanism defective 	<ul style="list-style-type: none"> • Check for a loose shift cable at the shift lever and the transmission control lever. • Check the park pawl, control shaft, and park lever link for wear and damage. Check if the control shaft lever pin is disengaged from the manual valve guide.

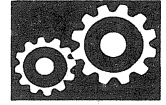


Symptom	Probable cause(s)	Notes
Torque converter clutch does not disengage	<ol style="list-style-type: none"> 1. Torque converter clutch solenoid valve defective 2. A/T clutch pressure control solenoid valve C defective 3. Torque converter clutch piston defective 4. Lock-up shift valve defective 5. Lock-up control valve defective 6. Lock-up timing valve defective 	<ul style="list-style-type: none"> • Check for a stored DTC, and check for loose connectors. • Inspect the A/T clutch pressure control solenoid valve C body gasket for wear and damage. If A/T clutch pressure control solenoid valve C is stuck, inspect the CPC valves.
Torque converter clutch does not operate smoothly	<ol style="list-style-type: none"> 1. Torque converter clutch solenoid valve defective 2. A/T clutch pressure control solenoid valve C defective 3. Torque converter clutch piston defective 4. Torque converter check valve defective 5. Lock-up shift valve defective 6. Lock-up control valve defective 7. Lock-up timing valve defective 	<ul style="list-style-type: none"> • Check for a stored DTC, and check for loose connectors. • Inspect the A/T clutch pressure control solenoid valve C body gasket for wear and damage. If A/T clutch pressure control solenoid valve C is stuck, inspect the CPC valves. • Center all engine mounts.
Torque converter clutch does not engage	<ol style="list-style-type: none"> 1. Torque converter clutch solenoid valve defective 2. A/T clutch pressure control solenoid valve C defective 3. Input shaft (mainshaft) speed sensor defective 4. Output shaft (countershaft) speed sensor defective 5. Torque converter clutch piston defective 6. Torque converter check valve defective 7. Lock-up shift valve defective 8. Lock-up control valve defective 	<ul style="list-style-type: none"> • Check for a stored DTC, and check for loose connectors. • Inspect the A/T clutch pressure control solenoid valve C body gasket for wear and damage. If A/T clutch pressure control solenoid valve C is stuck, inspect the CPC valves.
A/T gear position indicator does not indicate shift lever positions	<ol style="list-style-type: none"> 1. Transmission range switch defective or out of adjustment 2. Shift cable broken or out of adjustment 3. Connection between shift cable and transmission or body is worn 	<ul style="list-style-type: none"> • Check for a stored DTC, and check for loose connectors. • Inspect the transmission range switch. If the transmission range switch is faulty, replace it. If the transmission range switch is out of adjustment, adjust it and the shift cable. • Check for a loose shift cable at the shift lever and the transmission control lever.
Speedometer and odometer do not work	Output shaft (countershaft) speed sensor defective	Check for a stored DTC, and check for loose connectors.
Engine does not rev to high rpm, and the transmission upshifts at low rpm (engine at normal operating temperature)	VTEC rocker arms defective	Check the engine rocker arms.

Automatic Transmission

Component Location Index





System Description

General Operation

The automatic transmission is a combination of a 3-element torque converter and four-shaft electronically controlled unit which provides 5 speeds forward and 1 reverse. The entire unit is positioned in line with the engine.

Torque Converter, Shafts, Gears, and Clutches

The torque converter consists of a pump, turbine, and stator assembly in a single unit. The converter housing (pump) is connected to the engine crankshaft and turns as the engine turns. Around the outside of the torque converter is a ring gear which meshes with the starter pinion when the engine is being started. The entire torque converter assembly serves as a flywheel, transmitting power to the transmission mainshaft. The transmission has four parallel shafts; the mainshaft, the countershaft, the secondary shaft, and the intermediary shaft. The mainshaft is in line with the engine crankshaft. The mainshaft includes the 4th and 5th clutches, and gears for 3rd, 4th, 5th, and reverse (reverse gear is integral with the 5th gear). The countershaft includes gears for the final drive, 2nd, idler, 1st, 4th, 5th, and reverse (the final drive gear is integral with the countershaft). The secondary shaft includes the 1st, 1st-hold, and 2nd clutches, and gears for park, 2nd, idler, and 1st. The intermediary shaft includes the 3rd clutch, and gears for 3rd and 4th. The countershaft 5th gear and the countershaft reverse gear can be locked to the countershaft at its left end, providing 5th gear or reverse, depending with which way the selector is moved. The gears on the mainshaft, secondary shaft, and intermediary shaft are in constant mesh with those on the countershaft. When certain conditions of gears in the transmission are engaged by the clutches, power is transmitted through the mainshaft, to the secondary shaft or the intermediary shaft, then to the countershaft or through the mainshaft to the countershaft to provide drive.

Electronic Control

The electronic control system consists of the powertrain control module (PCM), sensors, and seven solenoid valves. Shifting and lock-up are electronically controlled for comfortable driving under all conditions. The PCM is located in the engine compartment.

Hydraulic Control

The valve bodies include the main valve body, the secondary valve body, the regulator valve body, and the accumulator body. They are bolted to the torque converter housing. The main valve body contains the manual valve, the modulator valve, the torque converter check valve, shift valves A, B, D, E, CPC valve C, the cooler check valve, the relief valve, the lock-up shift valve, the lock-up timing valve, the lubrication control valve, the lubrication check valve, and the ATF pump gears. The secondary valve body contains shift valve C, CPC valve A, B, the reverse CPC valve, the servo control valve, and the kick-down valve. The regulator valve body contains the regulator valve, the lock-up control valve, and the 3rd accumulator. The accumulator body contains the 1st, 1st-hold, 2nd, 4th, and 5th accumulators, shift solenoid valves A, B, C, and the torque converter clutch solenoid valve. Fluid from the regulator passes through the manual valve to the various control valves. The all clutches receive fluid from the internal hydraulic circuit.

Shift Control Mechanism

To shift gears, the PCM controls shift solenoid valves A, B, and C, and automatic transmission (A/T) clutch pressure control solenoid valves A and B, while receiving input signals from various sensors and switches located throughout the vehicle. The shift solenoid valves shift the positions of the shift valves to switch the port to send hydraulic pressure to the clutches. A/T clutch pressure control solenoid valves A and B control CPC valve A and B to shift smoothly between lower gear and higher gear. This pressurize a line to one of the clutches, engaging the clutch and its corresponding gear.

(cont'd)

Automatic Transmission

System Description (cont'd)

General Operation (cont'd)

Lock-up Mechanism

The lock-up mechanism operates in the D position (2nd, 3rd, 4th, and 5th), and the D3 position (2nd and 3rd). The pressurized fluid is drained from the back of the torque converter through a fluid passage, causing the torque converter clutch piston to be held against the torque converter cover. As this takes place, the mainshaft rotates at the same speed as the engine crankshaft. Together with the hydraulic control, the PCM optimizes the timing of the lock-up mechanism. When the torque converter clutch solenoid valve activates, modulator pressure changes to switch lock-up on and off. The lock-up control valve and the lock-up timing valve control the range of lock-up according to A/T clutch pressure control solenoid valve C. The torque converter clutch solenoid valve is located on the accumulator body in the transmission, and A/T clutch pressure control solenoid valve C is mounted on the transmission housing. They are all controlled by the PCM.

Gear Selection

The shift lever has seven positions; P: PARK, R: REVERSE, N: NEUTRAL, D: DRIVE 1st through 5th gear ranges, D3: 1st through 3rd gear ranges, 2: 2nd gear, and 1: 1st gear.

Position	Description
P: PARK	Front wheels locked; park pawl engaged with park gear on secondary shaft. All clutches are released.
R: REVERSE	Reverse; reverse selector engaged with countershaft reverse gear and 5th clutch engaged.
N: NEUTRAL	All clutches are released.
D: DRIVE (1st through 5th)	General driving; starts off in 1st, shifts automatically to 2nd, 3rd, 4th, then 5th, depending on vehicle speed and accelerator pedal position. Downshifts through 4th, 3rd, 2nd, and 1st on deceleration to stop. The lock-up mechanism operates in 2nd, 3rd, 4th, and 5th gear.
D3: DRIVE (1st through 3rd)	Used for rapid acceleration at highway speeds and general driving; up-hill and down-hill driving; starts off in 1st, shifts automatically to 2nd, then 3rd, depending on vehicle speed and accelerator pedal position. Downshifts through 2nd to 1st on deceleration to stop. The lock-up mechanism operates in 2nd and 3rd gear.
2: SECOND	Used for engine braking or better traction starting off on loose or slippery surfaces; stays in 2nd gear; does not shift up or down.
1: FIRST	Used for engine braking; stays in 1st gear; does not shift up.

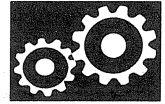
Starting is possible only in the P and N positions because of a slide-type neutral-safety switch.

Automatic Transmission (A/T) Gear Position Indicator

The A/T gear position indicator in the instrument panel shows which shift lever position has been selected without having to look down at the shift lever.

Transfer Mechanism

The transfer mechanism consists of the transfer drive gear on the differential, the transfer output shaft in the transmission, the transfer drive gear (hypoid gear), the transfer shaft, the transfer output shaft (hypoid gear), and the companion flange. The transfer mechanism assembly is on the rear side of the transmission, beside the differential. The transfer drive gear on the differential drives the transfer output shaft in the transmission. The transfer output shaft in the transmission is connected to the transfer drive gear (hypoid gear) by splines. Power is transmitted from the transfer drive gear on the differential to the rear differential via the transfer and the propeller shaft.



Clutches

The 5-speed automatic transmission uses hydraulically-actuated clutches to engage or disengage the transmission gears. When hydraulic pressure is introduced into the clutch drum, the clutch piston moves. This presses the friction discs and steel plates together, locking them so they don't slip. Power is then transmitted through the engaged clutch pack to its hub-mounted gear. Likewise, when the hydraulic pressure is bled from the clutch pack, the piston releases the friction discs and the steel plates, and they are free to slide past each other. This allows the gear to spin independently on its shaft, transmitting no power.

1st Clutch

The 1st clutch engages/disengages 1st gear, and is located at the left end of the secondary shaft. The 1st clutch is supplied hydraulic pressure by its ATF feed pipe within the secondary shaft.

1st-hold Clutch

The 1st-hold clutch engages/disengages 1st-hold in 1 position, and is located in the 1st clutch drum. The 1st-hold clutch is supplied hydraulic pressure by its ATF feed pipe within the secondary shaft.

2nd Clutch

The 2nd clutch engages/disengages 2nd gear, and is located at the right end of the secondary shaft. The 2nd clutch is supplied hydraulic pressure through the secondary shaft by a circuit connected to the internal hydraulic circuit.

3rd Clutch

The 3rd clutch engages/disengages 3rd gear, and is located at the end of the intermediary shaft. The 3rd clutch is supplied hydraulic pressure through the intermediary shaft by a circuit connected to the internal hydraulic circuit.

4th Clutch

The 4th clutch engages/disengages 4th gear, and is located at the middle of the mainshaft. The 4th clutch is joined back-to-back to the 5th clutch. The 4th clutch is supplied hydraulic pressure through the mainshaft by a circuit connected to the internal hydraulic circuit.

5th Clutch

The 5th clutch engages/disengages 5th gear, as well as reverse gear, and is located at the middle of the mainshaft. The 5th clutch is joined back-to-back to the 4th clutch. The 5th clutch is supplied hydraulic pressure through the mainshaft by a circuit connected to the internal hydraulic circuit.

One-way Clutch

The one-way clutch is positioned between the 1st clutch hub and the secondary shaft 1st gear. The secondary shaft 1st gear is splined to the 1st-hold clutch hub, with the 1st-hold clutch hub splined to the secondary shaft. The secondary shaft 1st gear provides the outer race surface, and the 1st clutch hub provides the inner race surface. The one-way clutch locks when power is transmitted from the secondary shaft 1st gear to the countershaft 1st gear. The 1st clutch and gears remain engaged in the 1st, 2nd, 3rd, 4th, and 5th gear ranges in the D, D3, or 2 position. However, the one-way clutch disengages when the 2nd, 3rd, 4th, or 5th clutches and gears are applied in the D, D3, or 2 position. This is because the increased rotational speed of the gears on the secondary shaft causes the one-way clutch to free-wheel with the 1st clutch still engaged.

Automatic Transmission

System Description (cont'd)

Power Flow

Gear Operation

Gears on the mainshaft:

- 4th gear is engaged/disengaged with the mainshaft by the 4th clutch.
- 5th gear is engaged/disengaged with the mainshaft by the 5th clutch.
- Reverse gear is engaged/disengaged with the mainshaft by the 5th clutch.
- 3rd gear is splined with the mainshaft and rotates with the mainshaft.

Gears on the countershaft:

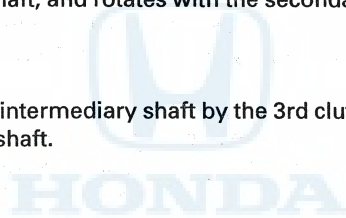
- Final gear is integral with the countershaft.
- 1st gear, 2nd gear, and 4th gear are splined with the countershaft, and rotate with the countershaft.
- 5th gear and reverse gear rotate freely from the countershaft. The reverse selector engages 5th gear and reverse gear with the reverse selector hub. The reverse selector hub is splined to the countershaft so 5th gear and reverse gear engage with the countershaft.
- Idler gear is located over the 2nd gear, and rotates freely from the countershaft.

Gears on the secondary shaft:

- 1st gear is engaged/disengaged with the secondary shaft by the 1st clutch. 1st gear is engaged with the secondary shaft by the one-way clutch and the 1st-hold clutch when decelerating for engine braking.
- 2nd gear is engaged/disengaged with the secondary shaft by the 2nd clutch.
- Idler gear is splined with the secondary shaft, and rotates with the secondary shaft.
- Park gear is integral with the 2nd gear.

Gears on the intermediary shaft:

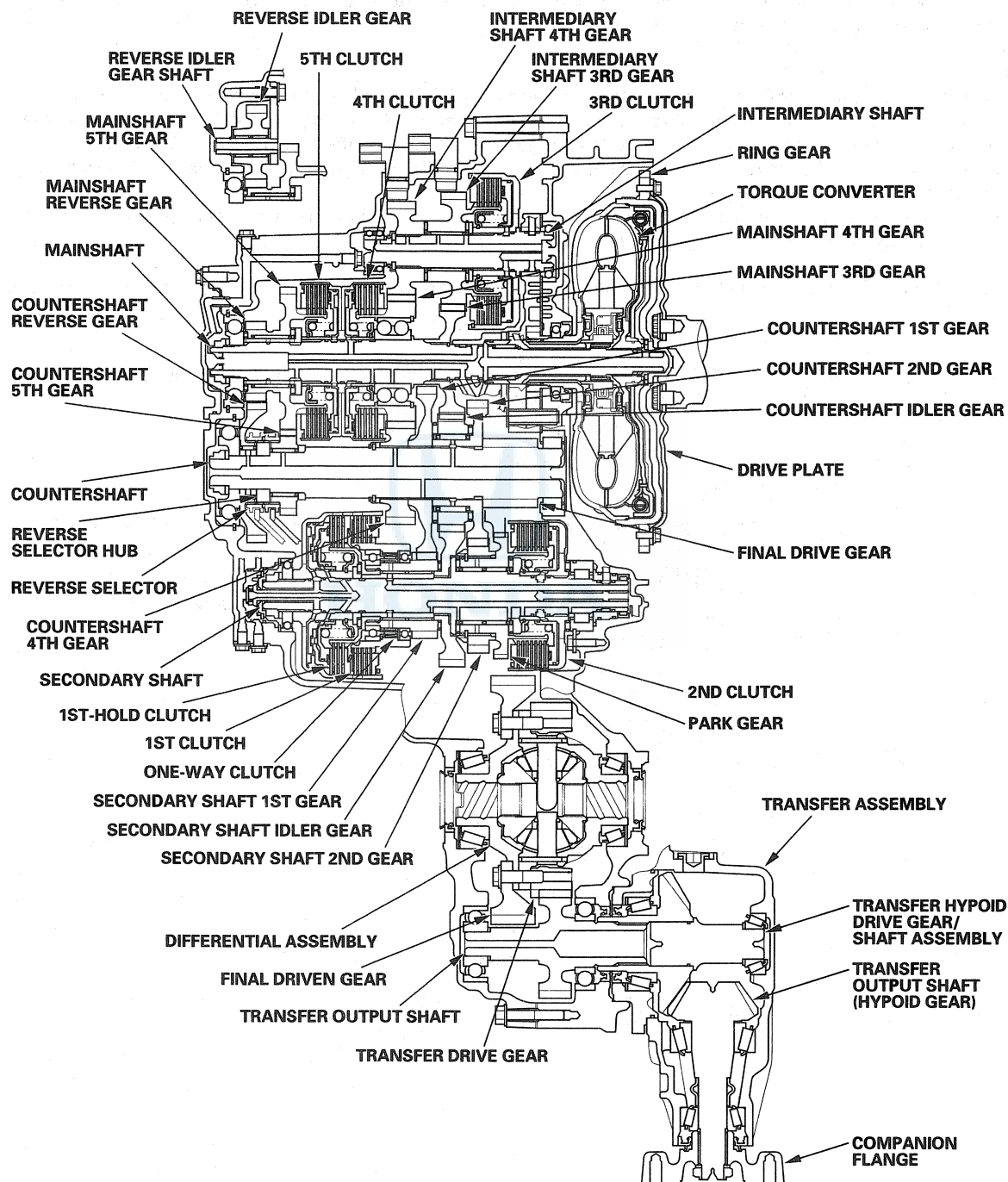
- 3rd gear is engaged/disengaged with the intermediary shaft by the 3rd clutch.
- 4th gear is splined with the intermediary shaft.





Transmission Cutaway View

NOTE: The illustration shows the 4WD transmission; the 2WD transmission does not have the transfer mechanism.



(cont'd)

Automatic Transmission

System Description (cont'd)

Power Flow (cont'd)

P Position

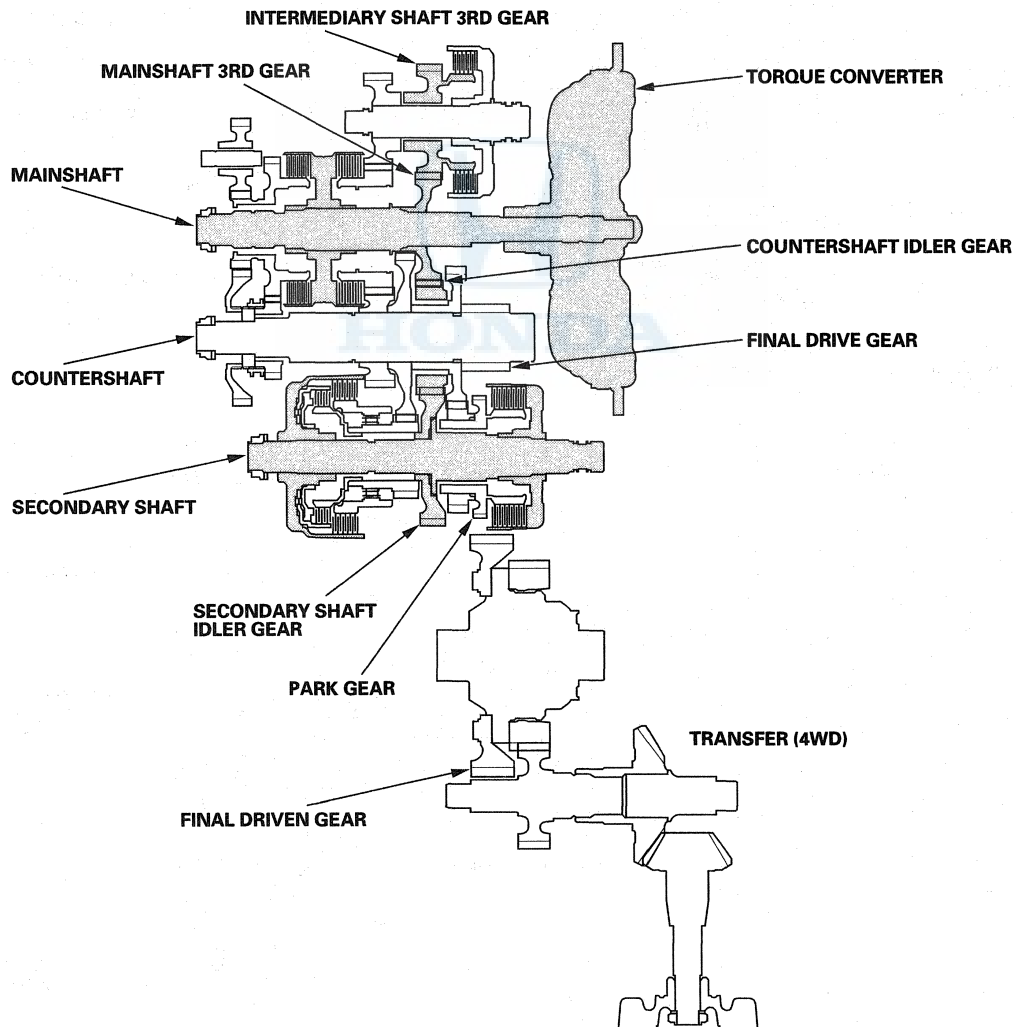
Hydraulic pressure is not applied to the clutches. Power is not transmitted to the countershaft. The countershaft is locked by the park pawl interlocking the park gear.

N Position

Engine power transmitted from the mainshaft drives the mainshaft 3rd gear, the intermediary shaft 3rd gear, but hydraulic pressure is not applied to the clutches. Power is not transmitted to the countershaft. In this position, the position of the reverse selector differs according to whether the shift lever shifted from the D or R position:

- When shifted from the D position, the reverse selector engages with the countershaft 5th gear and the reverse selector hub, and the 5th gear engages with the countershaft.
- When shifted from the R position, the reverse selector engages with the countershaft reverse gear, and the reverse selector hub, and the reverse gear engages with the countershaft.

NOTE: The illustration shows the 4WD transmission; the 2WD transmission does not have the transfer mechanism.



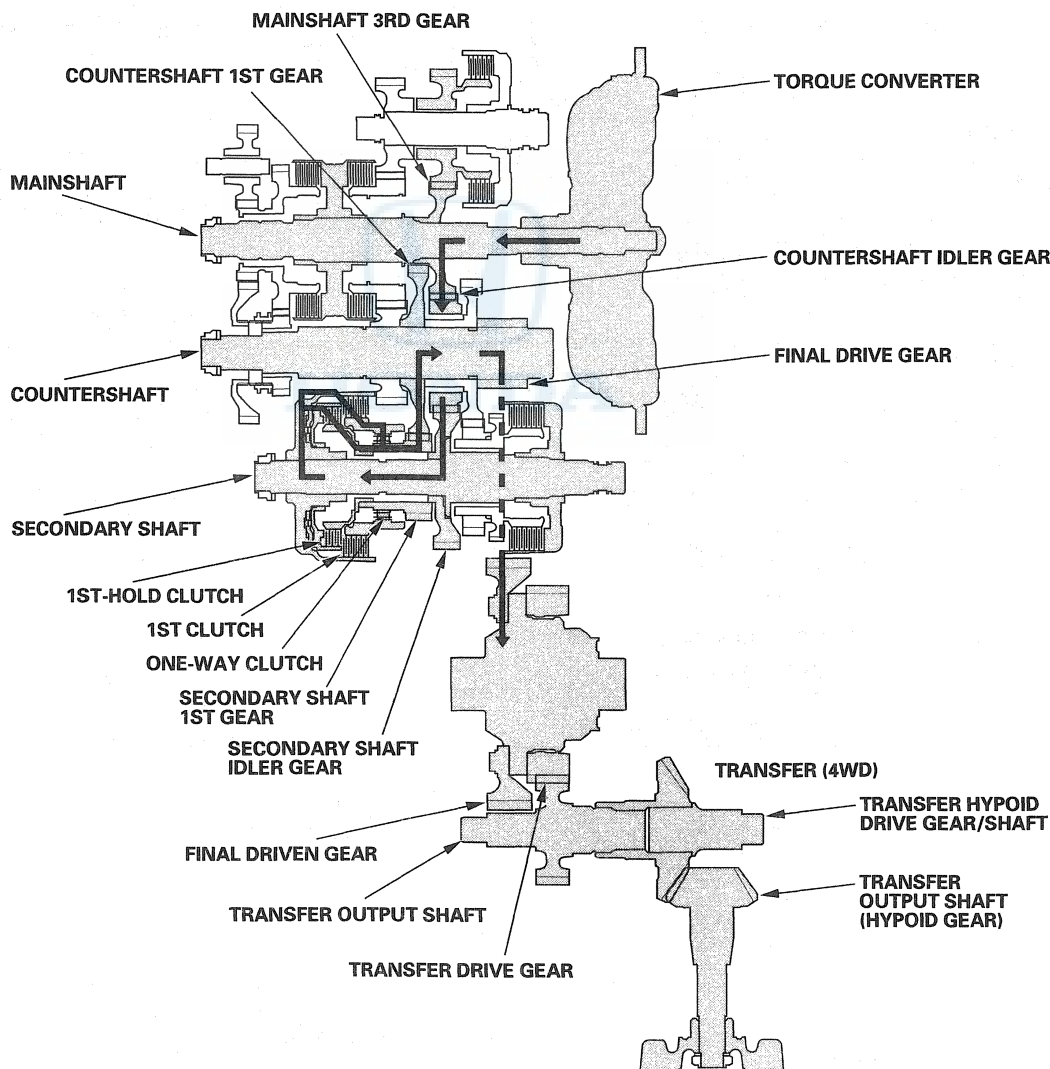


1 Position (Acceleration)

In the 1 position under an acceleration, hydraulic pressure is applied to the 1st clutch and the 1st-hold clutch. The power flow when accelerating is as follows:

- Hydraulic pressure is applied to the 1st clutch, then the 1st clutch engages the secondary shaft 1st gear with the secondary shaft by the one-way clutch.
- The mainshaft 3rd gear drives the secondary shaft via the countershaft idler gear and the secondary shaft idler gear.
- The secondary shaft 1st gear drives the countershaft 1st gear and the countershaft.
- Hydraulic pressure is also applied to the 1st-hold clutch, and the 1st-hold clutch engages the secondary shaft 1st gear with the secondary shaft.
- Power is transmitted to the final drive gear, which in turn drives the final driven gear, and the transfer drive gear (4WD).
- 4WD: The transfer output shaft drives the transfer hypoid drive gear/shaft and the transfer output shaft (hypoid gear).

NOTE: The illustration shows the 4WD transmission; the 2WD transmission does not have the transfer mechanism.



(cont'd)

Automatic Transmission

System Description (cont'd)

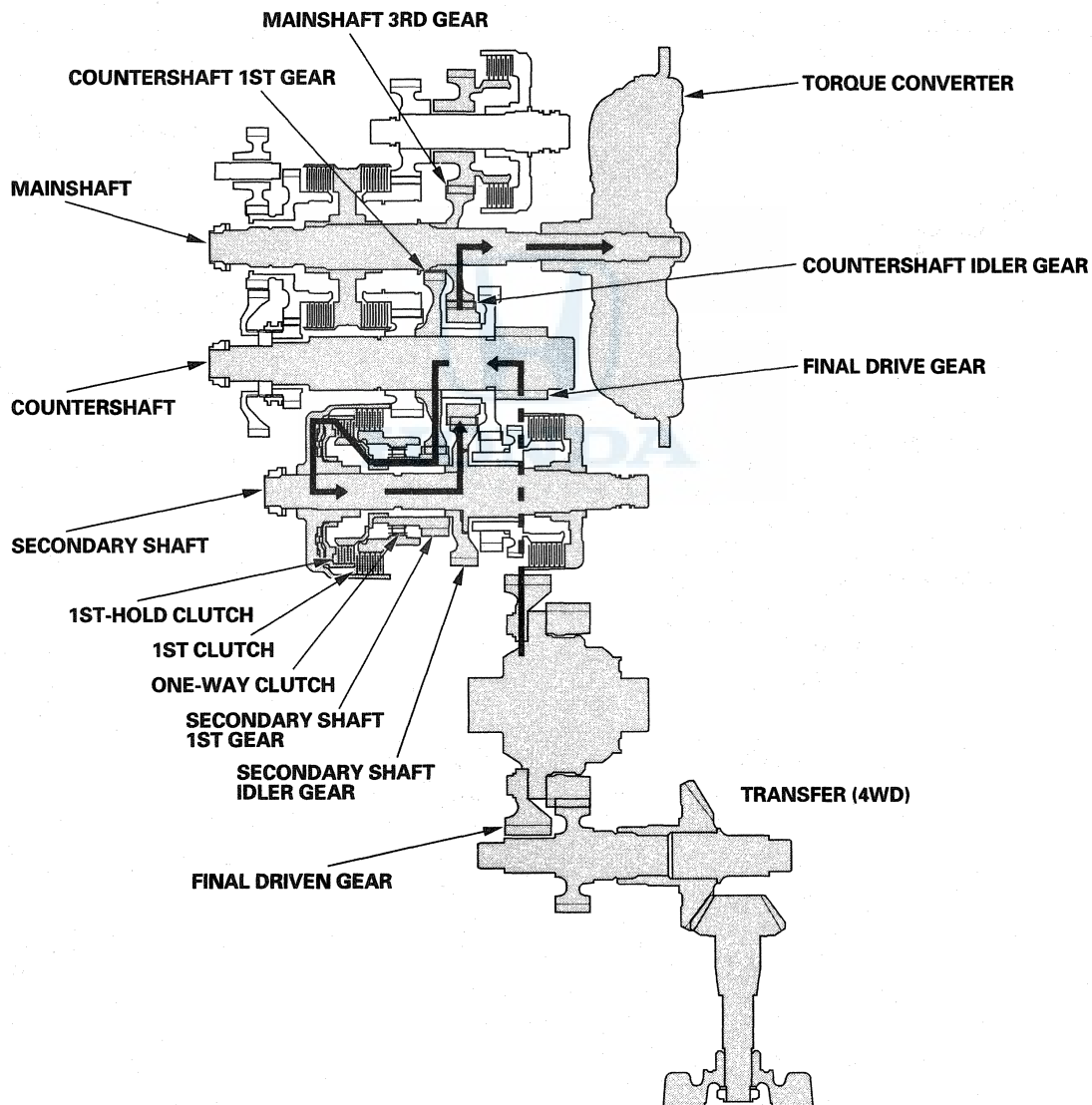
Power Flow (cont'd)

1 Position (Deceleration)

The power flow in the 1 position when decelerating is as follows:

- Hydraulic pressure is applied to the 1st clutch and the 1st-hold clutch.
- Rolling resistance from the road surface goes through the front wheels to the final driven gear, then to the countershaft idler gear.
- The one-way clutch disengages because the application of torque is reversed.
- The force conveyed to the secondary shaft idler gear turns the mainshaft 3rd gear via the countershaft idler gear. As a result, engine braking can be obtained with 1st gear.

NOTE: The illustration shows the 4WD transmission; the 2WD transmission does not have the transfer mechanism.



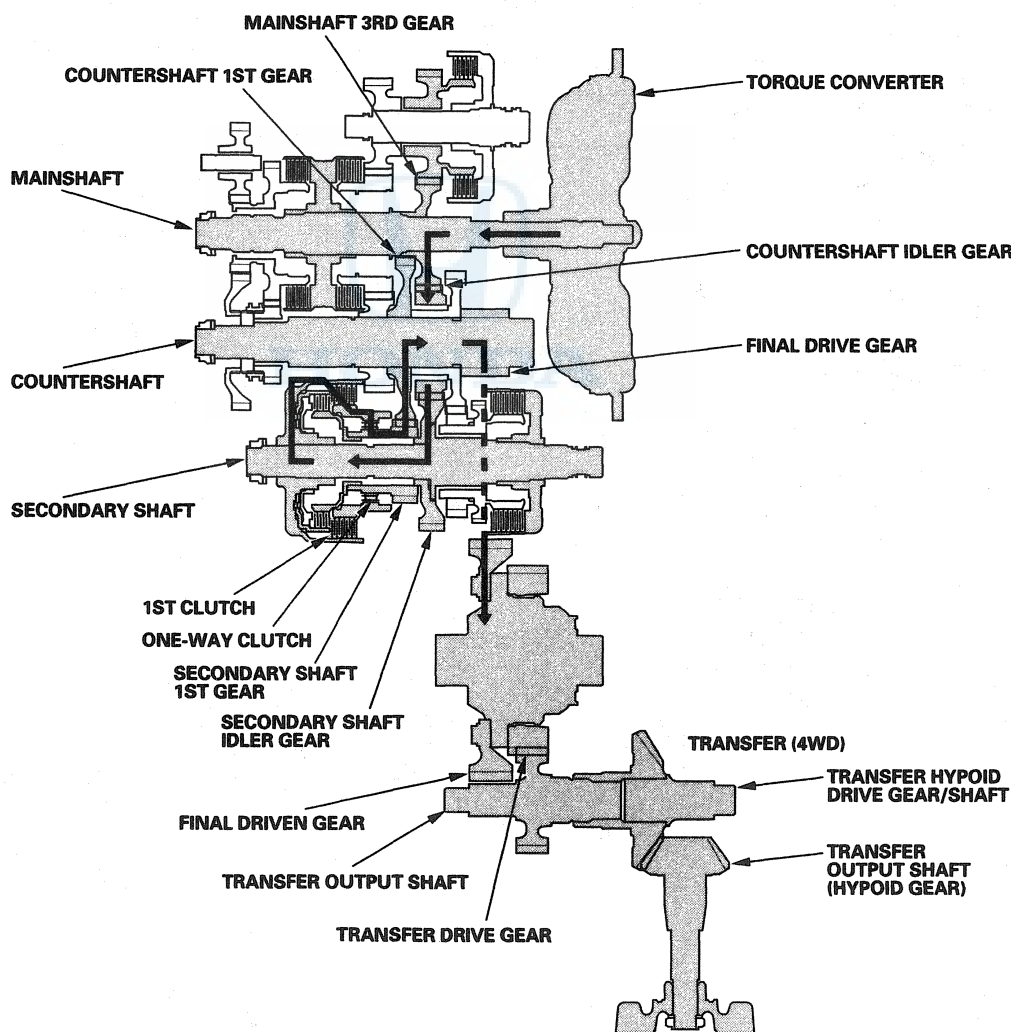
D or D3 Position

In the D position, the optimum gear is automatically selected from the 1st, 2nd, 3rd, 4th, and 5th gears (in the D position); 1st, 2nd, and 3rd gears (in the D3 position) according to conditions such as the balance between the throttle opening (engine loading) and vehicle speed.

In 1st gear

- Hydraulic pressure is applied to the 1st clutch, then the 1st clutch engages the secondary shaft 1st gear with the secondary shaft by the one-way clutch.
- The mainshaft 3rd gear drives the secondary shaft via the countershaft idler gear and the secondary shaft idler gear.
- The secondary shaft 1st gear drives the countershaft 1st gear and the countershaft.
- Power is transmitted to the final drive gear, which in turn drives the final driven gear, and the transfer drive gear (4WD).
- 4WD: The transfer output shaft drives the transfer hypoid drive gear/shaft and the transfer output shaft (hypoid gear).

NOTE: The illustration shows the 4WD transmission; the 2WD transmission does not have the transfer mechanism.



(cont'd)

Automatic Transmission

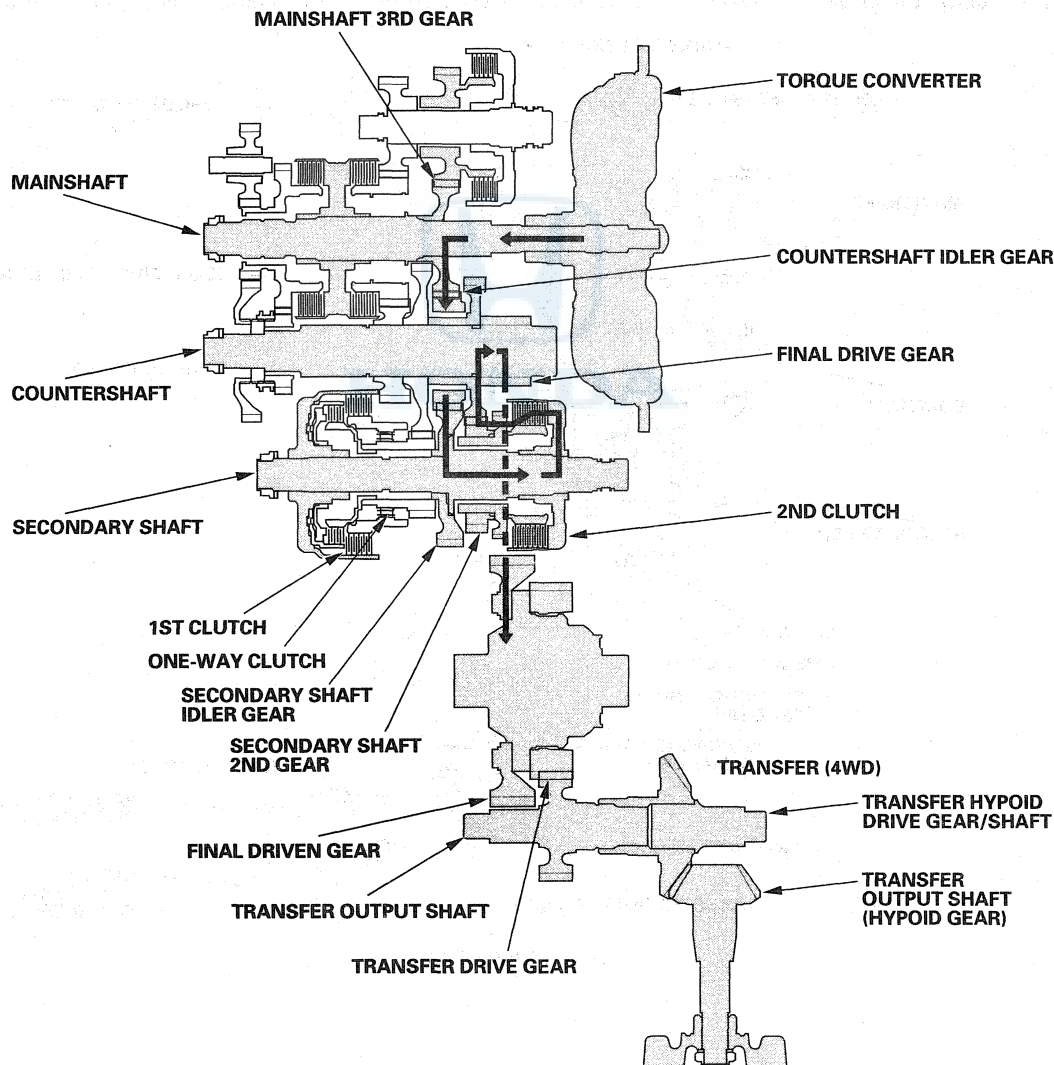
System Description (cont'd)

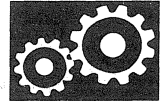
Power Flow (cont'd)

In 2nd gear and 2 Position

- Hydraulic pressure is applied to the 2nd clutch, then the 2nd clutch engages the secondary shaft 2nd gear with the secondary shaft.
- The mainshaft 3rd gear drives the secondary shaft via the countershaft idler gear and the secondary shaft idler gear.
- The secondary shaft 2nd gear drives the countershaft 2nd gear and the countershaft.
- Power is transmitted to the final drive gear, which in turn drives the final driven gear, and the transfer drive gear (4WD).
- 4WD: The transfer output shaft drives the transfer hypoid drive gear/shaft and the transfer output shaft (hypoid gear).
- Hydraulic pressure is also applied to the 1st clutch, but since the rotation speed of 2nd gear exceeds that of 1st gear, power from 1st gear is cut off at the one-way clutch.

NOTE: The illustration shows the 4WD transmission; the 2WD transmission does not have the transfer mechanism.

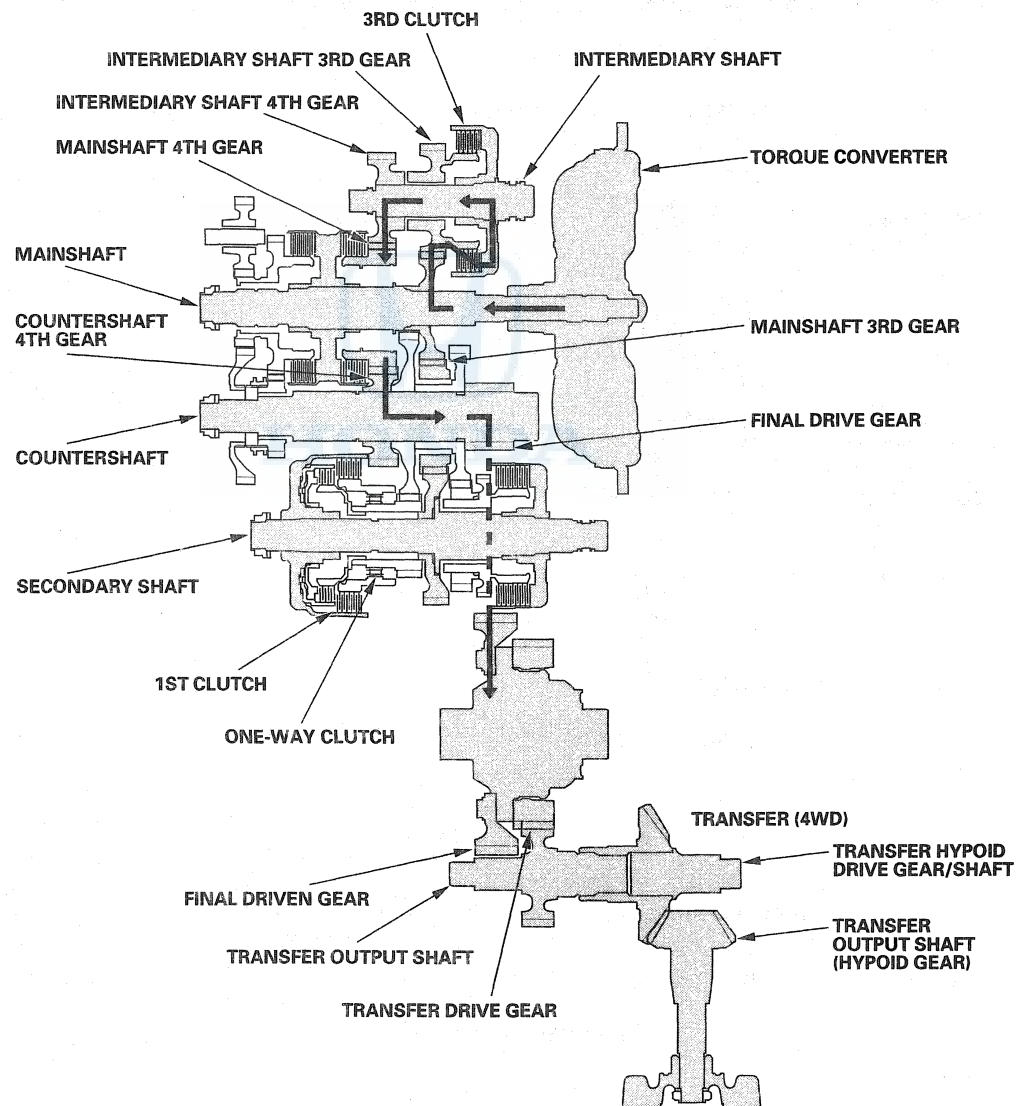




In 3rd gear

- Hydraulic pressure is applied to the 3rd clutch, then the 3rd clutch engages the intermediary shaft 3rd gear with the intermediary shaft.
- The mainshaft 3rd gear drives the intermediary shaft 4th gear via the intermediary shaft 3rd gear and the 3rd clutch.
- The intermediary shaft 4th gear drives the countershaft 4th gear and the countershaft via the mainshaft 4th gear.
- Power is transmitted to the final drive gear, which in turn drives the final driven gear, and the transfer drive gear (4WD).
- 4WD: The transfer output shaft drives the transfer hypoid drive gear/shaft and the transfer output shaft (hypoid gear).
- Hydraulic pressure is also applied to the 1st clutch, but since the rotation speed of 3rd gear exceeds that of 1st gear, power from 1st gear is cut off at the one-way clutch.

NOTE: The illustration shows the 4WD transmission; the 2WD transmission does not have the transfer mechanism.



(cont'd)

Automatic Transmission

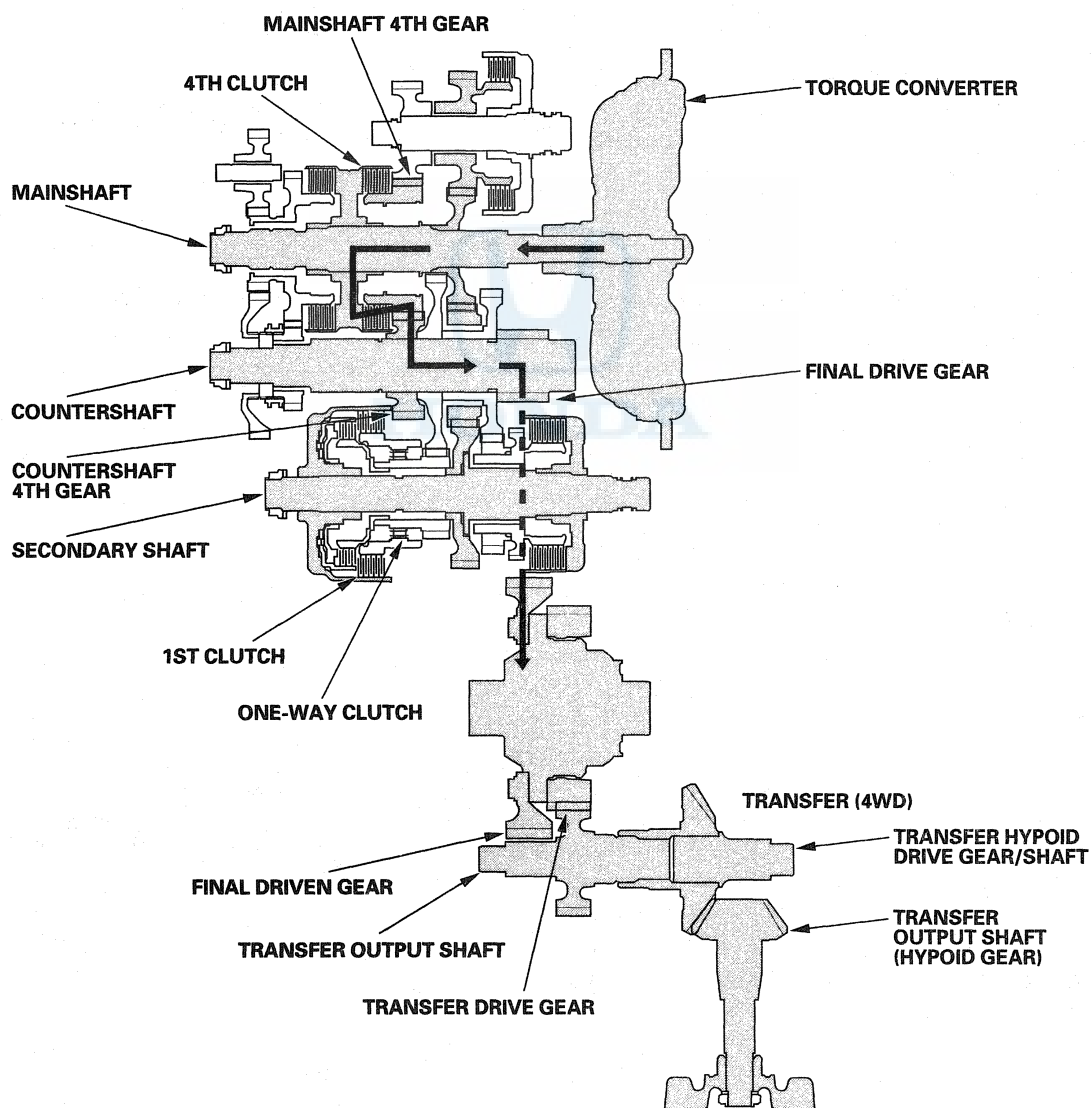
System Description (cont'd)

Power Flow (cont'd)

In 4th gear

- Hydraulic pressure is applied to the 4th clutch, then the 4th clutch engages the mainshaft 4th gear with the mainshaft.
- The mainshaft 4th gear drives the countershaft 4th gear and the countershaft.
- Power is transmitted to the final drive gear, which in turn drives the final driven gear, and the transfer drive gear (4WD).
- 4WD: The transfer output shaft drives the transfer hypoid drive gear/shaft and the transfer output shaft (hypoid gear).
- Hydraulic pressure is also applied to the 1st clutch, but since the rotation speed of 4th gear exceeds that of 1st gear, power from 1st gear is cut off at the one-way clutch.

NOTE: The illustration shows the 4WD transmission; the 2WD transmission does not have the transfer mechanism.

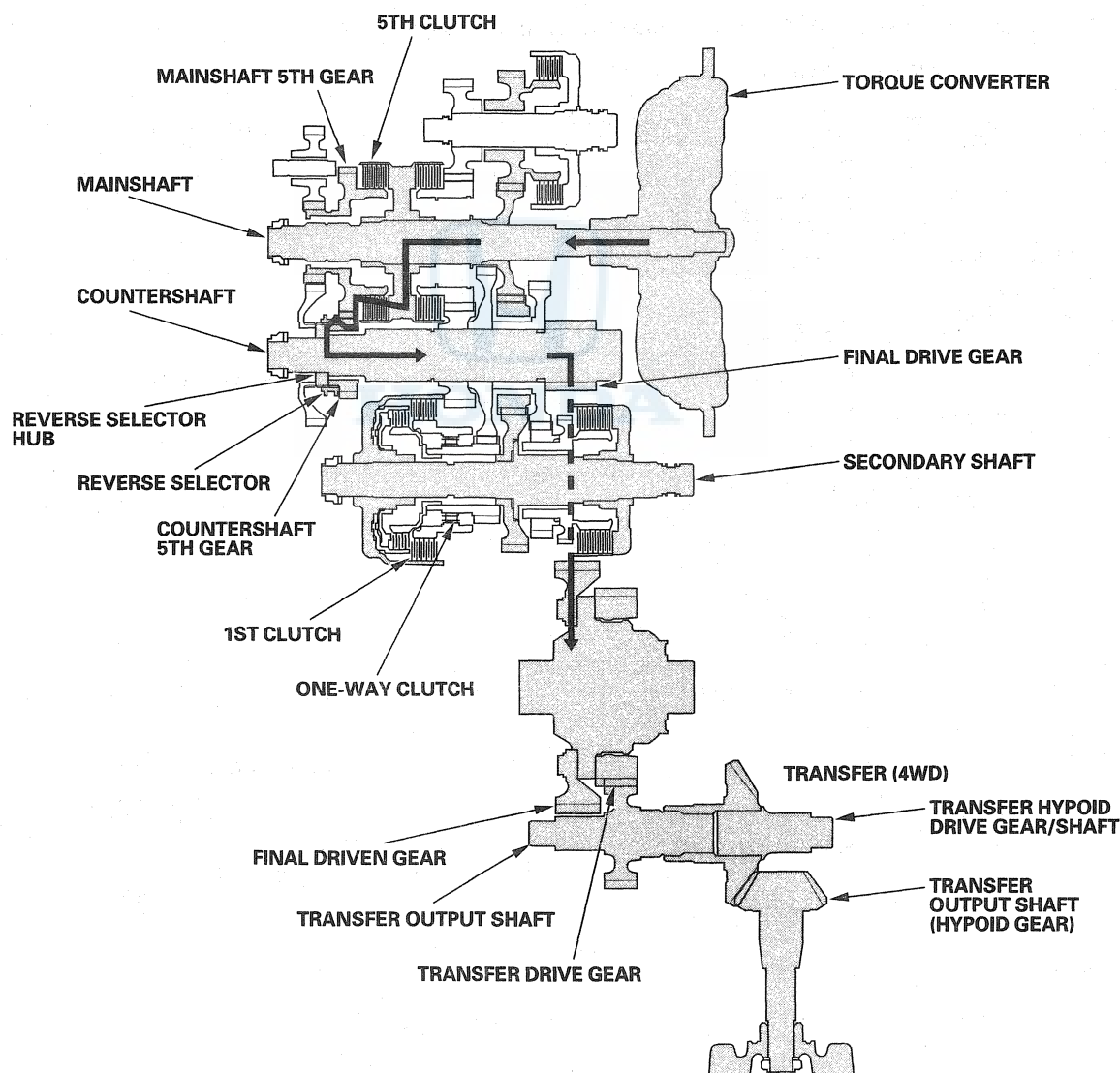




In 5th gear

- Hydraulic pressure is applied to the servo valve to engage the reverse selector with the countershaft 5th gear while the shift lever is in the forward range (D, D3, 2, and 1 positions).
- Hydraulic pressure is applied to the 5th clutch, then the 5th clutch engages the mainshaft 5th gear with the mainshaft.
- The mainshaft 5th gear drives the countershaft 5th gear, which drives the reverse selector hub and the countershaft.
- Power is transmitted to the final drive gear, which in turn drives the final driven gear, and the transfer drive gear (4WD).
- 4WD: The transfer output shaft drives the transfer hypoid drive gear/shaft and the transfer output shaft (hypoid gear).
- Hydraulic pressure is also applied to the 1st clutch, but since the rotation speed of 5th gear exceeds that of 1st gear, power from 1st gear is cut off at the one-way clutch.

NOTE: The illustration shows the 4WD transmission; the 2WD transmission does not have the transfer mechanism.



(cont'd)

Automatic Transmission

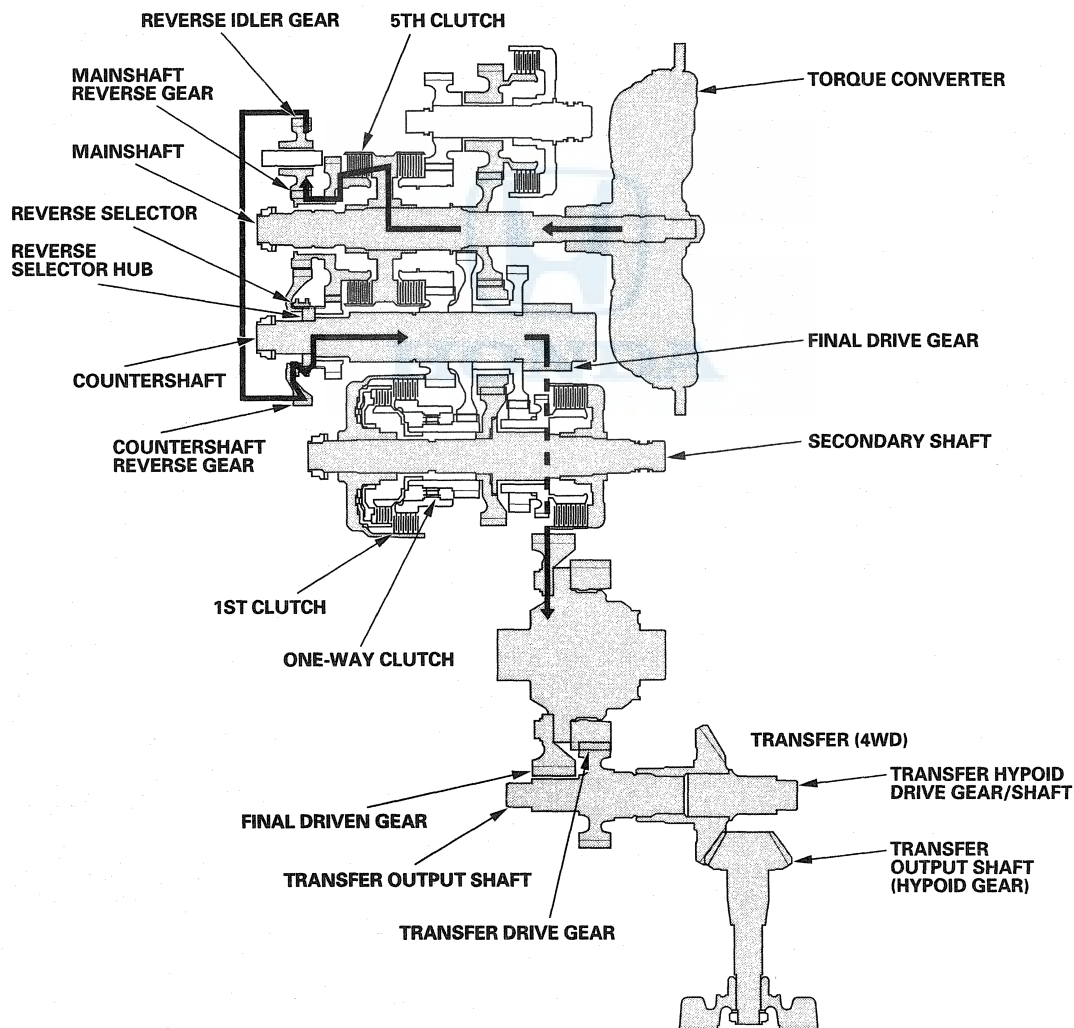
System Description (cont'd)

Power Flow (cont'd)

R Position

- Hydraulic pressure is applied to the servo valve to engage the reverse selector with the countershaft reverse gear while the shift lever is in the R position.
- Hydraulic pressure is applied to the 5th clutch, then the 5th clutch engages the mainshaft reverse gear with the mainshaft.
- The mainshaft reverse gear drives the countershaft reverse gear via the reverse idler gear.
- The countershaft reverse gear drives the countershaft via the reverse selector which drives the reverse selector hub.
- The rotation direction of the countershaft is changed by the reverse idler gear.
- Power is transmitted to the final drive gear, which in turn drives the final driven gear, and the transfer drive gear (4WD).
- 4WD: The transfer output shaft drives the transfer hypoid drive gear/shaft and the transfer output shaft (hypoid gear).

NOTE: The illustration shows the 4WD transmission; the 2WD transmission does not have the transfer mechanism.





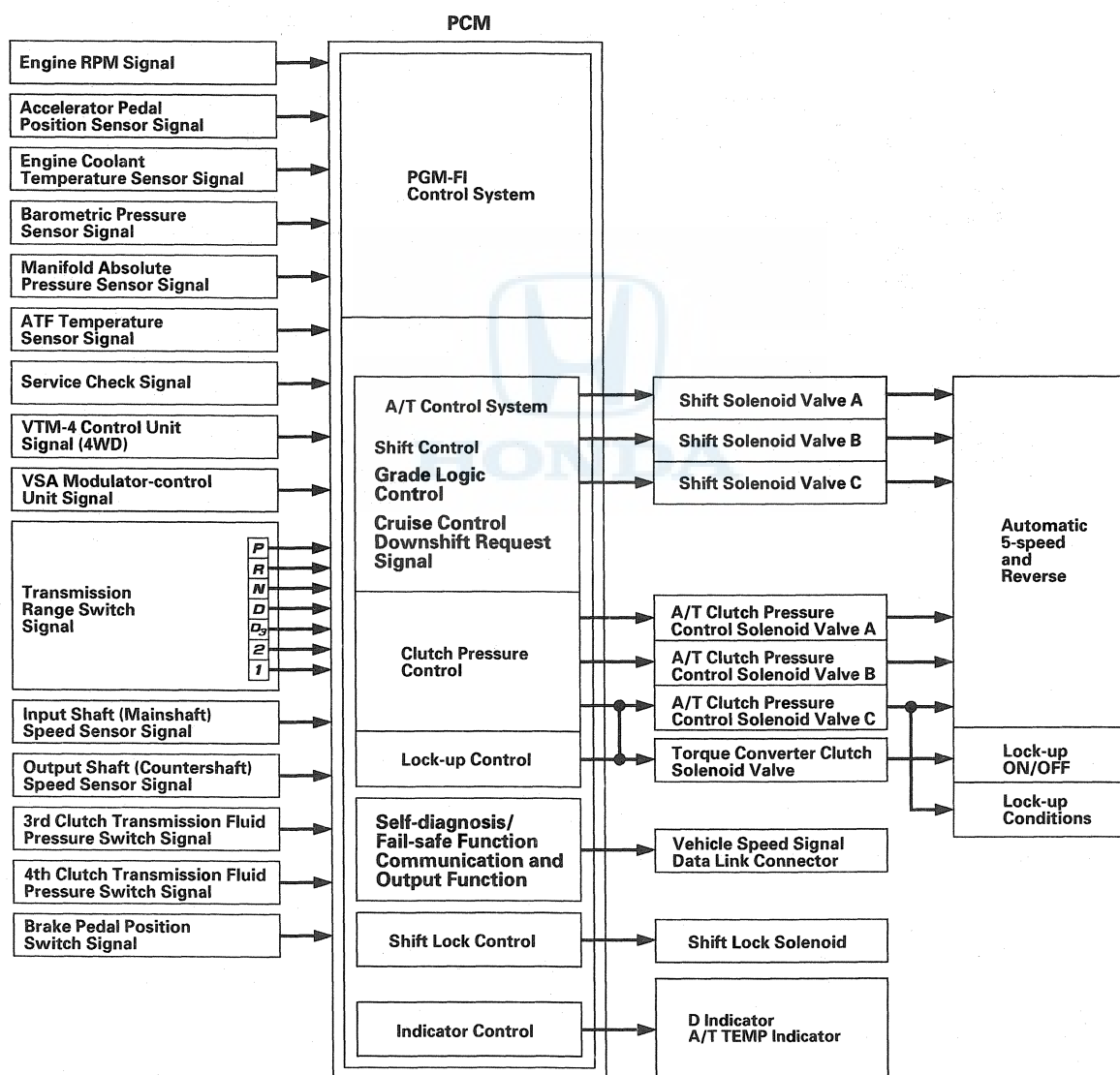
Electronic Control System

Electronic Control

The electronic control system consists of the powertrain control module (PCM), sensors, and solenoid valves. Shifting and lock-up are electronically controlled for comfortable driving under all conditions.

Functional Diagram

The PCM receives input signals from the sensors, switches, and other control units, processes data, and outputs signals for the engine control system and the A/T control system. The A/T control system includes shift control, grade logic control, clutch pressure control, and lock-up control. The PCM switches the shift solenoid valves and the A/T clutch pressure control solenoid valves to control shifting transmission gears and lock-up torque converter clutch.



(cont'd)

Automatic Transmission

System Description (cont'd)

Electronic Control System (cont'd)

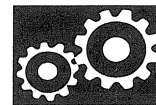
Shift Control

The PCM instantly determines which gear should be selected by various signals sent from sensors and switches, and it actuates shift solenoid valves A, B, and C to control shifting transmission gear.

Shift solenoid valves use ON-CLOSE/OFF-OPEN type; shift solenoid valve closes the port of shift solenoid valve pressure while shift solenoid valve is turned ON by the PCM, and opens the port when shift solenoid valve is OFF.

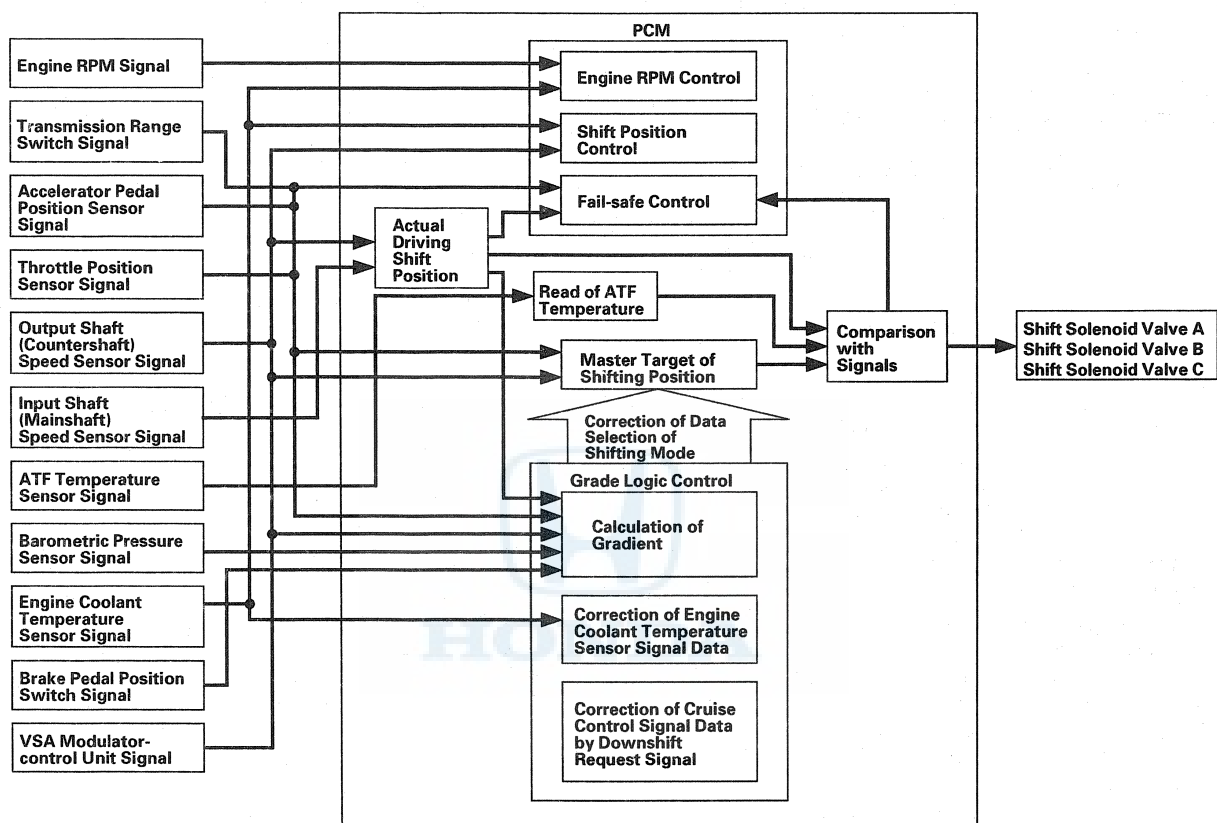
The combination of driving signals to shift solenoid valves A, B, and C are shown in the table.

Position	Gear Position	Shift Solenoid Valves		
		A	B	C
D, D3	Shifting from the N position	OFF	ON	OFF
	Stays in 1st	ON	ON	ON
	Shifting gears between 1st and 2nd	ON	ON	ON
	Stays in 2nd	ON	ON	OFF
	Shifting gears between 2nd and 3rd	OFF	ON	OFF
	Stays in 3rd	OFF	ON	ON
D	Shifting gears between 3rd and 4th	OFF	OFF	ON
	Stays in 4th	OFF	OFF	OFF
	Shifting gears between 4th and 5th	ON	OFF	OFF
	Stays in 5th	ON	OFF	ON
2	2nd	ON	ON	OFF
1	1st	ON	ON	ON
N	Neutral	OFF	ON	OFF
R	Shifting from the P and N positions	OFF	ON	ON
	Stays in reverse	OFF	ON	OFF
	Reverse inhibit control	ON	ON	ON
P	Park	OFF	ON	OFF



Shift Control - Grade Logic Control

The grade logic control system has been adopted to control shifting in the D position. To control shifting while the vehicle is ascending or descending a slope, the PCM compares actual driving conditions with programmed driving conditions, based on the input from the accelerator pedal position sensor, the engine coolant temperature sensor, the barometric pressure sensor, the brake pedal position switch signal, and the shift lever position signal.



(cont'd)

Automatic Transmission

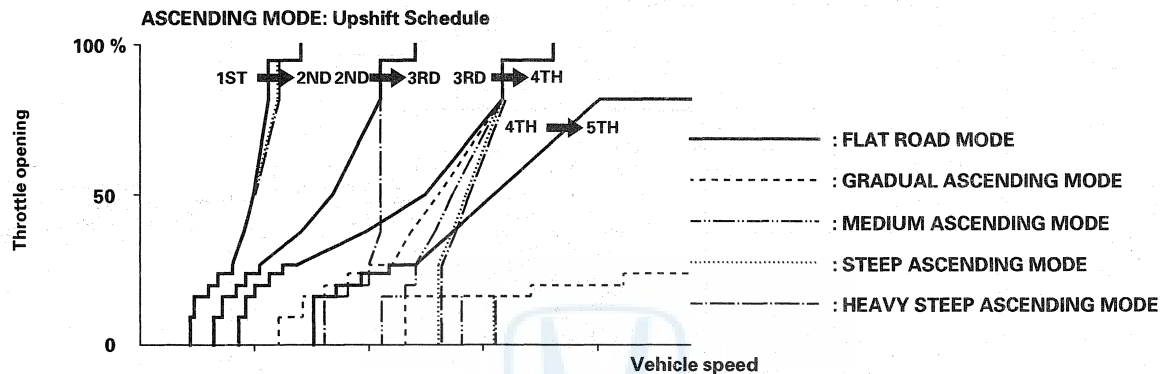
System Description (cont'd)

Electronic Control System (cont'd)

Grade Logic Control: Ascending Control

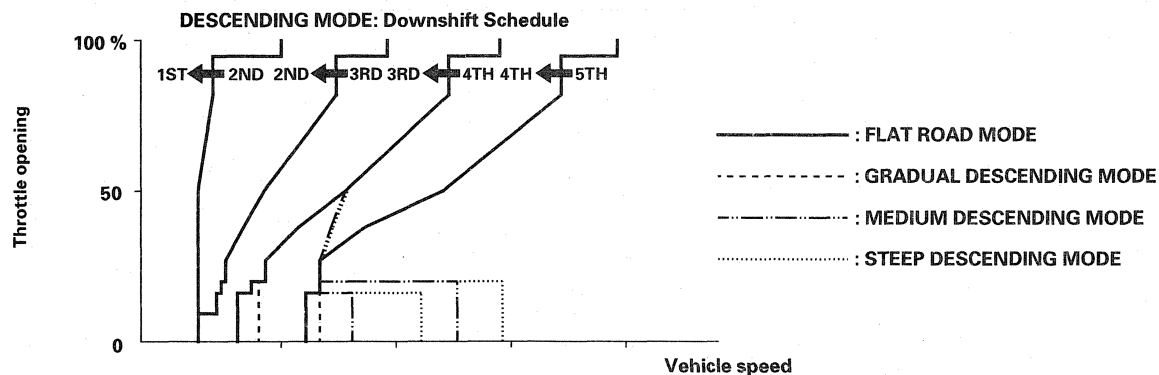
When the PCM determines that the vehicle is climbing a hill in the D position, the system extends the engagement area of 2nd gear, 3rd gear, and 4th gear to prevent the transmission from frequently shifting between 2nd and 3rd gears, between 3rd and 4th gears, and between 4th and 5th gears, so the vehicle can run smooth and have more power when needed.

NOTE: Shift commands stored in the PCM between 2nd and 3rd gears, between 3rd and 4th gears, and between 4th and 5th gears, enable the PCM to automatically select the most suitable gear according to the magnitude of a gradient.



Grade Logic Control: Descending Control

When the PCM determines that the vehicle is going down a hill in the D position, the shift-up speed from 4th to 5th gear, 3rd to 4th gear, and from 2nd to 3rd (when the throttle is closed) becomes faster than the set speed for flat road driving to extend the 4th gear, 3rd gear, and 2nd gear driving areas. This, in combination with engine braking from the deceleration lock-up, achieves smooth driving when the vehicle is descending. There are three descending modes with different 4th gear driving areas, 3rd gear driving areas, and 2nd gear driving areas according to the magnitude of a gradient stored in the PCM. When the vehicle is in 5th or 4th gear and you are decelerating while applying the brakes on a steep hill, the transmission will downshift to a lower gear. When you accelerate, the transmission will then return to a higher gear.



Deceleration Control

When the vehicle goes around a corner and needs to decelerate first and then accelerate, the PCM sets the data for deceleration control to reduce the number of times the transmission shifts. When the vehicle is decelerating from speeds above 27 mph (43 km/h), the PCM shifts the transmission from 5th or 4th to 2nd earlier than normal to cope with upcoming acceleration.

Automatic Transmission

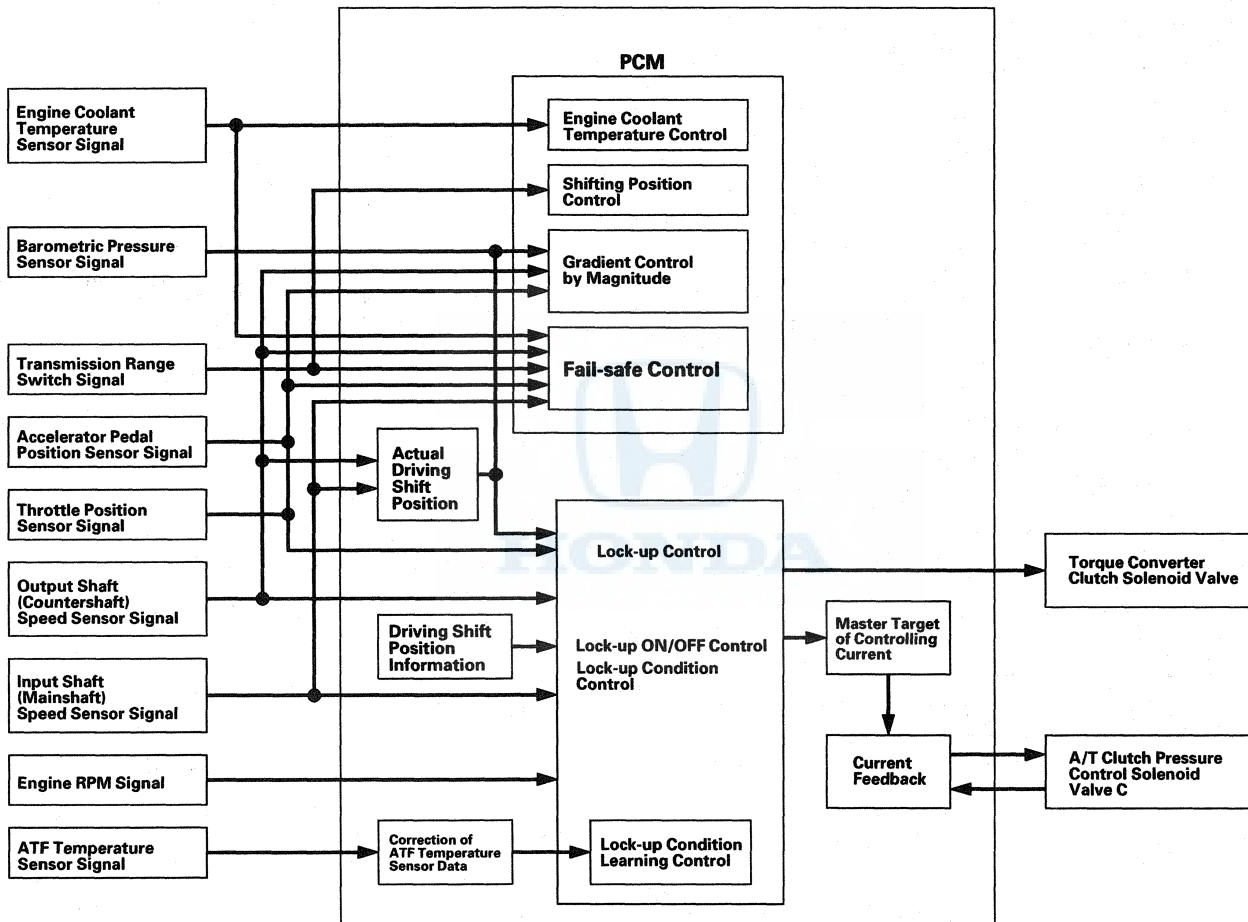
System Description (cont'd)

Electronic Control System (cont'd)

Lock-up Control

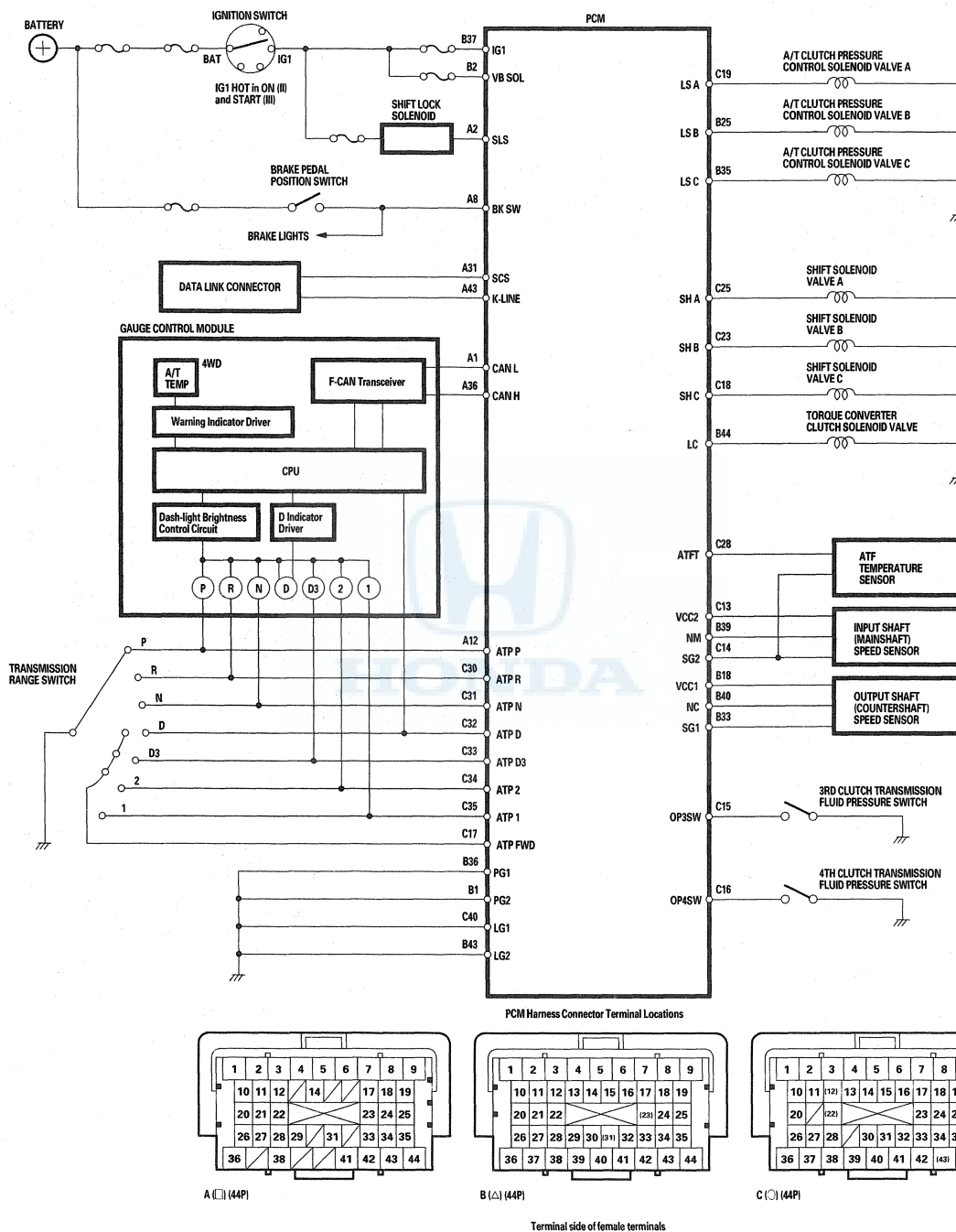
Torque converter clutch solenoid valve controls the hydraulic pressure to switch the lock-up shift valve and lock-up ON and OFF. The PCM actuates the torque converter clutch solenoid valve and the A/T clutch pressure control solenoid valve to start lock-up. A/T clutch pressure control solenoid valve C applies and regulates the hydraulic pressure to the lock-up control valve to control the amount of the lock-up.

The lock-up mechanism operates in the D position (2nd, 3rd, 4th, and 5th) and in the D3 position (2nd and 3rd).





PCM A/T Control System Electrical Connections



(cont'd)

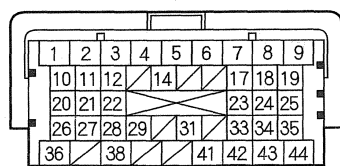
Automatic Transmission

System Description (cont'd)

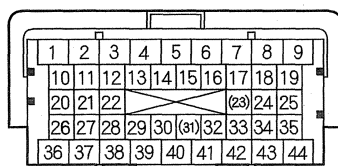
Electronic Control System (cont'd)

PCM A/T Control System Inputs and Outputs

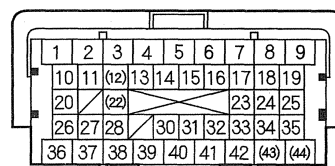
PCM Harness Connector Terminal Locations



A (□) (44P)



B (△) (44P)



C (○) (44P)

Terminal side of female terminals

PCM CONNECTOR A (44P)

Terminal number	Wire color	Terminal name	Description	Signal
A1	RED	CAN L (CAN COMMUNICATION SIGNAL LOW)	Sends and receives communication signal	With ignition switch ON (II): About 2.5 V (pulses)
A2	WHT/RED	SLS (SHIFT LOCK SOLENOID)	Drives shift lock solenoid	With ignition switch ON (II), in P position, brake pedal pressed, and accelerator released: About 0 V
A6	BLK/WHT	MRLY (PGM-FIMAIN RELAY)	Drives PGM-FI main relay 1 (FI-MAIN)	With ignition switch ON (II): About 0 V With ignition switch OFF: Battery voltage
A8	WHT/BLK	BK SW (BRAKE PEDAL POSITION SWITCH)	Detects brake pedal position switch signal	With brake pedal released: About 0 V With brake pedal pressed: Battery voltage
A12	BLU/BLK	ATP P (TRANSMISSION RANGE SWITCH)	Detects transmission range switch P signal	In P position: About 0 V In any position other than P position: Battery voltage
A17	ORN/BLK	APSA (ACCELERATOR PEDAL POSITION (APP) SENSOR A)	Detects APP Sensor A Signal	With ignition switch ON (II) and accelerator pedal pressed: About 4.7 V With ignition switch ON (II) and accelerator pedal released: About 0.5 V
A18	YEL	APSB (ACCELERATOR PEDAL POSITION (APP) SENSOR B)	Detects APP Sensor B Signal	With ignition switch ON (II) and accelerator pedal pressed: About 2.3 V With ignition switch ON (II) and accelerator pedal released: About 0.25 V
A24	GRN	VCC3 (SENSOR VOLTAGE)	Provides sensor reference voltage	With ignition switch ON (II): About 5.0 V With ignition switch OFF: About 0 V
A25	WHT	VCC4 (SENSOR VOLTAGE)	Provides sensor reference voltage	With ignition switch ON (II): About 5.0 V With ignition switch OFF: About 0 V
A31	BRN	SCS (SERVICE CHECK SIGNAL)	Detects service check signal	With the service check signal shorted using HDS: About 0 V With the service check signal open: About 5.0 V
A34	BLK	SG3 (SENSOR GROUND)	Sensor ground	Less than 1.0 V at all times
A35	RED/YEL	SG4 (SENSOR GROUND)	Sensor ground	Less than 1.0 V at all times
A36	WHT	CAN H (CAN COMMUNICATION SIGNAL HIGH)	Sends and receives communication signal	With ignition switch ON (II): About 2.6 V (pulses)
A43	GRY	K-LINE	Sends and receives HDS communication signal	With ignition switch ON (II) and HDS disconnected: About 9.0 V



PCM CONNECTOR B (44P)

Terminal number	Wire color	Terminal name	Description	Signal
B1	BLK	PG2 (POWER GROUND)	Ground circuit for the PCM	Less than 1.0 V at all times
B2	BLK/YEL	VB SOL (POWER SOURCE FOR SOLENOID VALVES)	Power source for solenoid valves	With ignition switch ON (II): Battery voltage With ignition switch OFF: About 0 V
B3	YEL/BLK	IGP (POWER SOURCE)	Power source for PCM	With ignition switch ON (II): Battery voltage With ignition switch OFF: About 0 V
B18	YEL/RED	VCC1 (SENSOR VOLTAGE)	Provide sensor reference voltage	With ignition switch ON (II): About 5.0 V With ignition switch OFF: About 0 V
B25	BRN/WHT	LS B (A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE B)	Drives A/T clutch pressure control solenoid valve B	With ignition switch ON (II): Current controlled
B30	GRN/RED	MAP (MANIFOLD ABSOLUTE PRESSURE SENSOR)	Detects MAP sensor signal	With ignition switch ON (II): About 3.0 V At idle: About 1.0 V (depending on engine speed)
B33	GRN/WHT	SG1 (SENSOR GROUND)	Sensor ground	Less than 1.0 V at all times
B35	GRN/RED	LS C (A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE C)	Drives A/T clutch pressure control solenoid valve C	With ignition switch ON (II): Current controlled
B36	BLK	PG1 (POWER GROUND)	Ground circuit for the PCM	Less than 1.0 V at all times
B37	RED/WHT	IG1 (IGNITION SWITCH)	Detects ignition switch signal	With ignition switch ON (II): Battery voltage
B39	RED	NM (INPUT SHAFT (MAINSHAFT) SPEED SENSOR)	Detects input shaft (mainshaft) speed sensor signal	With ignition switch ON (II): About 0 V or about 5.0 V With engine idling in N position: About 1.5—3.5 V (pulses)
B40	BLU	NC (OUTPUT SHAFT (COUNTERSHAFT) SPEED SENSOR)	Detects output shaft (countershaft) speed sensor signal	With ignition switch ON (II): About 0 V or about 5.0 V With vehicle moving: About 1.5—3.5 V (pulses)
B43	BRN/YEL	LG2 (LOGIC GROUND)	Ground circuit for the PCM	Less than 1.0 V at all times
B44	YEL	LC (TORQUE CONVERTER CLUTCH SOLENOID)	Drives torque converter clutch solenoid valve	During lock-up condition: Battery voltage During no lock-up condition: About 0 V

HONDA

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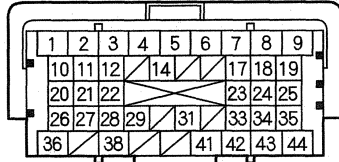
Automatic Transmission

System Description (cont'd)

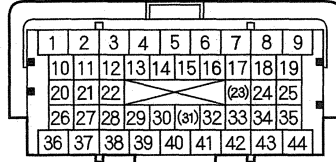
Electronic Control System (cont'd)

PCM A/T Control System Inputs and Outputs (cont'd)

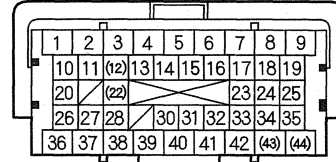
PCM Harness Connector Terminal Locations



A (□) (44P)



B (△) (44P)



C (○) (44P)

Terminal side of female terminals

PCM CONNECTOR C (44P)

Terminal number	Wire color	Terminal name	Description	Signal
C9	BLU/RED	EGR (EXHAUST GAS RECIRCULATION (EGR) VALVE)	Drives EGR valve	With EGR operating: Duty controlled With EGR not operation: About 0 V
C13	YEL/BLU	VCC2 (SENSOR VOLTAGE)	Provides sensor reference voltage	With ignition switch ON (II): About 5.0 V With ignition switch OFF: About 0 V
C14	GRN/YEL	SG2 (SENSOR GROUND)	Sensor ground	Less than 1.0 V at all times
C15	BLU/WHT	OP3SW (3RD CLUTCH TRANSMISSION FLUID PRESSURE SWITCH)	Detects 3rd clutch transmission fluid pressure switch signal	With ignition switch ON (II): • Without 3rd clutch pressure: About 5.0 V • With 3rd clutch pressure: About 0 V
C16	BLU/YEL	OP4SW (4TH CLUTCH TRANSMISSION FLUID PRESSURE SWITCH)	Detects 4th clutch transmission fluid pressure switch signal	With ignition switch ON (II): • Without 4th clutch pressure: About 5.0 V • With 4th clutch pressure: About 0 V
C17	BLU/YEL	ATP FWD (TRANSMISSION RANGE SWITCH FWD)	Detects transmission range switch FWD signal	In D, D3, or 2 position: About 0 V In any position other than D, D3 or 2 position: Battery voltage
C18	GRN	SH C (SHIFT SOLENOID VALVE C)	Drives shift solenoid valve C	With engine running in D (in 1st, 3rd and 5th gears), D3 (in 1st and 3rd gears), and 1 positions: Battery voltage With engine running in P, N, D (in 2nd and 4th gears), D3 (in 2nd gears), and 1 positions: About 0 V
C19	RED	LS A (A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE A)	Drives A/T clutch pressure control solenoid valve A	With ignition switch ON (II): Current controlled
C20	WHT/BLK	EGRP (EXHAUST GAS RECIRCULATION (EGR) VALVE)	Detects EGR valve position sensor signal	With engine running: About 1.2—3.0 V (depending on EGR valve lift)



PCM CONNECTOR C (44P)

Terminal number	Wire color	Terminal name	Description	Signal
C22 ^{*1}	BLU/YEL	POILCS (ENGINE OIL PRESSURE SENSOR)	Detects engine oil pressure sensor signal	With ignition switch ON (II): About 0.5 V With engine running: 1.5 V (depending on engine oil pressure)
C23	GRN/WHT	SH B (SHIFT SOLENOID VALVE B)	Drives shift solenoid valve B	With engine running in P, R, N, D (in 1st, 2nd, and 3rd gears), D3, 2, and 1 positions: Battery voltage With engine running in D (in 4th and 5th) positions: About 0 V
C25	BLU/YEL	SH A (SHIFT SOLENOID VALVE A)	Drives shift solenoid valve A	With engine running in D (in 1st, 2nd, and 5th gears), D3 (in 1st and 2nd gears), 2, and 1 positions: Battery voltage With engine running in P, N, D (in 3rd and 4th gears), D3 (in 3rd gears) positions: About 0 V
C28	BLU/YEL	ATFT (ATF TEMPERATURE SENSOR)	Detects ATF temperature sensor signal	With ignition switch ON (II): 0.2—4.8 V (about 1.8 V at operating temperature) (depending on ATF temperature)
C30	WHT	ATP R (TRANSMISSION RANGE SWITCH R)	Detects transmission range switch R position signal	In R position: About 0 V In any position other than R position: About 10.0 V—Battery voltage
C31	RED/BLK	ATP N (TRANSMISSION RANGE SWITCH N)	Detects transmission range switch N position signal	In N position: About 0 V In any position other than N position: About 10.0 V—Battery voltage
C32	LT BLU	ATP D (TRANSMISSION RANGE SWITCH D)	Detects transmission range switch D position signal	In D position: About 0 V In any position other than D position: Battery voltage
C33	RED	ATP D3 (TRANSMISSION RANGE SWITCH D3)	Detects transmission range switch D3 position signal	In D3 position: About 0 V In any position other than D3 position: About 10.0 V—Battery voltage
C34	BLU	ATP 2 (TRANSMISSION RANGE SWITCH 2)	Detects transmission range switch 2 position signal	In 2 position: About 0 V In any position other than 2 position: About 10.0 V—Battery voltage
C35	BRN	ATP 1 (TRANSMISSION RANGE SWITCH 1)	Detects transmission range switch 1 position signal	In 1 position: About 0 V In any position other than 1 position: About 10.0 V—Battery voltage
C40	BRN/YEL	LG1 (LOGIC GROUND)	Ground circuit for the PCM	Less than 1.0 V at all times

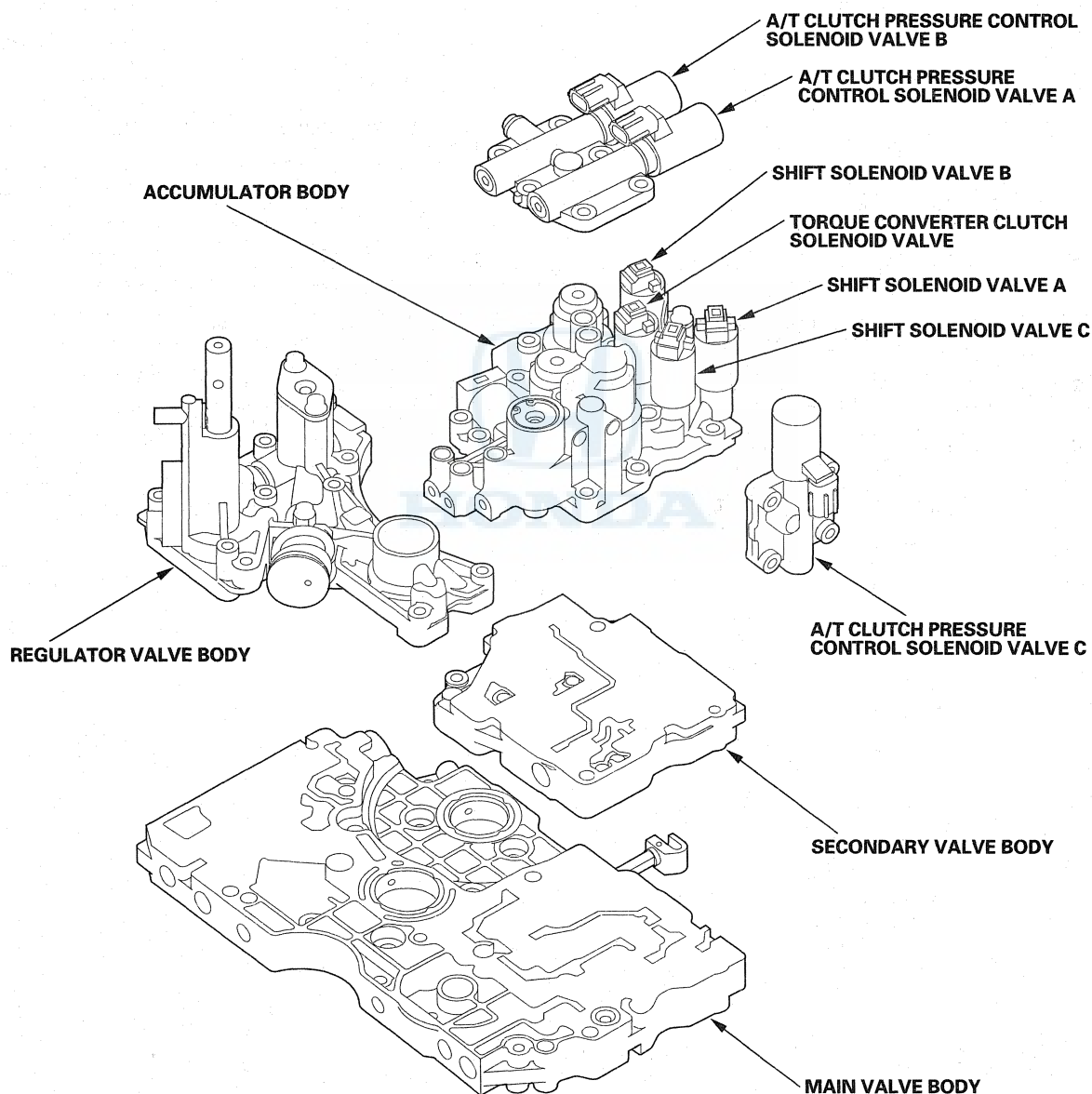
* 1: 2WD

Automatic Transmission

System Description (cont'd)

Hydraulic Controls

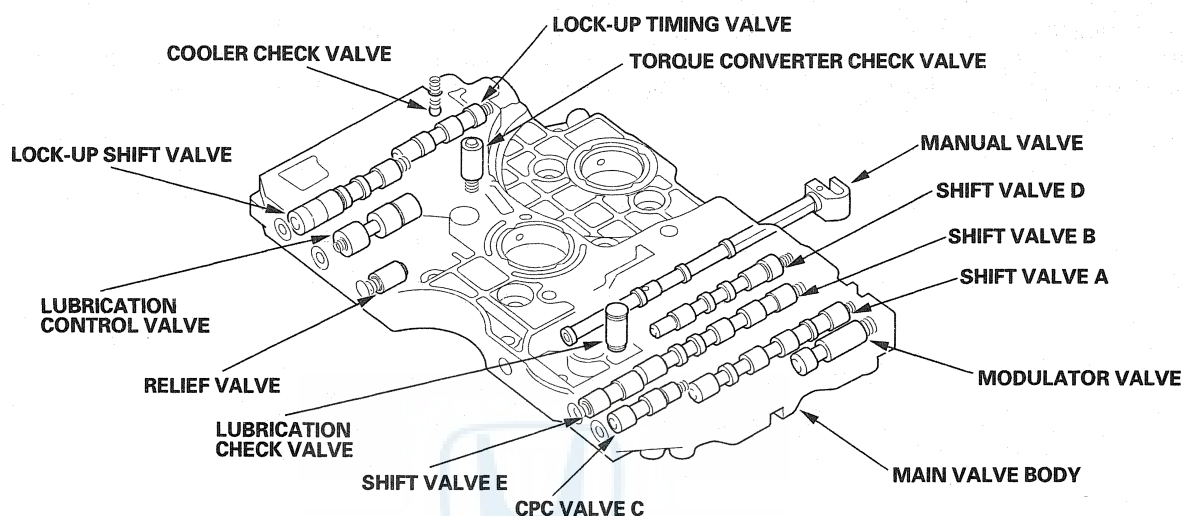
The valve body includes the main valve body, the regulator valve body, the secondary valve body, and the accumulator body. The ATF pump is driven by splines on the end of the torque converter which is attached to the engine. Fluid flows through the regulator valve to maintain specified pressure through the main valve body to the manual valve, directing pressure to each of the clutches. Shift solenoid valves A, B, and C, and the torque converter clutch solenoid valve are mounted on the accumulator body. A/T clutch pressure control solenoid valves A, B, and C are mounted on the transmission housing.





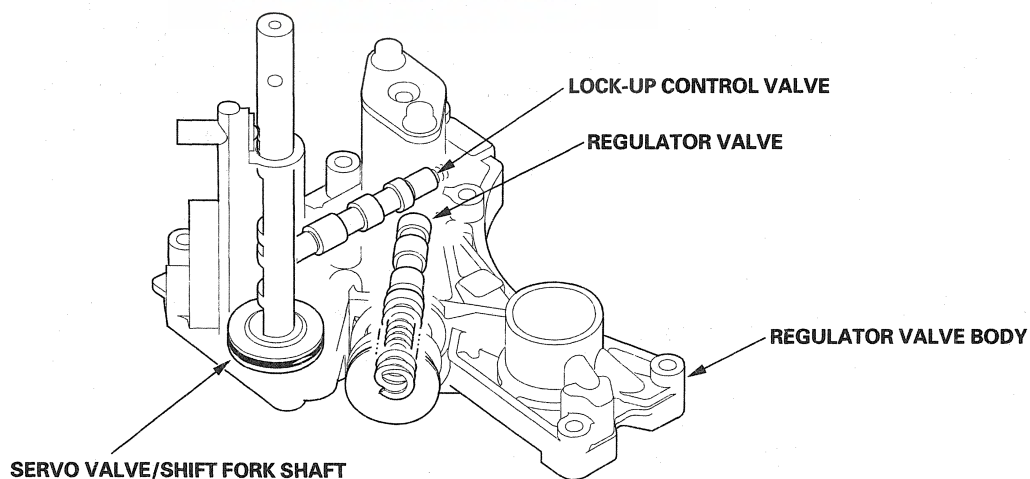
Main Valve Body

The main valve body contains the manual valve, the modulator valve, the torque converter check valve, shift valve A, shift valve B, shift valve D, shift valve E, CPC valve C, the cooler check valve, the relief valve, the lock-up shift valve, the lock-up timing valve, the lubrication control valve, the lubrication check valve, and the ATF pump gears. The primary function of the main valve body is to switch fluid pressure on and off to control hydraulic pressure going to the hydraulic control system.



Regulator Valve Body

The regulator valve body is located on the main valve body. The regulator valve body contains the regulator valve, the lock-up control valve, the servo valve, and the 3rd accumulator.



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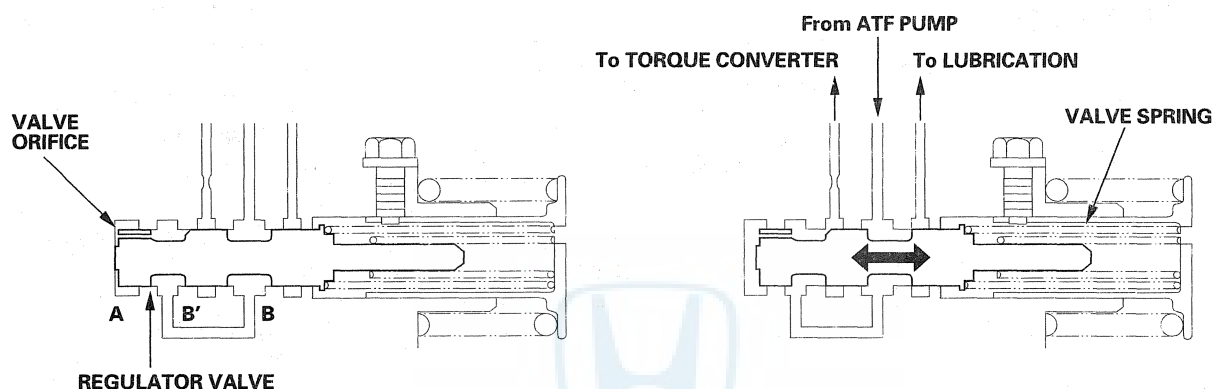
Automatic Transmission

System Description (cont'd)

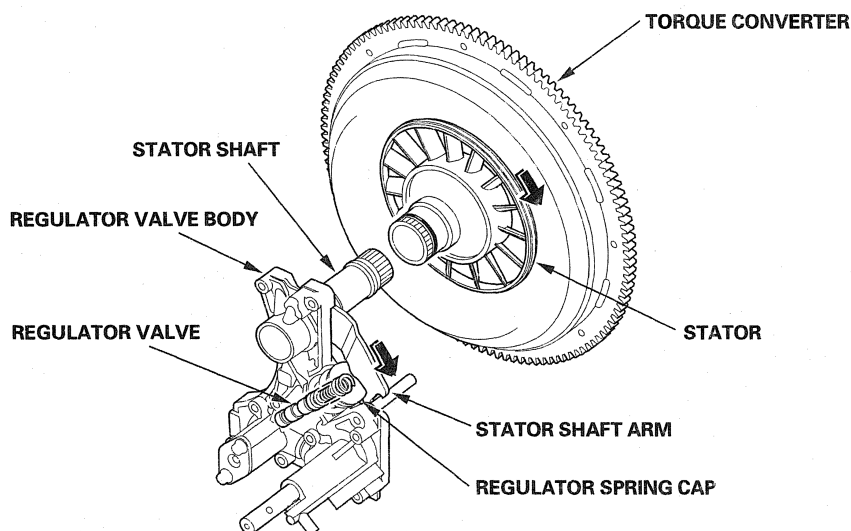
Hydraulic Controls (cont'd)

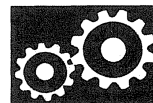
Regulator Valve

The regulator valve maintains constant hydraulic pressure from the ATF pump to the hydraulic control system, while also furnishing fluid to the lubricating system and the torque converter. Fluid from the ATF pump flows through B and B'. Fluid entering from B flows through the valve orifice to the A cavity. This pressure of the A cavity pushes the regulator valve to the spring side, and this movement of the regulator valve uncovers the fluid port to the torque converter and the relief valve. The fluid flows out to the torque converter and the relief valve, and the regulator valve returns under spring force. According to the level of the hydraulic pressure through B, the position of the regulator valve changes, and the amount of fluid from B' through the torque converter changes. This operation is continued, maintaining the line pressure.



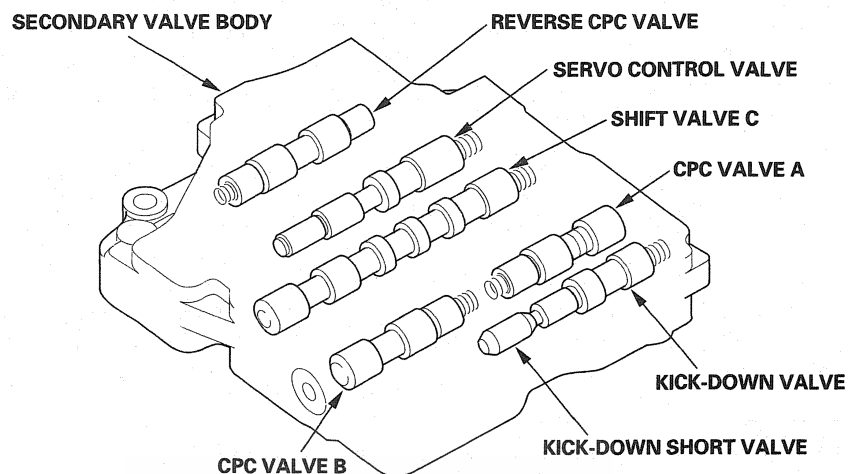
Increases in hydraulic pressure according to torque are regulated by the regulator valve using stator torque reaction. The stator shaft is splined to the stator in the torque converter, and its arm end contacts the regulator spring cap. When the vehicle is accelerating or climbing (torque converter range), stator torque reaction acts on the stator shaft, and the stator arm pushes the regulator spring cap in the direction of the arrow in proportion to the reaction. The stator reaction spring compresses, and the regulator valve moves to increase the line pressure which is regulated by the regulator valve. The line pressure reaches its maximum when the stator torque reaction reaches its maximum.





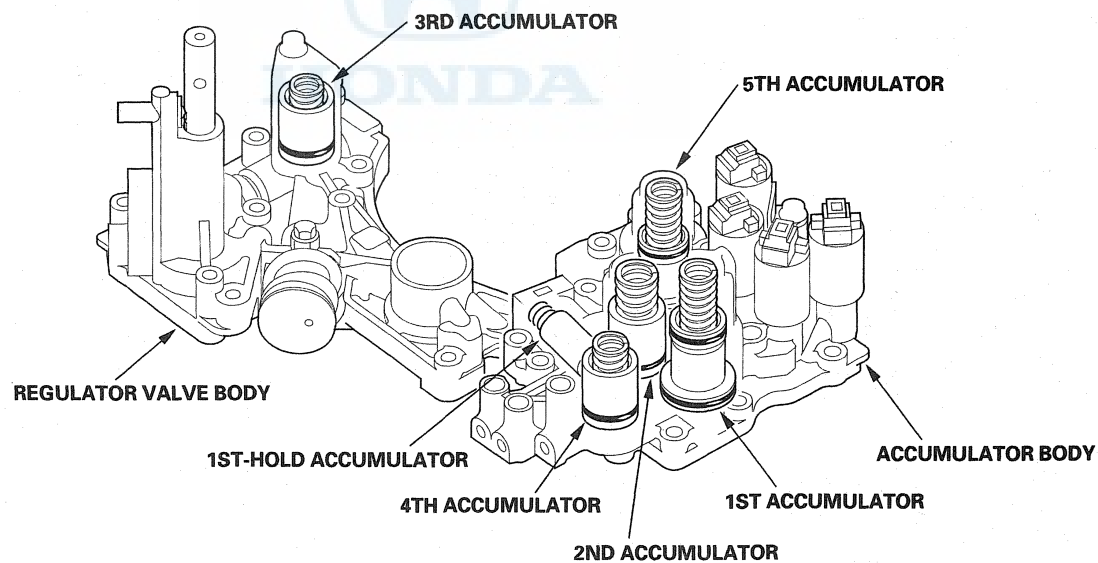
Secondary Valve Body

The secondary valve body is on the main valve body. The secondary valve body contains shift valve C, CPC valve A, CPC valve B, the reverse CPC valve, the servo control valve, the kick-down valve, and the kick-down short valve.



Accumulator Body

The accumulator body is on the secondary valve body, and contains the 1st, 1st-hold, 2nd, 4th, and 5th accumulators. The 3rd accumulator is in the regulator valve body.



Automatic Transmission

System Description (cont'd)

Hydraulic Flow

Distribution of Hydraulic Pressure

As the engine turns, the ATF pump starts to operate. Automatic transmission fluid (ATF) is drawn through the ATF strainer (filter) and discharged into the hydraulic circuit. Then, ATF flowing from the ATF pump becomes line pressure that is regulated by the regulator valve. Torque converter pressure from the regulator valve enters the torque converter through the lock-up shift valve and it is discharged from the torque converter. The torque converter check valve prevents torque converter pressure from rising.

The PCM controls the shift solenoid valves ON and OFF, and the shift solenoid valves control shift solenoid pressure to the shift valves. Applying shift solenoid pressure to the shift valves moves the position of the shift valve, and switches the port of hydraulic pressure. The PCM also controls A/T clutch pressure control solenoid valves A and B. A/T clutch pressure control solenoid valves A and B regulate the A/T clutch pressure and apply it to CPC valves A and B.

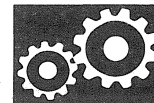
When shifting gears, the clutch is engaged by pressure from the CPC pressure mode. The PCM controls one of the shift solenoid valves to move the position of the shift valve. This movement switches the port of the CPC and line pressure. Line pressure is then applied to the clutch, and the CPC pressure is intercepted. Engaging the clutch with line pressure happens when shifting is completed.

Hydraulic pressure at the ports:

Port No.	Hydraulic Pressure	Port No.	Hydraulic Pressure	Port No.	Hydraulic Pressure
1	LINE	5N	CPC A or LINE	56	LS A
2	LINE	5D	CPC B or LINE	57	LS B
3	LINE	5G	CPC B or LINE	58	LS C
3'	REVERSE CPC or LINE	5K	CPC B or LINE	90	TORQUE CONVERTER
3''	REVERSE CPC or LINE	6	MODULATE	90'	TORQUE CONVERTER
4	LINE	SA	SH A	91	TORQUE CONVERTER
4'	LINE	SB	SH B	91'	TORQUE CONVERTER
4''	LINE	SC	SH C	92	TORQUE CONVERTER
4A	CPC A	LA	LC A	93	ATF COOLER
4B	CPC B	9	LINE	94	TORQUE CONVERTER
4C	CPC C	10	1ST CLUTCH	95	LUBRICATION
5B	CPC A	15	1ST-HOLD CLUTCH	95'	LUBRICATION
5C	CPC B	20	2ND CLUTCH	96	TORQUE CONVERTER
5H	CPC B	25	LINE	97	TORQUE CONVERTER
5J	CPC B	30	3RD CLUTCH	99	SUCTION
5A	CPC A or LINE	40	4TH CLUTCH	X	DRAIN
5E	CPC A or LINE	50	5TH CLUTCH	HX	HIGH POSITION DRAIN
5F	CPC A or LINE	51	5TH CLUTCH	hX	HIGH POSITION DRAIN
5M	CPC A or LINE	55	CPC C or LINE	AX	AIR DRAIN

NOTE:

- CPC: Clutch Pressure Control pressure
- SH: Shift Solenoid pressure
- LS A: A/T Clutch Pressure Control Solenoid A pressure
- LS B: A/T Clutch Pressure Control Solenoid B pressure
- LS C: A/T Clutch Pressure Control Solenoid C pressure
- LC: Torque Converter Clutch Solenoid pressure



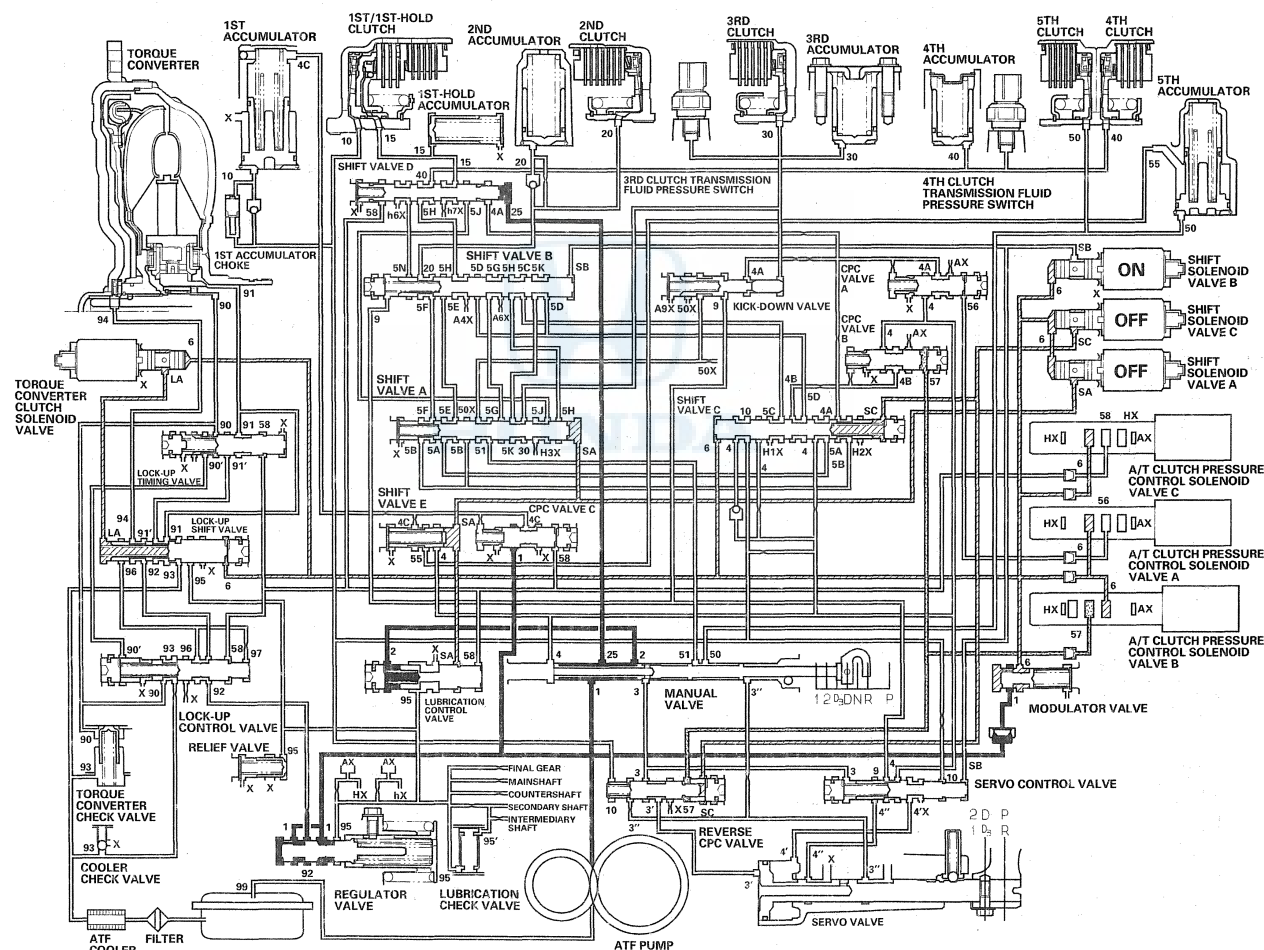
N Position

The PCM controls the shift solenoid valves. The conditions of the shift solenoid valves and positions of the shift valve are as follows:

- Shift solenoid valve A is turned OFF, and shift valve A moves to the left side.
- Shift solenoid valve B is turned ON, and shift valve B stays on the right side.
- Shift solenoid valve C is turned OFF, and shift valve C stays on the left side.

Line pressure (1) passes through the manual valve and becomes line pressure (25). Line pressure (25) stops at shift valve D. Line pressure (1) also flows to the modulator valve and becomes modulator pressure (6). Modulator pressure (6) flows to the shift solenoid valves, A/T clutch pressure control solenoid valves A and B, and A/T clutch pressure control solenoid valve C. Under this condition, the hydraulic pressure is not applied to the clutches.

NOTE: When used, "left" or "right" indicates direction on the hydraulic circuit.



(cont'd)

Automatic Transmission

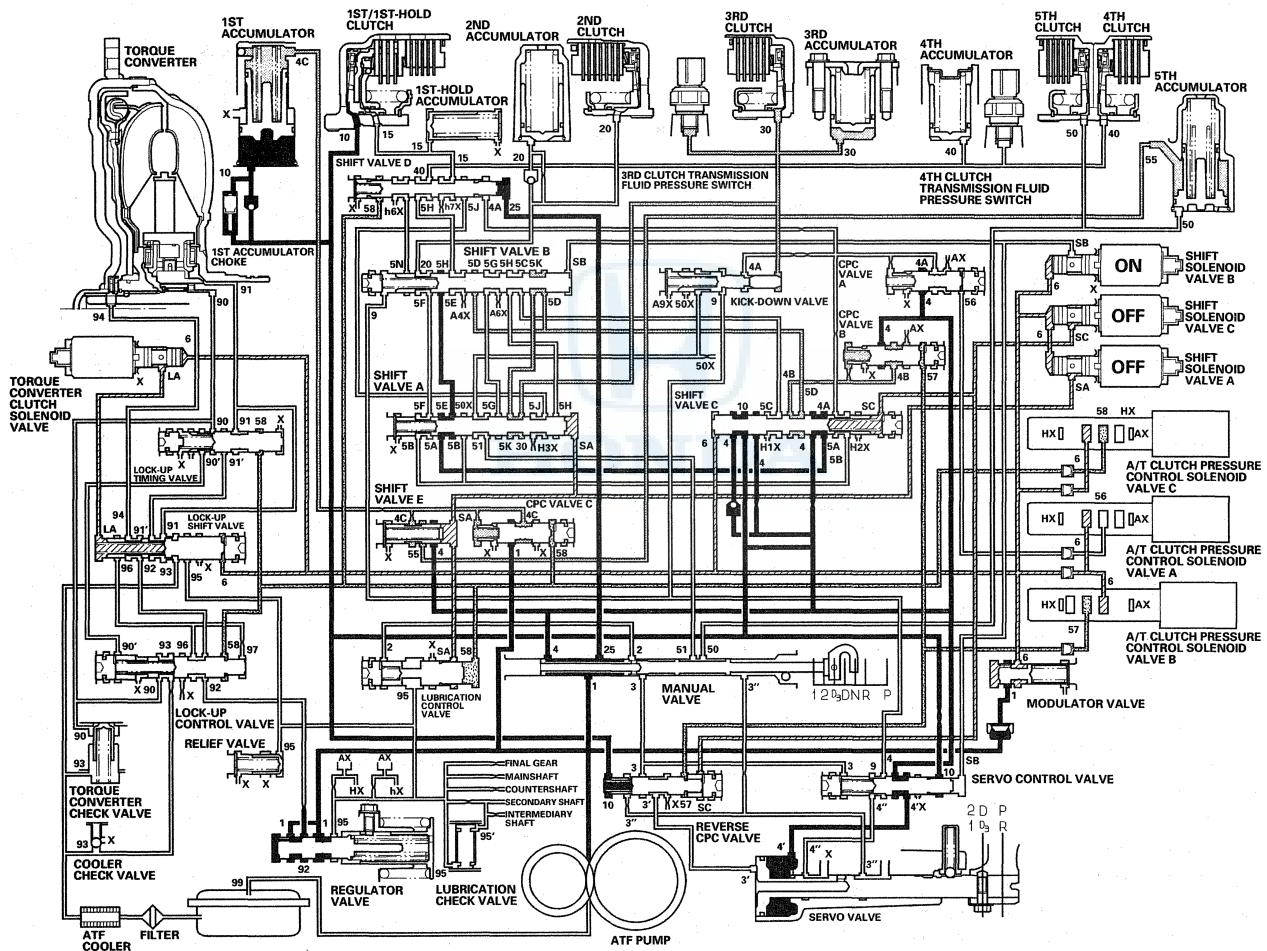
System Description (cont'd)

Hydraulic Flow (cont'd)

D Position: 1st gear shifting from the N position

Shift solenoid valves remain the same as in the N position when shifting to the D position from the N position. The manual valve moves to D position and switches the port of line pressure (4) leading to shift valve C and CPC valve B. Line pressure (4) flows to the 1st clutch via shift valve C. Line pressure (1) becomes CPC C pressure (4C) at CPC valve C, then goes to the 1st accumulator back side. Line pressure (4) also becomes CPC B pressure (4B) at CPC B valve. CPC B pressure goes to the 3rd clutch, via shift valves C, B, and A, and the 3rd clutch is engaged. The 1st clutch is engaged gently when shifting to the D position from the N position.

NOTE: When used, "left" or "right" indicates direction on the hydraulic circuit.

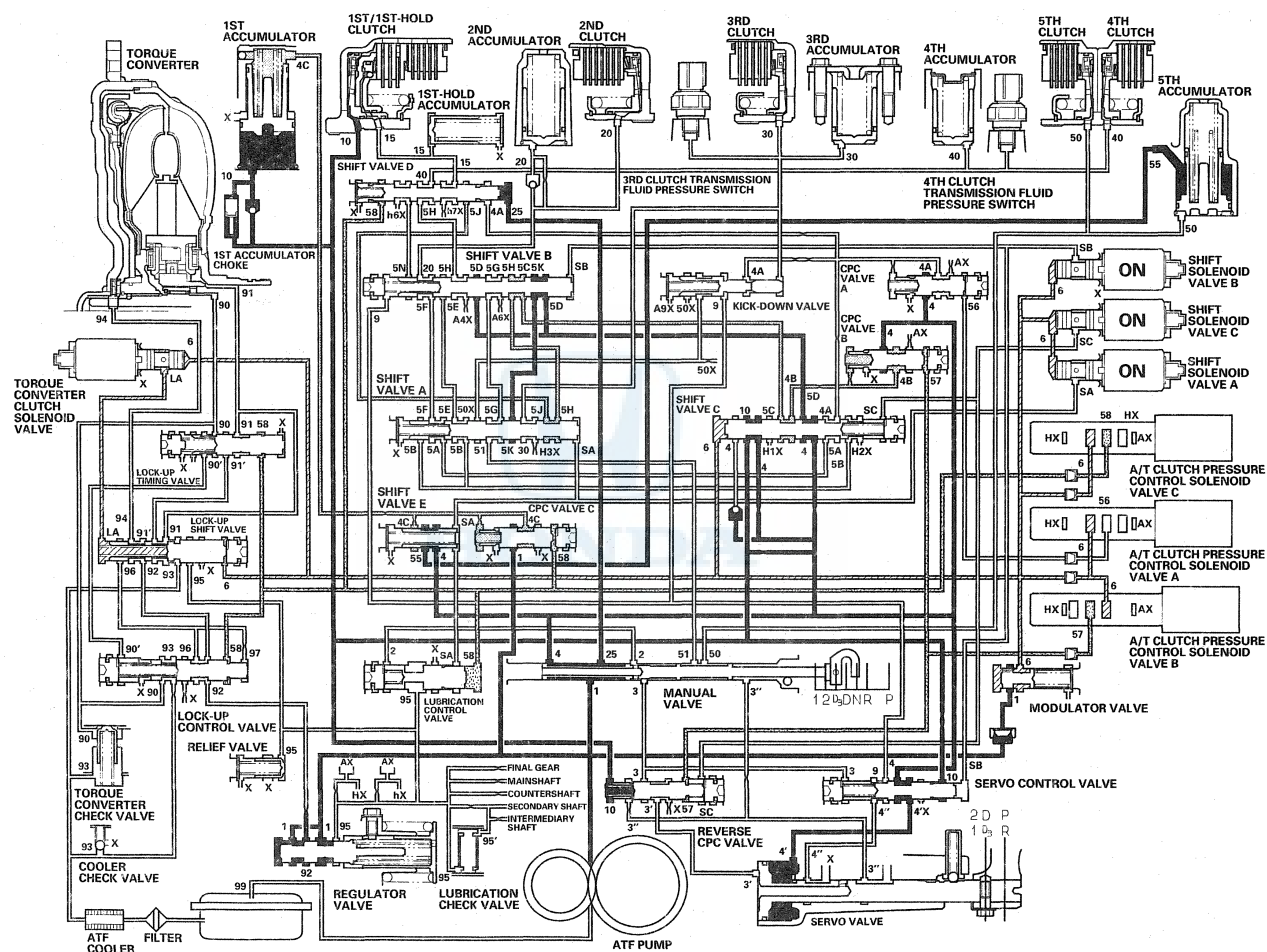




D Position: Driving in 1st gear

The PCM turns shift solenoid valves A and C ON, and shift solenoid valve B remains ON. SH A pressure (SA) in the right side of shift valves A and E is released, and shift valves A and E are moved to the right side. SH C pressure (SC) in the right side of shift valve C is released, and modulator pressure (6) is applied to the left side of shift valve C. Shift valve C is moved to the right side. These movement of these valves releases CPC C pressure (4C) from the back of the 1st accumulator and the 3rd clutch, and the 1st clutch is engaged securely.

NOTE: When used, "left" or "right" indicates direction on the hydraulic circuit.



(cont'd)

Automatic Transmission

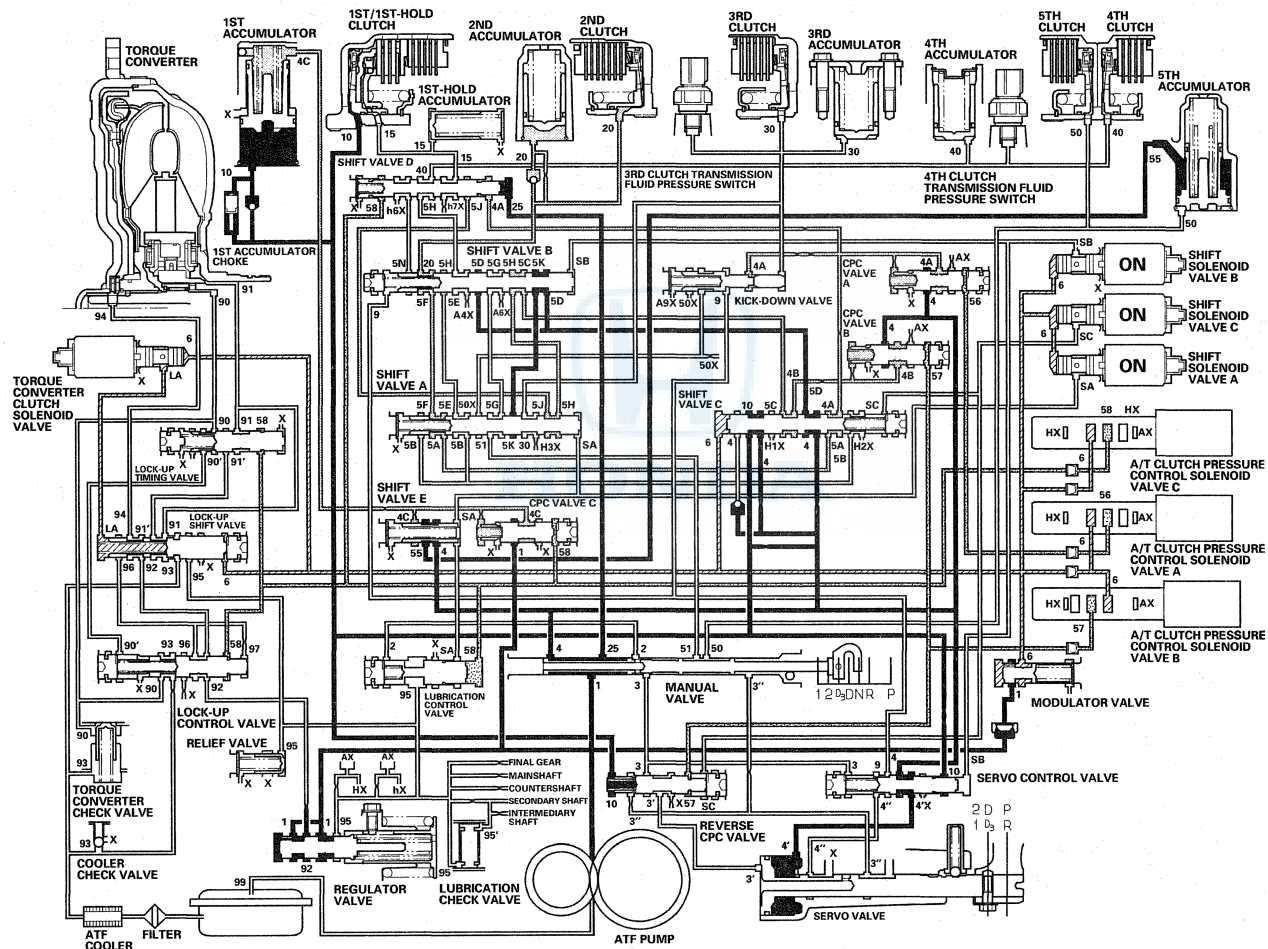
System Description (cont'd)

Hydraulic Flow (cont'd)

D Position: Shifting between 1st gear and 2nd gear

As the speed of the vehicle reaches the programmed value, the PCM controls A/T clutch pressure control solenoid valves A and B. LS B pressure (57) in the right side of CPC valve B is released, and LS A pressure (56) is applied to the right side of CPC valve A. Line pressure (4) becomes the CPC A pressure (4A) at CPC valve A, and the CPC A pressure passes through shift valves C, A, and B, to become the 2nd clutch pressure. The 2nd clutch is engaged with CPC pressure, and the 1st clutch is also engaged. No power is transmitted because of the one-way clutch.

NOTE: When used, "left" or "right" indicates direction on the hydraulic circuit.

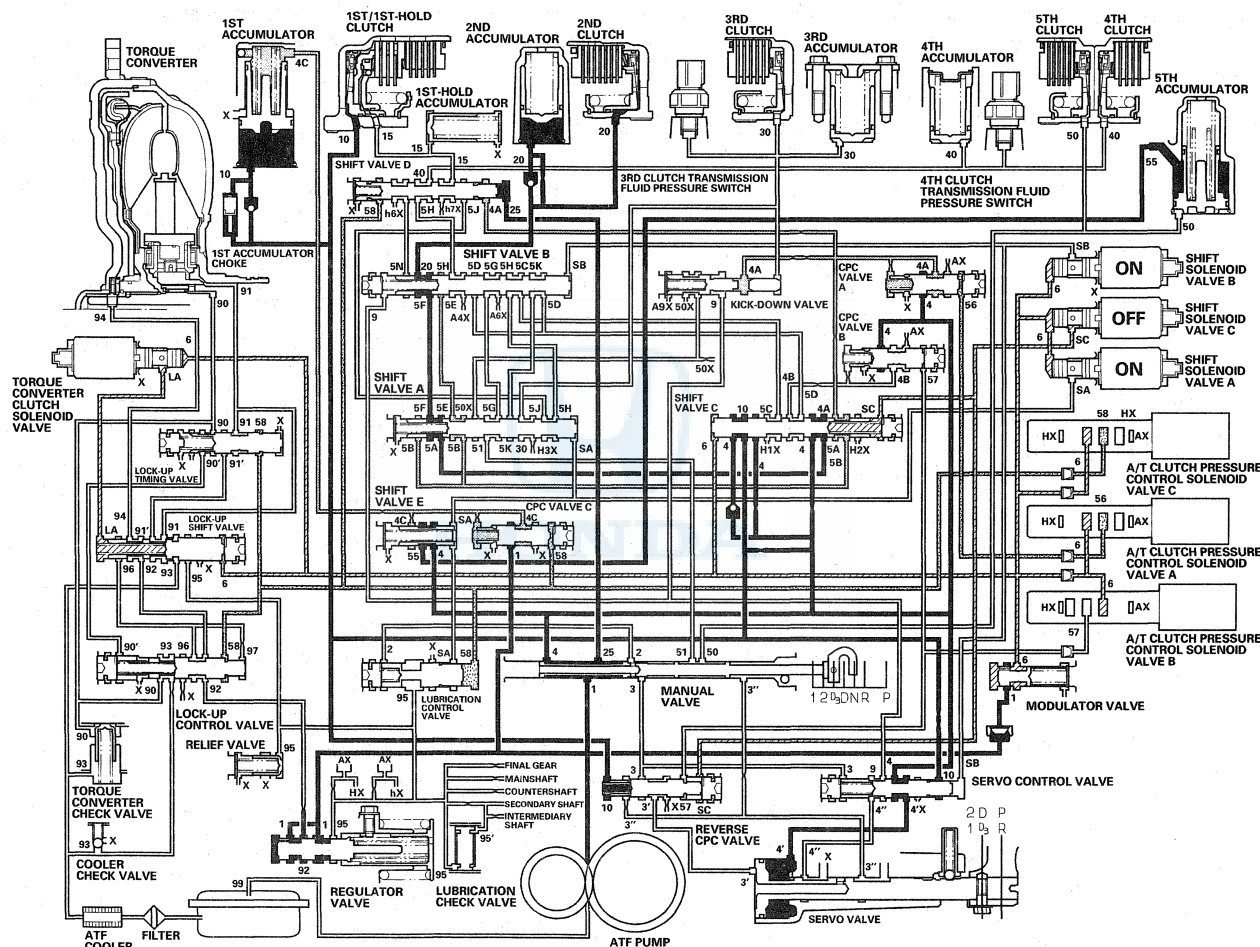




D Position: Driving in 2nd gear

The PCM turns shift solenoid valve C OFF, and shift solenoid valves A and B remain ON. Shift solenoid valve C is turned OFF, and the SH C pressure (SC) is applied to the right side of shift valve C. Then shift valve C is moved to the left side to switch the port of line pressure and the CPC pressure. The 2nd clutch pressure is changed to line pressure mode, and the 2nd clutch is engaged securely. The 1st clutch is also engaged. No power is transmitted because of the one-way clutch.

NOTE: When used, "left" or "right" indicates direction on the hydraulic circuit.



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Automatic Transmission

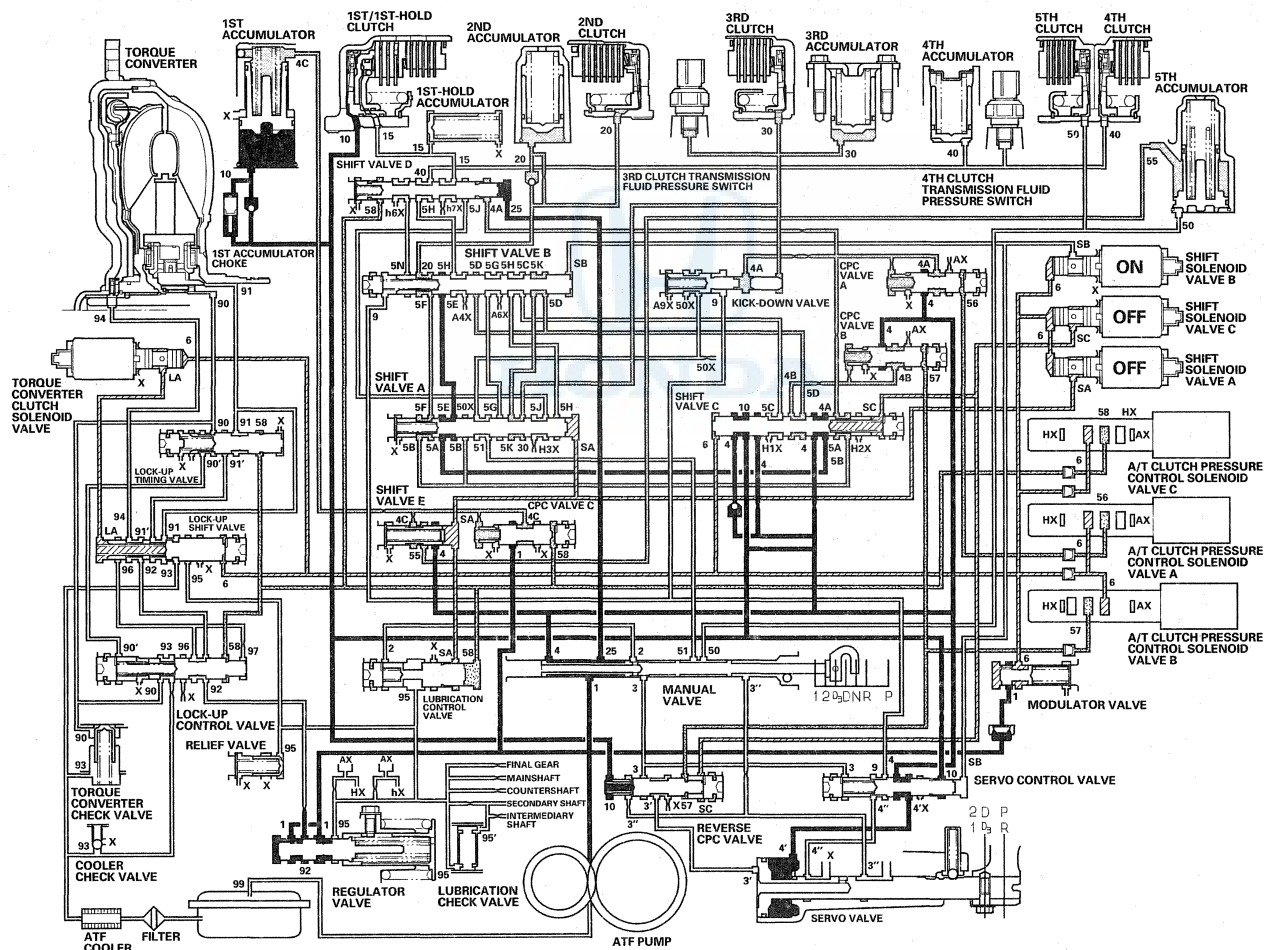
System Description (cont'd)

Hydraulic Flow (cont'd)

D Position: Shifting between 2nd gear and 3rd gear

As the speed of the vehicle reaches the programmed value, the PCM turns shift solenoid valve A OFF. The PCM also controls A/T clutch pressure control solenoid valve B to apply the LS B pressure (57) to CPC valve B. Shift solenoid valve B remains ON, and C remains OFF. Shift solenoid valve A is turned OFF, and the SH A pressure (SA) is applied to the right side of shift valves A and E. Then shift valves A and E are moved to the left side to switch the port of line pressure and the CPC pressure. Line pressure (4) becomes the CPC A pressure (4A) at CPC valve A, and becomes the CPC B pressure (4B) at CPC valve B. The CPC B pressure (4B) becomes the 3rd clutch pressure (30) at shift valve A via shift valves C and B, and flows to the 3rd clutch. The 2nd clutch pressure is changed to CPC pressure mode by switching the position of shift valve A. The 1st clutch is also engaged. No power is transmitted because of the one-way clutch.

NOTE: When used, "left" or "right" indicates direction on the hydraulic circuit.

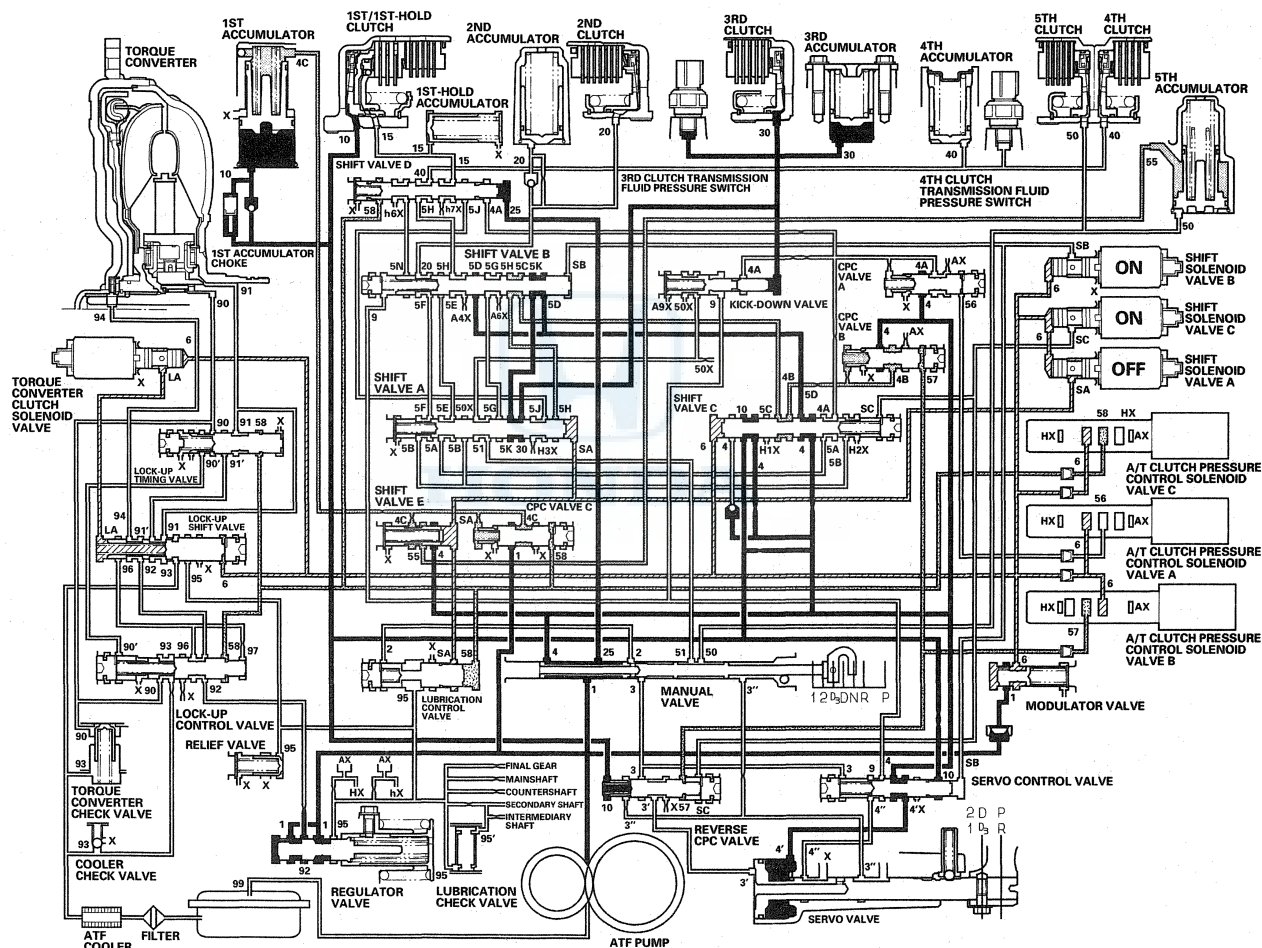




D Position: Driving in 3rd gear

The PCM turns shift solenoid valve C ON, and controls A/T clutch pressure control solenoid valve A to release the LS A pressure (56) in CPC valve A. Shift solenoid valve A remains OFF, and B remains ON. Releasing the LS A pressure (56) in CPC valve A releases the CPC A pressure in the 2nd clutch pressure circuit. Shift solenoid valve C is turned ON, and the SH C pressure (SC) in the right side of shift valve C is released. Then shift valve C is moved to the right side to switch the port of line pressure and the CPC pressure. The 3rd clutch pressure is changed to line pressure mode, and the 3rd clutch is engaged securely. The 1st clutch is also engaged. No power is transmitted because of the one-way clutch.

NOTE: When used, "left" or "right" indicates direction on the hydraulic circuit.



(cont'd)

Automatic Transmission

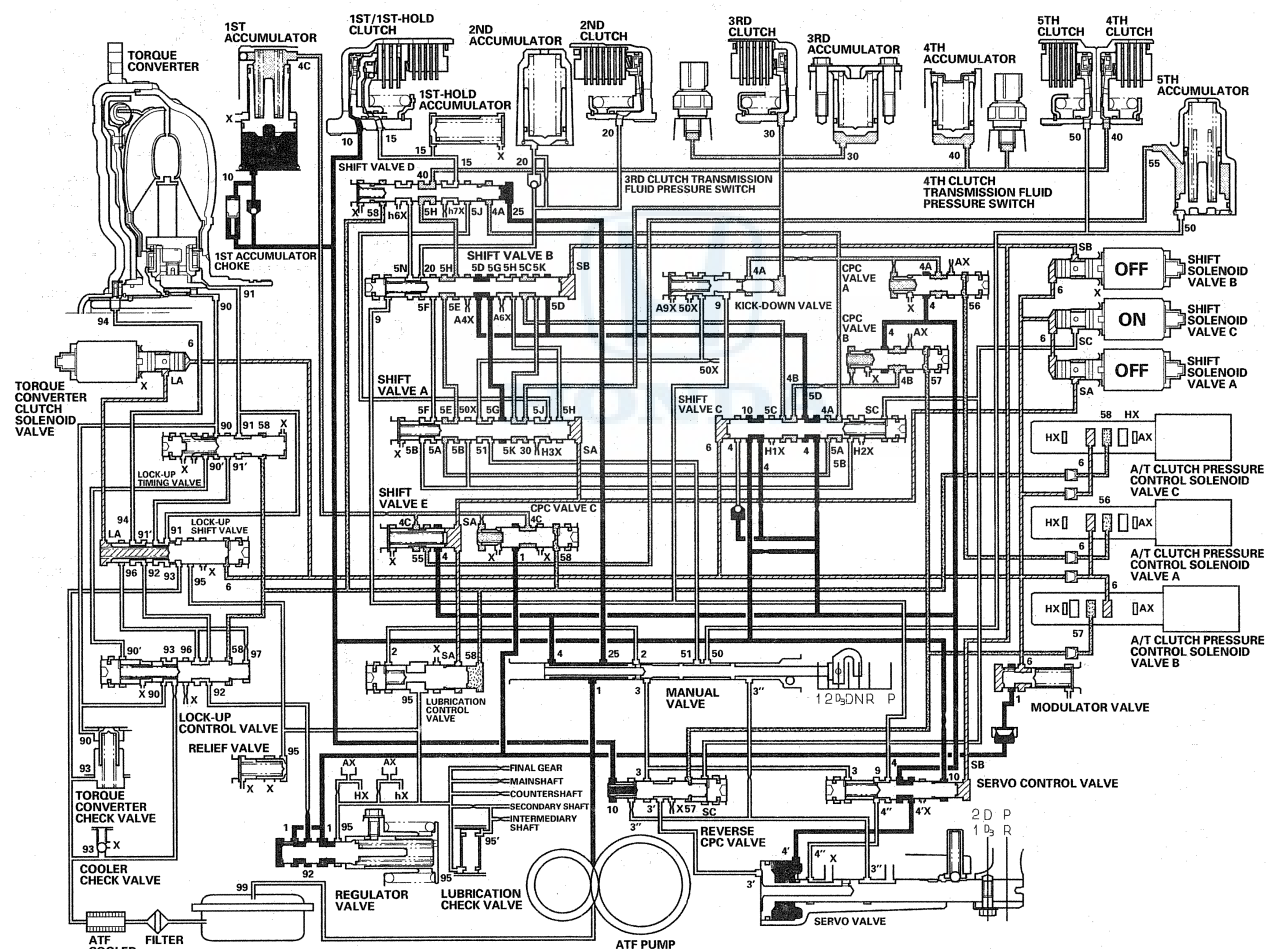
System Description (cont'd)

Hydraulic Flow (cont'd)

D Position: Shifting between 3rd gear and 4th gear

As the speed of the vehicle reaches the programmed value, the PCM turns shift solenoid valve B OFF. The PCM also controls A/T clutch pressure control solenoid valve A to apply the LS A pressure (56) to CPC valve A. Shift solenoid valve A remains OFF, and C remains ON. Shift solenoid valve B is turned OFF, and the SH B pressure (SB) is applied to the right side of shift valve B. Then shift valve B is moved to the left side to switch the port of line pressure and the CPC pressure. Line pressure (4) becomes the CPC A pressure (4A) at CPC valve A, and becomes the CPC B pressure (4B) at CPC valve B. The CPC A pressure (4A) becomes the 4th clutch pressure (40) at shift valve D via shift valves C, A, and B, and flows to the 4th clutch. The 3rd clutch pressure is changed to CPC pressure mode by switching the position of shift valve B. The 1st clutch is also engaged. No power is transmitted because of the one-way clutch.

NOTE: When used, "left" or "right" indicates direction on the hydraulic circuit.

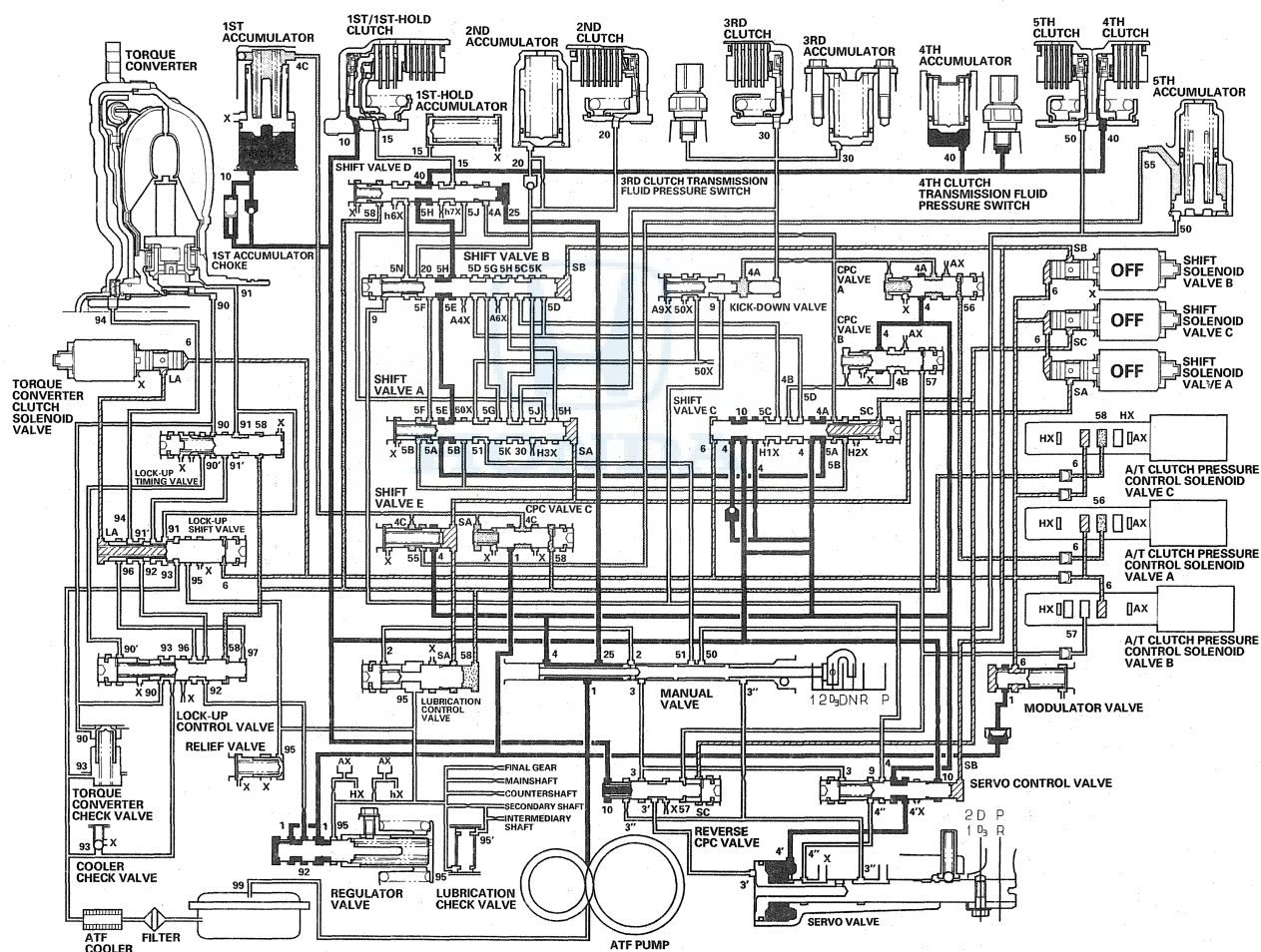




D Position: Driving in 4th gear

The PCM turns shift solenoid valve C OFF, and controls A/T clutch pressure control solenoid valve B to release the LS B pressure (57) in CPC valve B. Shift solenoid valves A and B remain OFF. Releasing the LS B pressure (57) in CPC valve B releases the CPC B pressure in the 3rd clutch pressure circuit. Shift solenoid valve C is turned OFF, and the SH C pressure (SC) is applied to the right side of shift valve C. Then shift valve C is moved to the left side to switch the port of line pressure and the CPC pressure. Line pressure (4) from the manual valve becomes the 4th clutch pressure (40) at shift valve D via shift valves C, A, and B, and flows to the 4th clutch. The 4th clutch pressure is changed to line pressure mode by switching the position of shift valve C, and the 4th clutch is engaged securely. The 1st clutch is also engaged. No power is transmitted because of the one-way clutch.

NOTE: When used, "left" or "right" indicates direction on the hydraulic circuit.



(cont'd)

Automatic Transmission

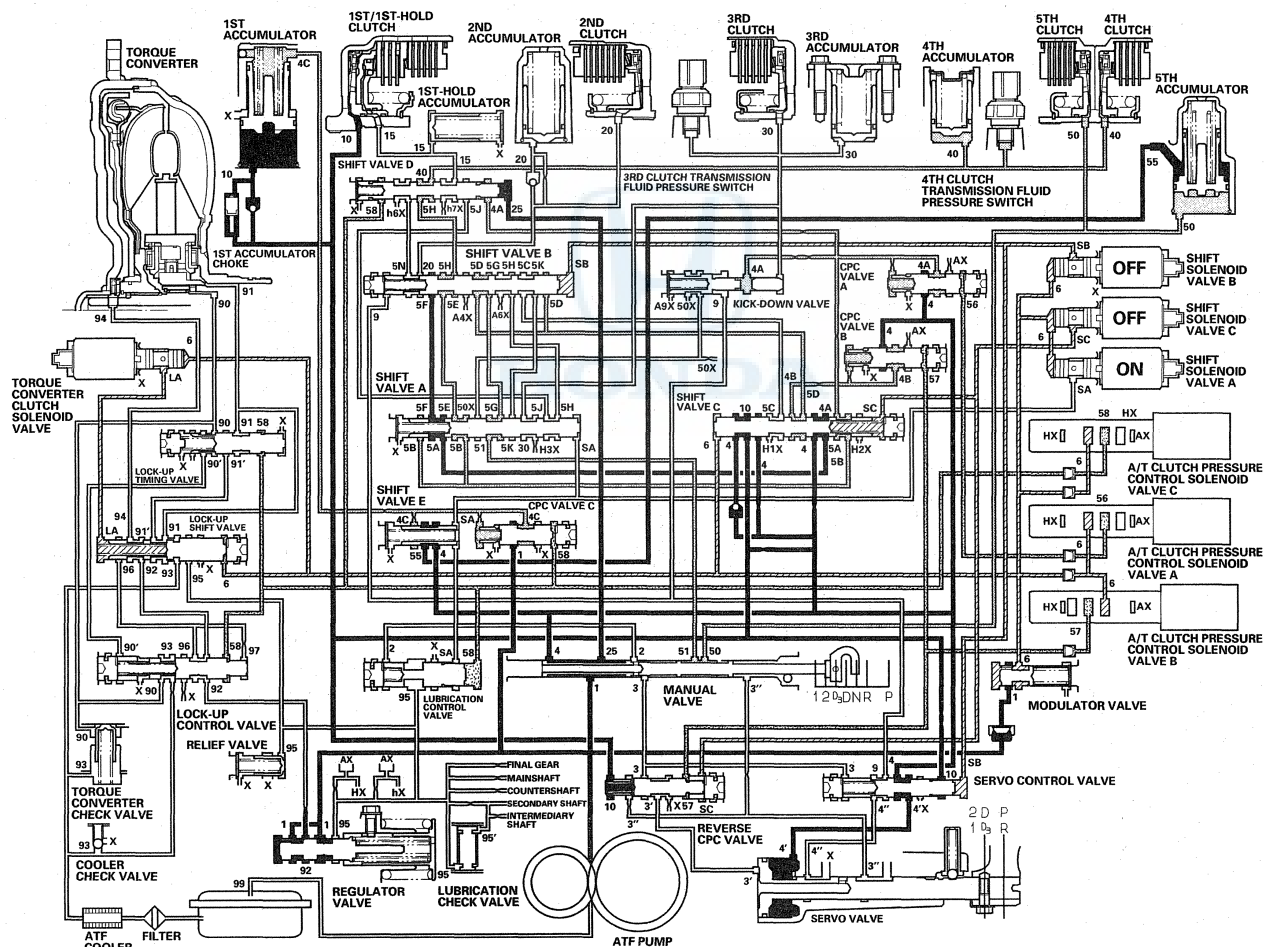
System Description (cont'd)

Hydraulic Flow (cont'd)

D Position: Shifting between 4th gear and 5th gear

As the speed of the vehicle reaches the programmed value, the PCM turns shift solenoid valve A ON. The PCM also controls A/T clutch pressure control solenoid valve B to apply the LS B pressure (57) to CPC valve B. Shift solenoid valves B and C remain OFF. Shift solenoid valve A is turned ON, and the SH A pressure (SA) in the right side of shift valves A and E is released. Then shift valves A and E are moved to the left side to switch the port of line pressure and the CPC pressure. Line pressure (4) becomes the CPC A pressure (4A) at CPC valve A, and becomes the CPC B pressure (4B) at CPC valve B. The CPC B pressure (4B) becomes the 5th clutch pressure (50) at shift valve C, and flows to the 5th clutch via shift valves B and A and the manual valve. The 4th clutch pressure is changed to CPC pressure mode by switching the position of shift valve A. The 1st clutch is also engaged. No power is transmitted because of the one-way clutch.

NOTE: When used, "left" or "right" indicates direction on the hydraulic circuit.

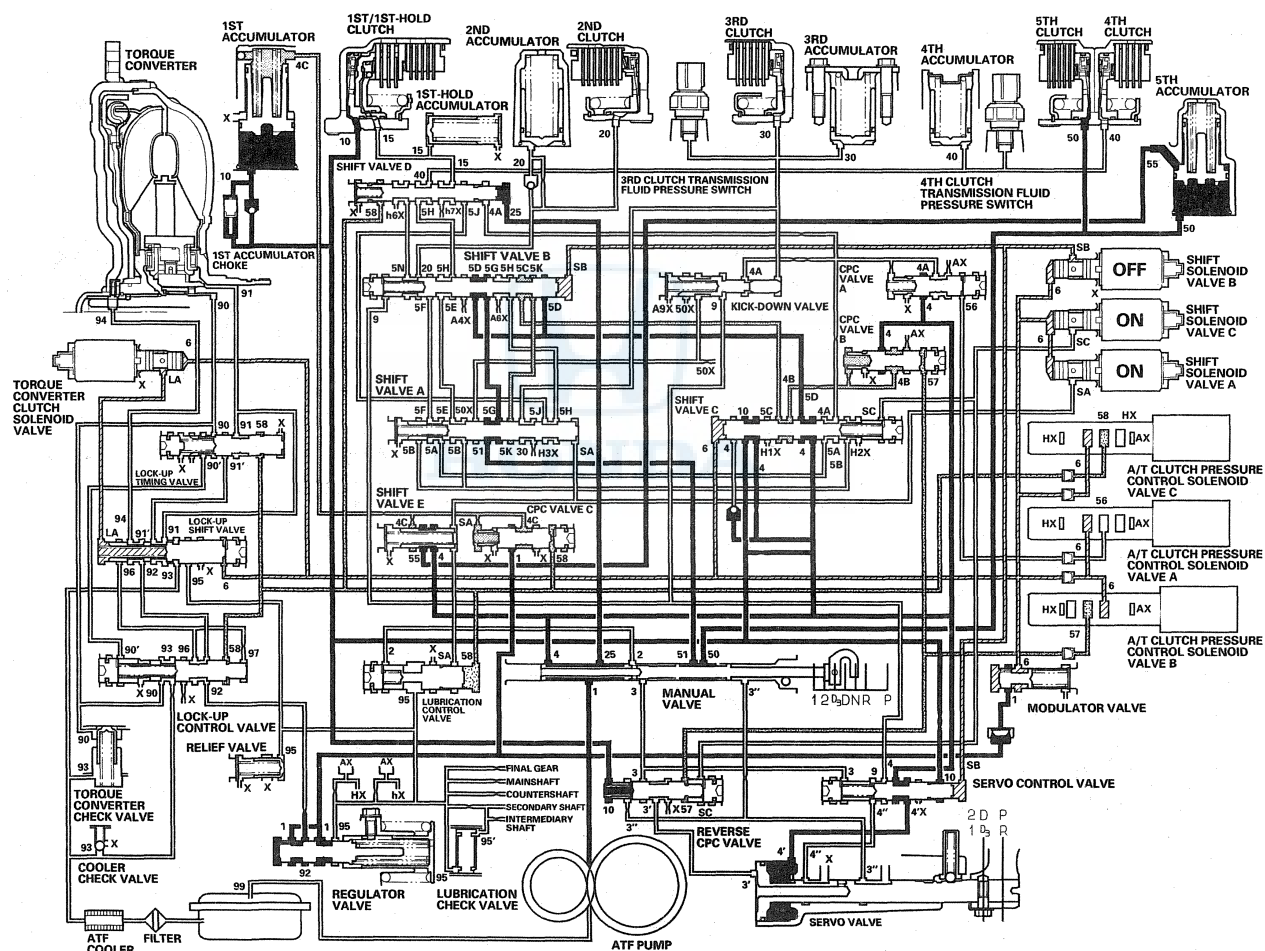




D Position: Driving in 5th gear

The PCM turns shift solenoid valve C ON, and controls A/T clutch pressure control solenoid valve A to release the LS A pressure (56) in CPC valve A. Shift solenoid valve A remains ON, and B remains OFF. Releasing the LS A pressure (56) in CPC valve A releases the CPC A pressure in the 4th clutch pressure circuit. Shift solenoid valve C is turned ON, and the SH C pressure (SC) in the right side of shift valve C is released. Then shift valve C is moved to the right side to switch the port of line pressure and the CPC pressure. Line pressure (4) from the manual valve becomes the 5th clutch pressure (50) at the manual valve, via shift valves C, B, and A, and flows to the 5th clutch. The 5th clutch pressure is changed to line pressure mode by switching the position of shift valve C. The 5th clutch is engaged securely, and the 1st clutch is also engaged. No power is transmitted because of the one-way clutch.

NOTE: When used, "left" or "right" indicates direction on the hydraulic circuit.



(cont'd)

Automatic Transmission

System Description (cont'd)

Hydraulic Flow (cont'd)

2 Position

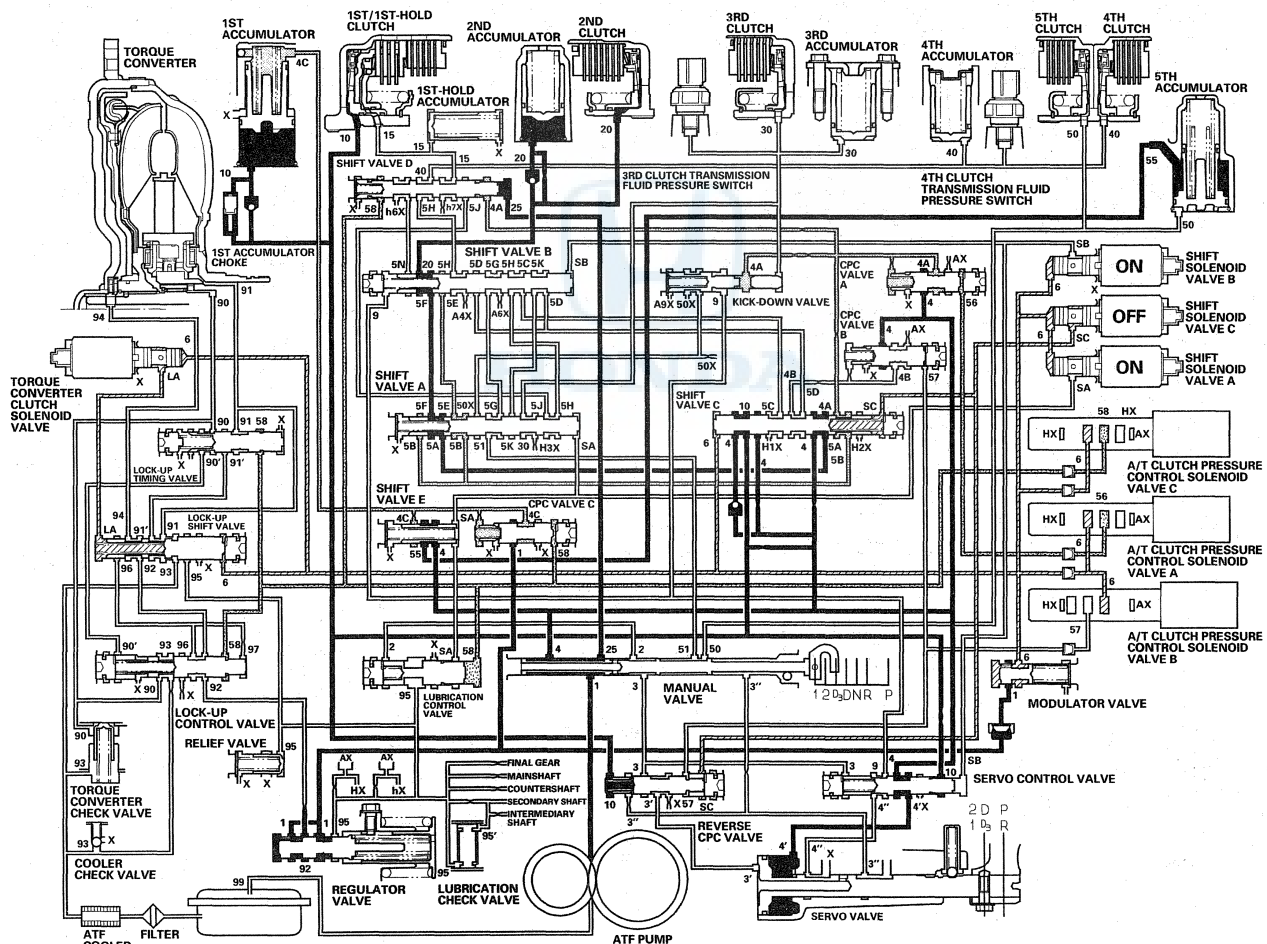
The PCM controls the shift solenoid valves and A/T clutch pressure control solenoid valves A and B. The conditions of the shift solenoid valves and the position of the shift valves are as follows:

- Shift solenoid valve A is turned ON, and shift valve A is in the right side.
- Shift solenoid valve B is turned ON, and shift valve B is in the right side.
- Shift solenoid valve C is turned OFF, and shift valve C is in the left side.

The PCM also controls A/T clutch pressure control solenoid valve A to apply the LS A pressure (56) to CPC valve A.

Line pressure (4) from the manual valve becomes the 2nd clutch pressure (20) at shift valve B, via shift valves C and A. The 2nd clutch pressure (20) is applied to the 2nd clutch, and the 2nd clutch is engaged. The 1st clutch is also engaged. No power is transmitted because of the one-way clutch.

NOTE: When used, "left" or "right" indicates direction on the hydraulic circuit.



Automatic Transmission

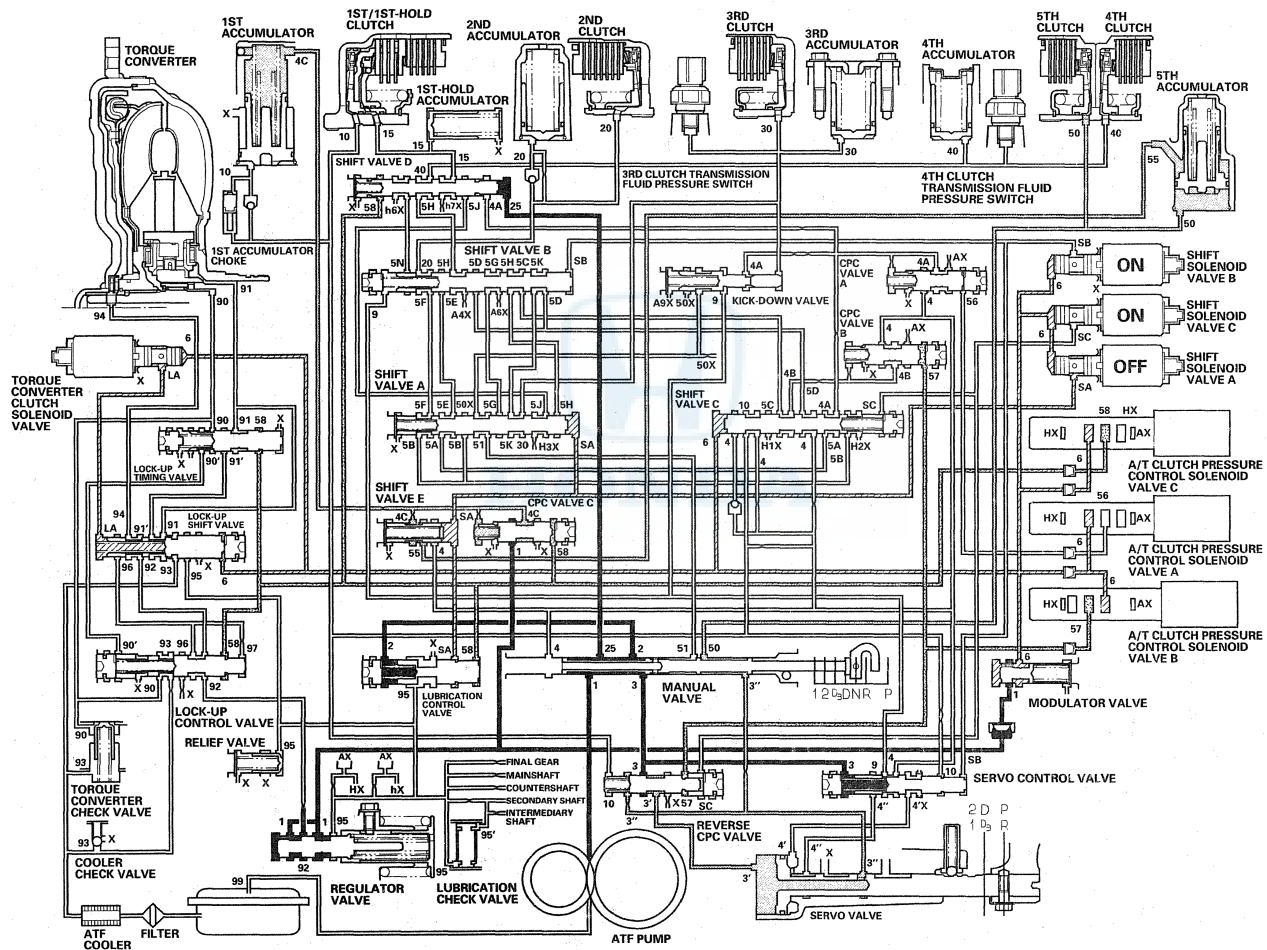
System Description (cont'd)

Hydraulic Flow (cont'd)

R Position: Shifting to the R position from the P or N position

Line pressure (1) becomes line pressure (3) at the manual valve, and flows to the reverse CPC valve. Line pressure (3) is regulated by the reverse CPC valve and becomes the reverse CPC pressure (3'). The reverse CPC pressure (3') pushes the servo valve to the reverse position, passes through the servo valve, and flows to the manual valve. The reverse CPC pressure (3') becomes the 5th clutch pressure (50) at the manual valve. The 5th clutch pressure (50) is applied to the 5th clutch, and the 5th clutch is engaged with the reverse CPC pressure.

NOTE: When used, "left" or "right" indicates direction on the hydraulic circuit.





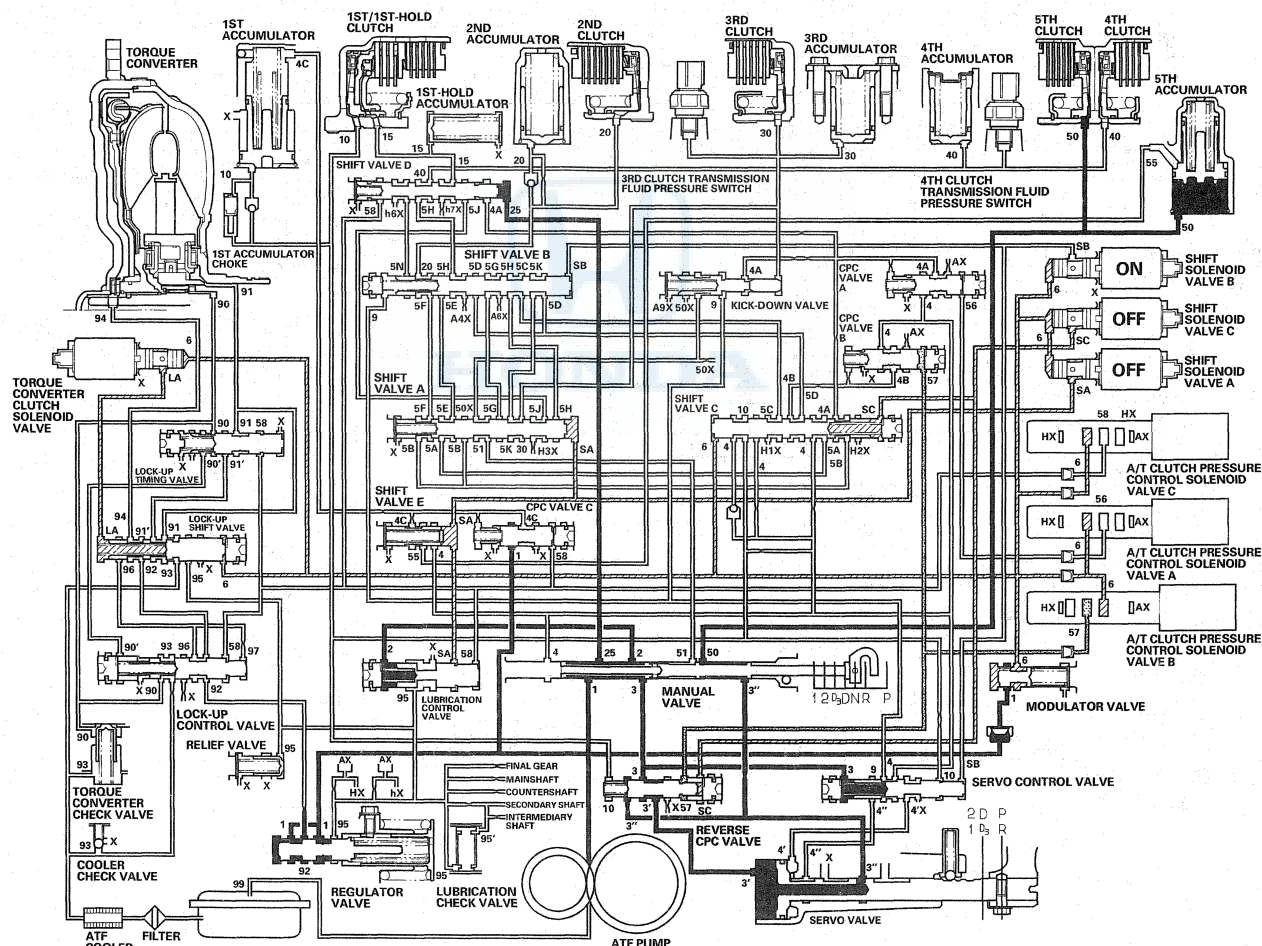
R Position: Driving in reverse gear

The PCM turns shift solenoid valve C OFF. Shift solenoid valve A remains OFF, and B remains ON. Shift solenoid valve C is turned OFF, and the SH C pressure (SC) is applied to the right side of the reverse CPC valve. Then the reverse CPC valve moves to the left side, creating full line pressure. Line pressure to the 5th clutch is the same as when shifting to the R position, and the 5th clutch pressure increases. The 5th clutch is engaged with line pressure mode.

Reverse Inhibitor Control

When the R position is selected while the vehicle is moving forward at speeds over 6 mph (10 km/h), the PCM turns shift solenoid valves A and C ON, and shift solenoid valve B remains ON. The reverse CPC valve is moved to the right side and covers the port to stop. Line pressure (3') to the servo valve. Line pressure (3') is not applied to the servo valve, and the 5th clutch pressure (50) is not applied to the 5th clutch, as a result, power is not transmitted to the reverse direction.

NOTE: When used, "left" or "right" indicates direction on the hydraulic circuit.



(cont'd)

Automatic Transmission

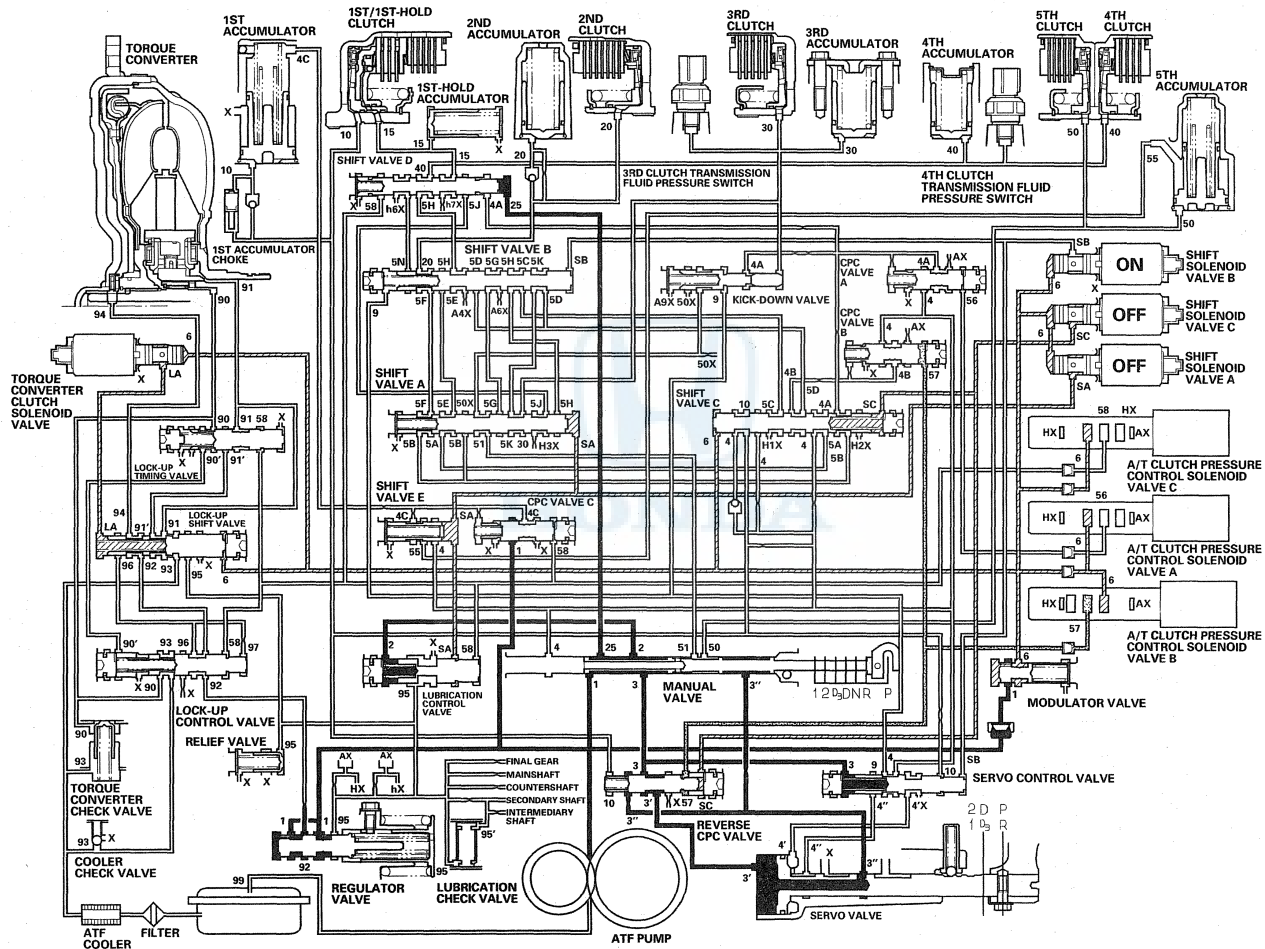
System Description (cont'd)

Hydraulic Flow (cont'd)

P Position

Shift solenoid valve C is turned OFF by the PCM, and the SH C pressure (SC) is applied to the right side of the reverse CPC valve. Then the reverse CPC valve is moved to the left side to uncover the port leading line pressure (3) to the servo valve. Line pressure (3') passes through the servo valve and flows to the manual valve. Line pressure (3'') is intercepted at the manual valve, and is not applied to the clutches.

NOTE: When used, "left" or "right" indicates direction on the hydraulic circuit.





Lock-up System

The lock-up mechanism of the torque converter clutch operates in the D3 position (2nd, 3rd, 4th, and 5th), and D3 position (2nd and 3rd). The pressurized fluid is drained from the back of the torque converter through a fluid passage, causing the torque converter clutch piston to be held against the torque converter cover. As this takes place, the mainshaft rotates at the same speed as the engine crankshaft. Together with the hydraulic control, the PCM optimizes the timing and amount of the lock-up mechanism. When the torque converter clutch solenoid valve is turned on by the PCM, the torque converter clutch solenoid valve pressure switches the lock-up shift valve lock-up on and off. A/T clutch pressure control solenoid valve C, the lock-up control valve, and the lock-up timing valve control the amount of lock-up.

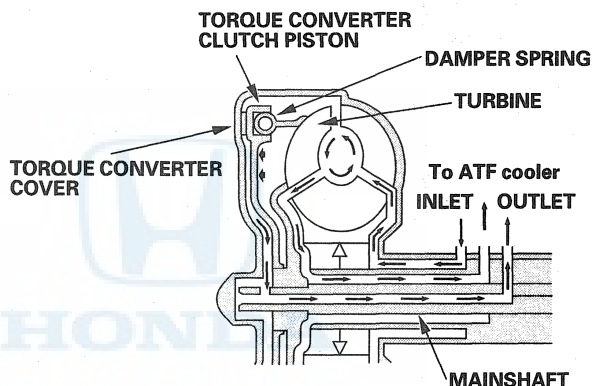
Torque Converter Clutch Lock-up ON (Engaging Torque Converter Clutch)

Fluid in the chamber between the torque converter cover and the torque converter clutch piston is drained off, and fluid entering from the chamber between the pump and stator exerts pressure through the torque converter clutch piston against the torque converter cover. The torque converter clutch piston engages with the torque converter cover; the torque converter clutch lock-up ON, and the mainshaft rotates at the same as the engine.

Power flow

The power flows by way of:

Engine
↓
Drive plate
↓
Torque converter cover
↓
Torque converter clutch piston
↓
Damper spring
↓
Turbine
↓
Mainshaft



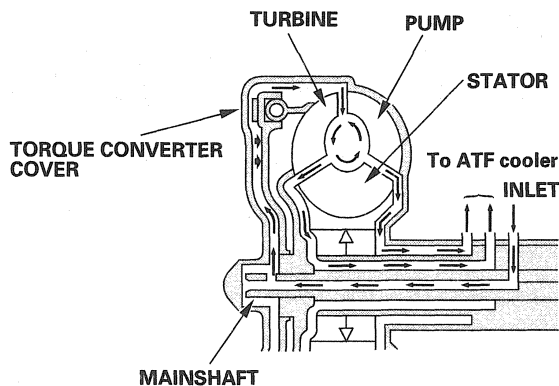
Torque Converter Clutch Lock-up OFF (Disengaging Torque Converter Clutch)

Fluid entered from the chamber between the torque converter cover and the torque converter clutch piston passes through the torque converter and goes out from the chambers between the turbine and the stator, and between the pump and the stator. As a result, the torque converter clutch piston moves away from the torque converter cover, and the torque converter clutch lock-up is released; torque converter clutch lock-up OFF.

Power flow

The power flows by way of:

Engine
↓
Drive plate
↓
Torque converter cover
↓
Pump
↓
Turbine
↓
Mainshaft



(cont'd)

Automatic Transmission

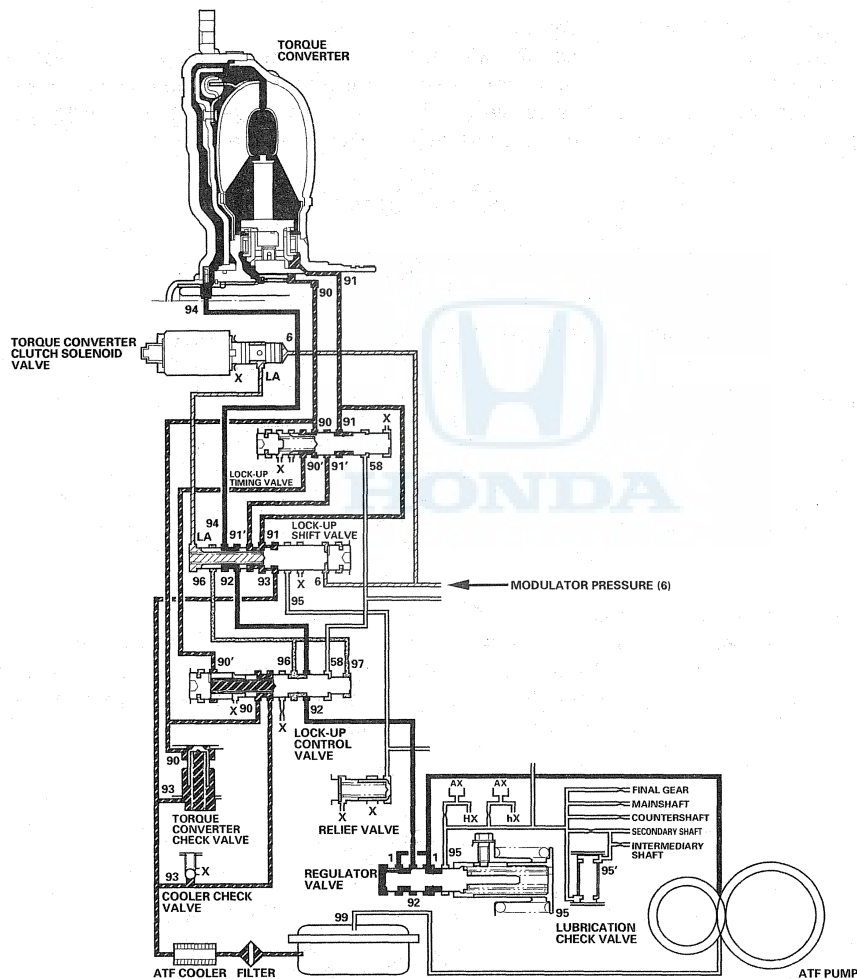
System Description (cont'd)

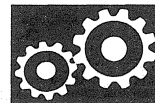
Lock-up System (cont'd)

No Lock-up

The torque converter clutch solenoid valve is turned OFF by the PCM. The lock-up shift valve receives the LC pressure (LA) on the left side, and the modulator pressure (6) on the right side. The lock-up shift valve is in the right side to uncover the port leading the torque converter pressure (92) to the left side of the torque converter. The torque converter pressure (92) becomes the torque converter pressure (94), and enters into the left side of the torque converter to disengage the torque converter clutch. The torque converter clutch is OFF.

NOTE: When used, "left" or "right" indicates direction on the hydraulic circuit.

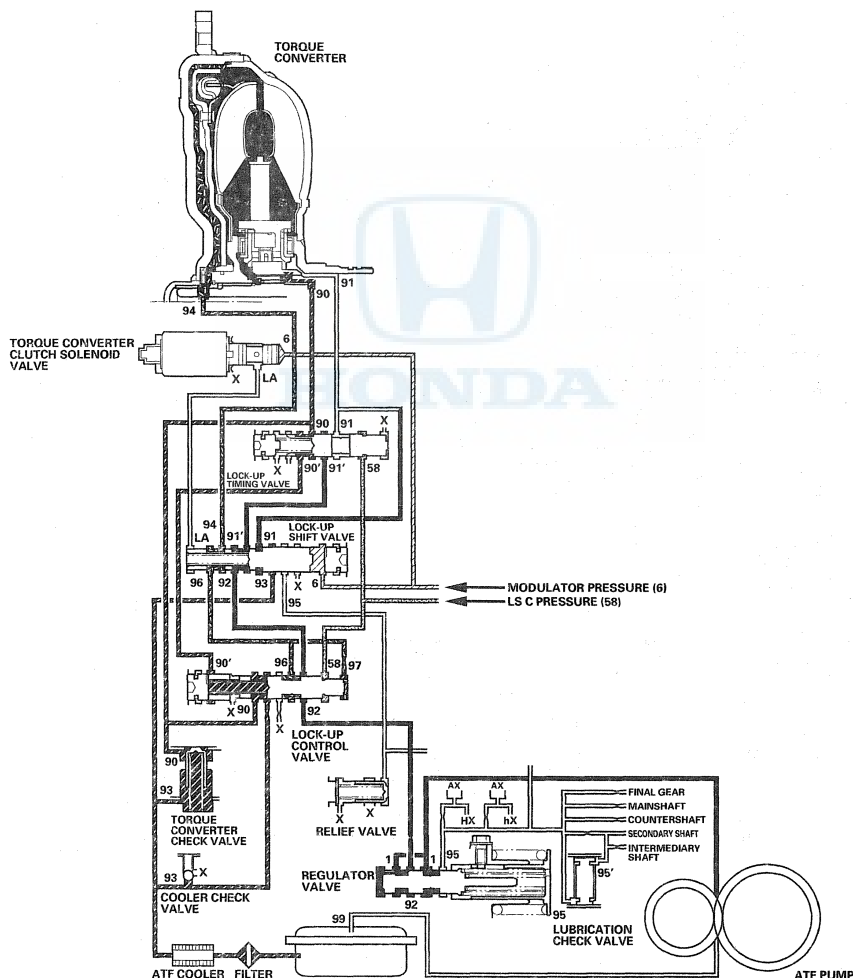




Partial Lock-up

As the speed of the vehicle reaches the programmed value, the torque converter clutch solenoid valve is turned ON by the PCM to release the LC pressure (LA) in the left cavity of the lock-up shift valve. The modulator pressure (6) is applied to the right side of the lock-up shift valve, then the lock-up shift valve is moved in the left side to switch the port leading the torque converter pressure to the right side of the torque converter. The torque converter pressure (91) is applied to the right side of the torque converter to engage the lock-up clutch. The PCM also controls A/T clutch pressure control solenoid valve C, and the LS C pressure (58) is applied to the lock-up control valve and the lock-up timing valve. When the LS C pressure (58) is lower, the torque converter pressure (91) from the lock-up timing valve is lower. The torque converter clutch is engaged partially. The LS C pressure (58) increases, and the lock-up timing valve is moved to the left side to uncover the port leading the torque converter pressure to high. The torque converter clutch is then engaged securely. Under this condition, the torque converter clutch is engaged by pressure from the right side of the torque converter; this condition is partial lock-up.

NOTE: When used, "left" or "right" indicates direction on the hydraulic circuit.



(cont'd)

Automatic Transmission

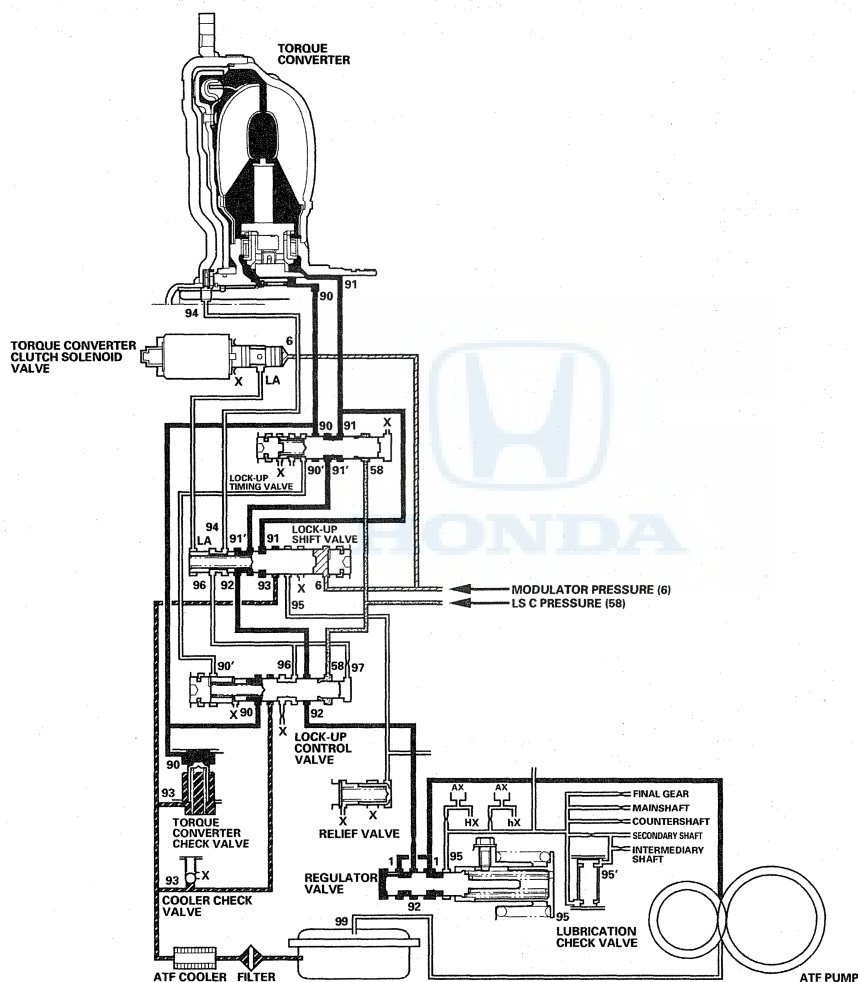
System Description (cont'd)

Lock-up System (cont'd)

Full Lock-up

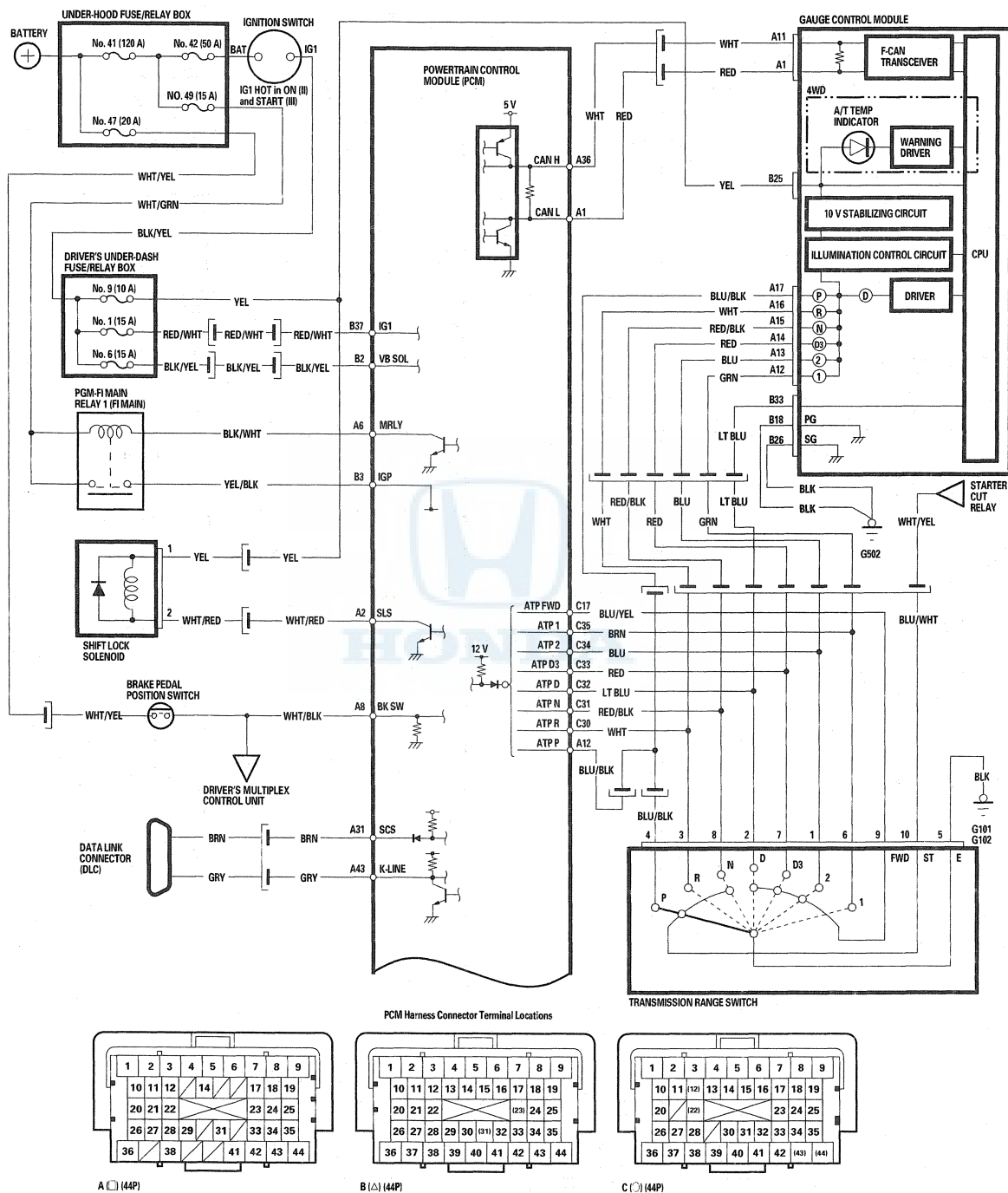
When the vehicle speed increases, the PCM controls A/T clutch pressure control solenoid valve C to increase the LS C pressure (58). The LS C pressure (58) is applied to the lock-up control valve and the lock-up timing valve, and moves them to the left side. Under this condition, the torque converter back pressure is released fully, causing the torque converter clutch to be fully engaged.

NOTE: When used, "left" or "right" indicates direction on the hydraulic circuit.





Circuit Diagram - PCM A/T Control System

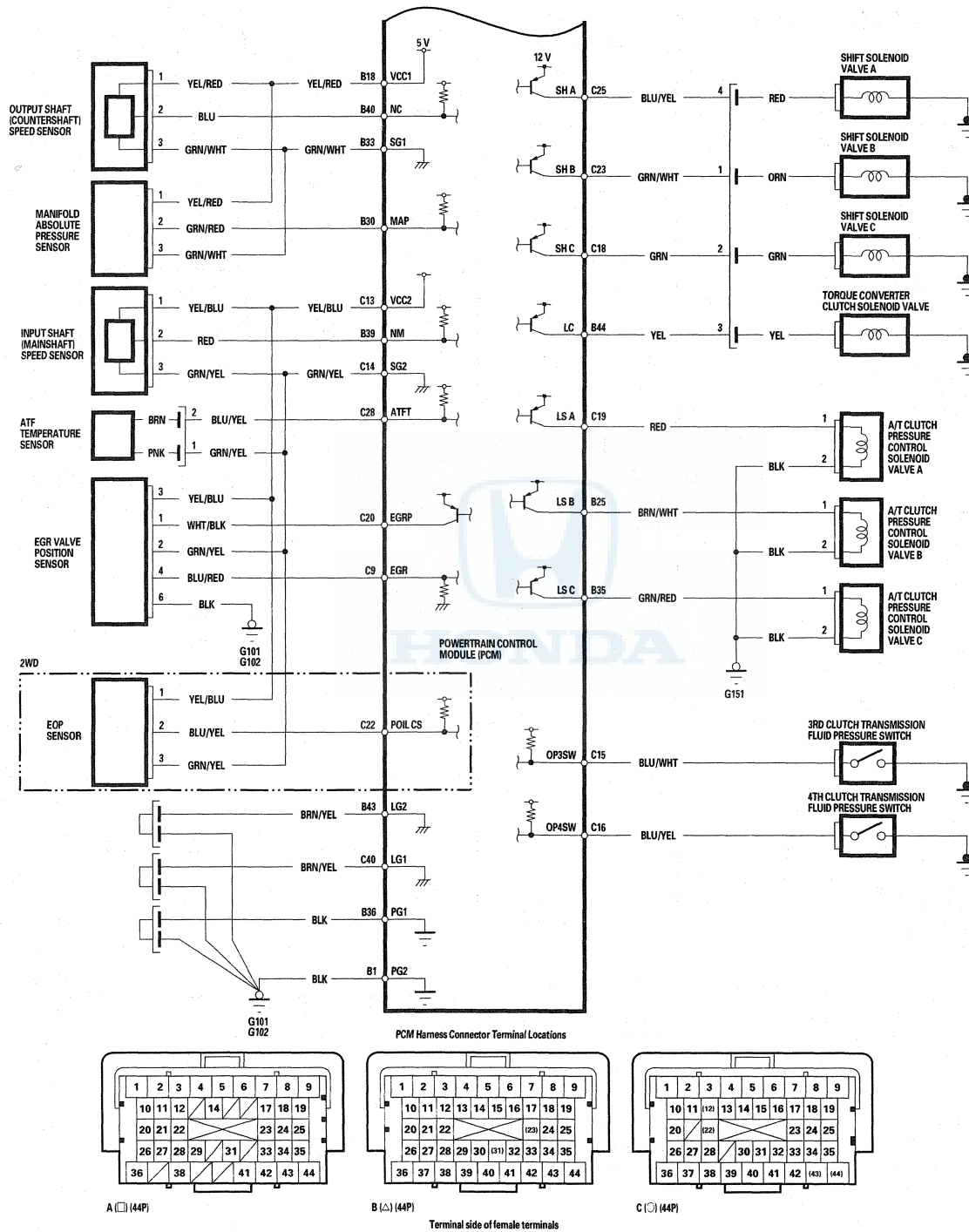


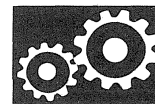
(cont'd)

Automatic Transmission

System Description (cont'd)

Circuit Diagram - PCM A/T Control System (cont'd)





DTC Troubleshooting

DTC P0705: Short in Transmission Range Switch Circuit (Multiple Shift-position Input)

NOTE:

- Before you troubleshoot, record all freeze data and any on-board snapshot, and review General Troubleshooting Information (see page 14-4).
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine.
4. With the brake pedal pressed, move the shift lever through all position. Stop for at least 1 second in each position.
5. Monitor the OBD STATUS for P0705 in the DTCs MENU with the HDS.

Does the screen indicate FAILED?

YES—Go to step 6.

NO—If the screen indicates PASSED, intermittent failure, the system is OK at this time. Check for intermittent short to body ground in the wires between the transmission range switch and the PCM. If the screen indicates NOT COMPLETED, go to step 4.

6. Turn the ignition switch OFF.
7. Inspect the transmission range switch (see page 14-261).

Is the switch OK?

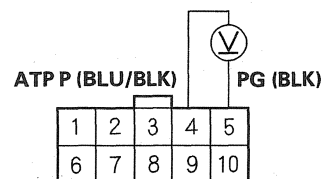
YES—With the switch connector disconnected, go to step 8.

NO—Replace the transmission range switch (see page 14-262), then go to step 50.

8. Turn the ignition switch ON (II).

9. Measure the voltage between transmission range switch connector terminals No. 4 and No. 5.

TRANSMISSION RANGE SWITCH CONNECTOR



Wire side of female terminals

Is there battery voltage?

YES—Go to step 15.

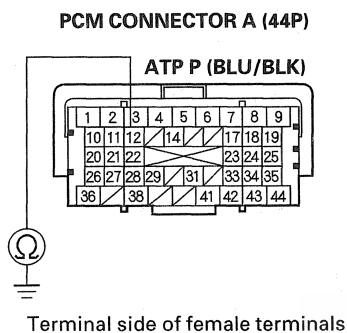
NO—Go to step 10.

(cont'd)

Automatic Transmission

DTC Troubleshooting (cont'd)

10. Turn the ignition switch OFF.
11. Jump the SCS line with the HDS.
12. Disconnect PCM connector A (44P).
13. Check for continuity between PCM connector terminal A12 and body ground.



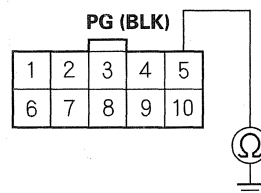
Is there continuity?

YES—Repair short to body ground in the wire between PCM connector terminal A12 and the transmission range switch, then go to step 50.

NO—Go to step 14.

14. Check for continuity between transmission range switch connector terminal No. 5 and body ground.

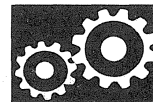
TRANSMISSION RANGE SWITCH CONNECTOR



Is there continuity?

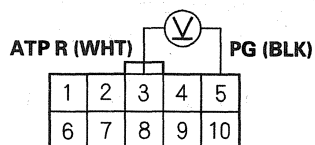
YES—Go to step 57.

NO—Repair open in the wire between transmission range switch connector terminal No. 5 and ground (G101, G102), or repair poor ground (G101, G102), then go to step 50.



15. Measure the voltage between transmission range switch connector terminals No. 3 and No. 5.

**TRANSMISSION RANGE
SWITCH CONNECTOR**



Wire side of female terminals

Is there battery voltage?

YES—Go to step 20.

NO—Go to step 16.

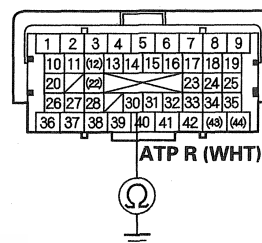
16. Turn the ignition switch OFF.

17. Jump the SCS line with the HDS.

18. Disconnect PCM connector C (44P).

19. Check for continuity between PCM connector terminal C30 and body ground.

PCM CONNECTOR C (44P)



Terminal side of female terminals

Is there continuity?

YES—Repair short to body ground in the wire between PCM connector terminal C30 and the transmission range switch, then go to step 50.

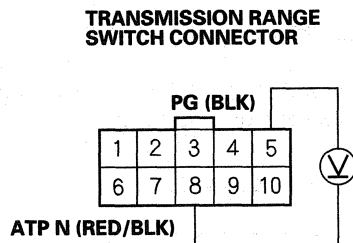
NO—Go to step 57.

(cont'd)

Automatic Transmission

DTC Troubleshooting (cont'd)

20. Measure the voltage between transmission range switch connector terminals No. 5 and No. 8.



Wire side of female terminals

Is there battery voltage?

YES—Go to step 25.

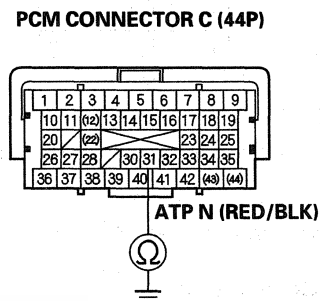
NO—Go to step 21.

21. Turn the ignition switch OFF.

22. Jump the SCS line with the HDS.

23. Disconnect PCM connector C (44P).

24. Check for continuity between PCM connector terminal C31 and body ground.

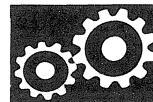


Terminal side of female terminals

Is there continuity?

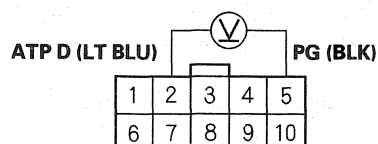
YES—Repair short to body ground in the wire between PCM connector terminal C31 and the transmission range switch, then go to step 50.

NO—Go to step 57.



25. Measure the voltage between transmission range switch connector terminals No. 2 and No. 5.

**TRANSMISSION RANGE
SWITCH CONNECTOR**



Wire side of female terminals

Is there battery voltage?

YES—Go to step 30.

NO—Go to step 26.

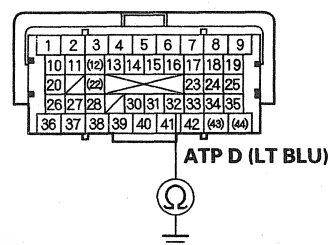
26. Turn the ignition switch OFF.

27. Jump the SCS line with the HDS.

28. Disconnect PCM connector C (44P).

29. Check for continuity between PCM connector terminal C32 and body ground.

PCM CONNECTOR C (44P)



Terminal side of female terminals

Is there continuity?

YES—Repair short to body ground in the wire between PCM connector terminal C32 and the transmission range switch, then go to step 50.

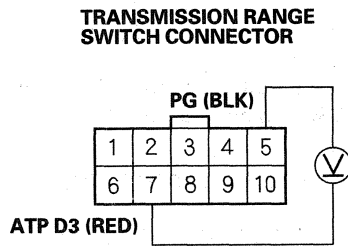
NO—Go to step 57.

(cont'd)

Automatic Transmission

DTC Troubleshooting (cont'd)

30. Measure the voltage between transmission range switch connector terminals No. 5 and No. 7.



Wire side of female terminals

Is there battery voltage?

YES—Go to step 35.

NO—Go to step 31.

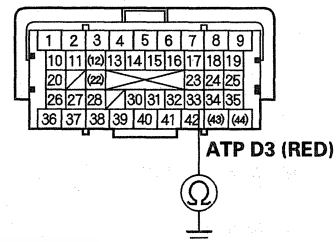
31. Turn the ignition switch OFF.

32. Jump the SCS line with the HDS.

33. Disconnect PCM connector C (44P).

34. Check for continuity between PCM connector terminal C33 and body ground.

PCM CONNECTOR C (44P)



Terminal side of female terminals

Is there continuity?

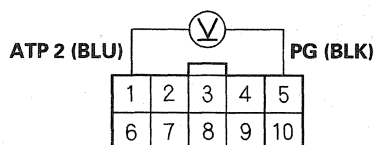
YES—Repair short to body ground in the wire between PCM connector terminal C33 and the transmission range switch, then go to step 50.

NO—Go to step 57.



35. Measure the voltage between transmission range switch connector terminals No. 1 and No. 5.

**TRANSMISSION RANGE
SWITCH CONNECTOR**



Wire side of female terminals

Is there battery voltage?

YES—Go to step 40.

NO—Go to step 36.

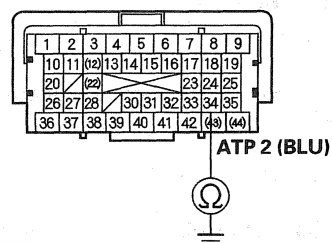
36. Turn the ignition switch OFF.

37. Jump the SCS line with the HDS.

38. Disconnect PCM connector C (44P).

39. Check for continuity between PCM connector terminal C34 and body ground.

PCM CONNECTOR C (44P)



Is there continuity?

YES—Repair short to body ground in the wire between PCM connector terminal C34 and the transmission range switch, then go to step 50.

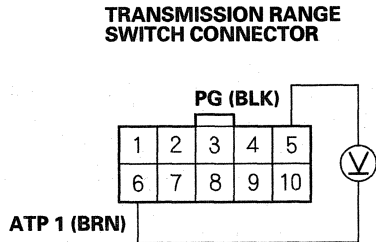
NO—Go to step 57.

(cont'd)

Automatic Transmission

DTC Troubleshooting (cont'd)

40. Measure the voltage between transmission range switch connector terminals No. 5 and No. 6.



Wire side of female terminals

Is there battery voltage?

YES—Go to step 45.

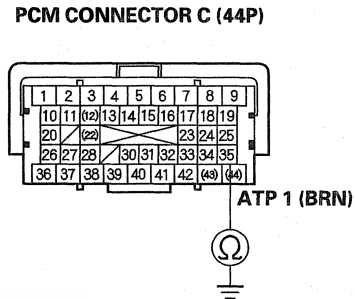
NO—Go to step 41.

41. Turn the ignition switch OFF.

42. Jump the SCS line with the HDS.

43. Disconnect PCM connector C (44P).

44. Check for continuity between PCM connector terminal C35 and body ground.



Terminal side of female terminals

Is there continuity?

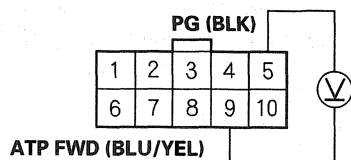
YES—Repair short to body ground in the wire between PCM connector terminal C35 and the transmission range switch, then go to step 50.

NO—Go to step 57.



45. Measure the voltage between transmission range switch connector terminals No. 5 and No. 9.

**TRANSMISSION RANGE
SWITCH CONNECTOR**



Wire side of female terminals

Is there battery voltage?

YES—Go to step 57.

NO—Go to step 46.

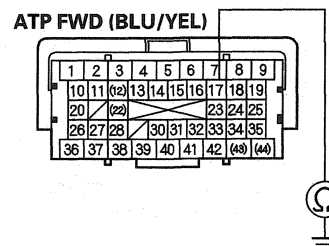
46. Turn the ignition switch OFF.

47. Jump the SCS line with the HDS.

48. Disconnect PCM connector C (44P).

49. Check for continuity between PCM connector terminal C17 and body ground.

PCM CONNECTOR C (44P)



Terminal side of female terminals

Is there continuity?

YES—Repair short to body ground in the wire between PCM connector terminal C17 and the transmission range switch, then go to step 50.

NO—Go to step 57.

(cont'd)

Automatic Transmission

DTC Troubleshooting (cont'd)

50. Reconnect all connectors.

51. Turn the ignition switch ON (II).

52. Clear the DTC with the HDS.

53. Start the engine.

54. With the brake pedal pressed, move the shift lever through all positions. Stop for at least 1 second in each position.

55. Check for DTCs with the HDS.

Is DTC P0705 indicated?

YES—Check for intermittent short to body ground in the wire between the transmission range switch and the PCM, then go to step 1.

NO—Go to step 56.

56. Monitor the OBD STATUS for P0705 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. If any other DTCs were indicated in step 55, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for intermittent short to body ground in the wire between the transmission range switch and the PCM, then go to step 1. If the screen indicates NOT COMPLETED, go to step 54.

57. Update the PCM if it does not have the latest software (see page 14-8), or substitute a known-good PCM (see page 14-9).

58. Start the engine.

59. With the brake pedal pressed, move the shift lever through all positions. Stop for at least 1 second in each position.

60. Check for DTCs with the HDS.

Is DTC P0705 indicated?

YES—Check for intermittent short to body ground in the wire between the transmission range switch and the PCM. If the PCM was updated, substitute a known-good PCM (see page 14-9), then go to step 58. If the PCM was substituted, go to step 1.

NO—Go to step 61.

61. Monitor the OBD STATUS for P0705 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-230). If any other DTCs were indicated in step 60, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for intermittent short to body ground in the wire between the transmission range switch and the PCM. If the PCM was updated, substitute a known-good PCM (see page 14-9), then go to step 58. If the PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, go to step 58.



DTC P0706: Open in Transmission Range Switch Circuit

NOTE:

- Before you troubleshoot, record all freeze data and any on-board snapshot, and review General Troubleshooting Information (see page 14-4).
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. 4WD: Raise the vehicle on a lift, make sure it is securely supported, and allow all four wheels to rotate freely.
2WD: Raise the front of the vehicle, make sure it is securely supported, and allow the front wheels to rotate freely. Or raise the vehicle on a lift.
4. Start the engine, disable the VSA by pressing the VSA OFF switch, run the vehicle in the D position until the vehicle speed reaches 30 mph (48 km/h), then slow down and stop the wheels.
5. Turn the ignition switch OFF, and repeat the test-drive in step 4.
6. Monitor the OBD STATUS for P0706 in the DTCs MENU with the HDS.

Does the screen indicate FAILED?

YES—Go to step 7.

NO—If the screen indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals between the transmission range switch and the PCM. If the screen indicates NOT COMPLETED, go to step 4.

7. Turn the ignition switch OFF.

8. Inspect the transmission range switch (see page 14-261).

Is the switch OK?

YES—Go to step 9.

NO—Replace the transmission range switch (see page 14-262), then go to step 30.

9. Adjust the shift cable (see page 14-256).

10. Turn the ignition switch ON (II).

11. Clear the DTC with the HDS.

12. Start the engine, disable the VSA by pressing the VSA OFF switch, run the vehicle in the D position until the vehicle speed reaches 30 mph (48 km/h), then slow down and stop the wheels.

13. Turn the ignition switch OFF, and repeat the test-drive in step 12.

14. Monitor the OBD STATUS for P0706 in the DTCs MENU with the HDS.

Does the screen indicate FAILED?

YES—Go to step 15.

NO—If the screen indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals between the transmission range switch and the PCM. If the screen indicates NOT COMPLETED, go to step 12.

15. Shift to the D position, and check the ATP FWD and ATP D in the DATA LIST with the HDS.

Are ATP FWD and ATP D ON?

YES—Go to step 16.

NO—Go to step 22.

(cont'd)

Automatic Transmission

DTC Troubleshooting (cont'd)

16. Shift to the D3 position, and check the ATP FWD and ATP D3 in the DATA LIST with the HDS.

Are ATP FWD and ATP D3 ON?

YES—Go to step 17.

NO—Go to step 22.

17. Shift to the 2 position, and check the ATP FWD and ATP 2 in the DATA LIST with the HDS.

Are ATP FWD and ATP 2 ON?

YES—Go to step 18.

NO—Go to step 22.

18. Clear the DTC with the HDS.

19. Start the engine, disable the VSA by pressing the VSA OFF switch, run the vehicle in the D position until the vehicle speed reaches 30 mph (48 km/h), then slow down and stop the wheels.

20. Turn the ignition switch OFF, and repeat the test-drive in step 19.

21. Monitor the OBD STATUS for P0706 in the DTCs MENU with the HDS.

Does the screen indicate FAILED?

YES—Go to step 22.

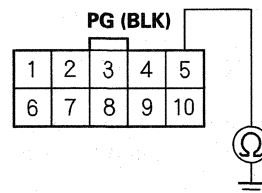
NO—If the screen indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals between the transmission range switch and the PCM. If the screen indicates NOT COMPLETED, go to step 19.

22. Turn the ignition switch OFF.

23. Disconnect the transmission range switch connector.

24. Check for continuity between transmission range switch connector terminal No. 5 and body ground.

TRANSMISSION RANGE SWITCH CONNECTOR



Wire side of female terminals

Is there continuity?

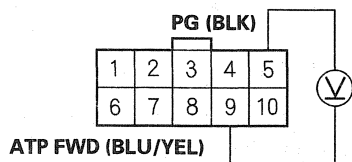
YES—Go to step 25.

NO—Repair open in the wire between the transmission range switch and ground (G101, G102), or repair poor ground (G101, G102), then go to step 30.



25. Turn the ignition switch ON (II).
26. Measure the voltage between transmission range switch connector terminals No. 5 and No. 9.

TRANSMISSION RANGE SWITCH CONNECTOR



Wire side of female terminals

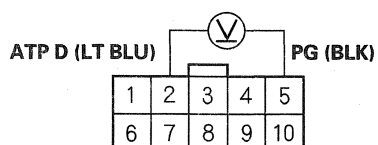
Is there voltage?

YES—Go to step 27.

NO—Repair open in the wire between the transmission range switch and PCM connector terminal C17, then go to step 30.

27. Measure the voltage between transmission range switch connector terminals No. 2 and No. 5.

TRANSMISSION RANGE SWITCH CONNECTOR



Wire side of female terminals

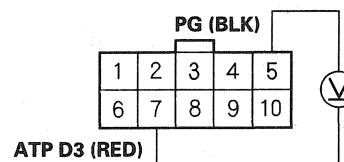
Is there voltage?

YES—Go to step 28.

NO—Repair open in the wire between the transmission range switch and PCM connector terminal C32, then go to step 30.

28. Measure the voltage between transmission range switch connector terminals No. 5 and No. 7.

TRANSMISSION RANGE SWITCH CONNECTOR



Wire side of female terminals

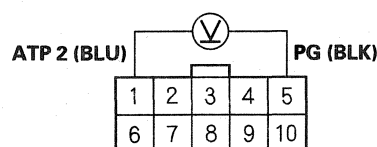
Is there voltage?

YES—Go to step 29.

NO—Repair open in the wire between the transmission range switch and PCM connector terminal C32, then go to step 30.

29. Measure the voltage between transmission range switch connector terminals No. 1 and No. 5.

TRANSMISSION RANGE SWITCH CONNECTOR



Wire side of female terminals

Is there voltage?

YES—Go to step 37.

NO—Repair open in the wire between the transmission range switch and PCM connector terminal C34, then go to step 30.

(cont'd)

Automatic Transmission

DTC Troubleshooting (cont'd)

30. Reconnect all connectors.

31. Turn the ignition switch ON (II).

32. Clear the DTC with the HDS.

33. Start the engine, run the vehicle in the D position until the vehicle speed reaches 30 mph (48 km/h), then slow down and stop the wheels.

34. Turn the ignition switch OFF, and repeat the test-drive in step 33.

35. Check for DTCs with the HDS.

Is DTC P0706 indicated?

YES—Check for poor connections or loose terminals between the transmission range switch and the PCM, then go to step 1.

NO—Go to step 36.

36. Monitor the OBD STATUS for P0706 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. If any other DTCs were indicated in step 35, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals between the transmission range switch and the PCM, then go to step 1. If the screen indicates NOT COMPLETED, go to step 33.

37. Update the PCM if it does not have the latest software (see page 14-8), or substitute a known-good PCM (see page 14-9).

38. Start the engine, run the vehicle in the D position until the vehicle speed reaches 30 mph (48 km/h), then slow down and stop the wheels.

39. Turn the ignition switch OFF, and repeat the test-drive in step 38.

40. Check for DTCs with the HDS.

Is DTC P0706 indicated?

YES—Check for poor connections or loose terminals between the transmission range switch and the PCM. If the PCM was updated, substitute a known-good PCM (see page 14-9), then go to step 38. If the PCM was substituted, go to step 1.

NO—Go to step 41.

41. Monitor the OBD STATUS for P0706 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-230). If any other DTCs were indicated in step 40, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals between the transmission range switch and the PCM. If the PCM was updated, substitute a known-good PCM (see page 14-9), then go to step 38. If the PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, go to step 38.



DTC P0711: Problem in ATF Temperature Sensor Circuit

NOTE:

- Before you troubleshoot, record all freeze data and any on-board snapshot, and review General Troubleshooting Information (see page 14-4).
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

1. Turn the ignition switch ON (II).
2. Check the ATF TEMP SENSOR in the DATA LIST with the HDS.

Does the ATF temperature exceed an ambient air temperature?

YES—Record the ATF temperature. Leave the engine off for at least 30 minutes, then go to step 3.

NO—Record the ATF temperature. Test the stall speed RPM (see page 14-187) three times. Go to step 3 after stall speed testing.

3. Check the ATF TEMP SENSOR in the DATA LIST with the HDS.

Did the ATF temperature change?

YES—Leave the engine off for at least 30 minutes, then go to step 4.

NO—Replace the ATF temperature sensor (see page 14-212), then go to step 6.

4. Check the ECT SENSOR in the DATA LIST with the HDS.

Does the ECT SENSOR read about the same as the ambient air temperature?

YES—Go to step 5.

NO—Leave the engine off until the ECT SENSOR reads the same as ambient air temperature, then go to step 5.

5. Check ATF TEMP SENSOR in the DATA LIST with the HDS.

Does the ATF temperature read about the same as ECT SENSOR?

YES—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the ATF temperature sensor and the PCM. ■

NO—Replace the ATF temperature sensor (see page 14-212), then go to step 6.

6. Reconnect all connectors.
7. Turn the ignition switch ON (II).
8. Clear the DTC with the HDS.
9. Start the engine, and warm it up to normal operating temperature (the radiator fan comes on).
10. Turn the ignition switch OFF, and allow engine coolant temperature to cool to ambient temperature.

(cont'd)

Automatic Transmission

DTC Troubleshooting (cont'd)

11. Start the engine, and warm it up to normal operating temperature (the radiator fan comes on). Let the engine at least another 20 seconds, then drive the vehicle at speeds over 19 mph (31 km/h) for 5 minutes or more.

12. Check for DTCs with the HDS.

Is DTC P0711 indicated?

YES—Check for poor connections or loose terminals between the ATF temperature sensor and the PCM, then go to step 1.

NO—Go to step 13.

13. Monitor the OBD STATUS for P0711 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. If any other DTCs were indicated in step 12, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals between the ATF temperature sensor and the PCM, then go to step 1. If the screen indicates NOT COMPLETED, go to step 8.

14. Update the PCM if it does not have the latest software (see page 14-8), or substitute a known-good PCM (see page 14-9).

15. Start the engine, and warm it up to normal operating temperature (the radiator fan comes on).

16. Turn the ignition switch OFF, and allow engine coolant temperature to cool to ambient temperature.

17. Start the engine, and warm it up to normal operating temperature (the radiator fan comes on). Let the engine at least another 20 seconds, then drive the vehicle at speeds over 19 mph (31 km/h) for 5 minutes or more.

18. Check for DTCs with the HDS.

Is DTC P0711 indicated?

YES—Check for poor connections or loose terminals between the ATF temperature sensor and the PCM. If the PCM was updated, substitute a known-good PCM (see page 14-9), then go to step 15. If the PCM was substituted, go to step 1.

NO—Go to step 19.

19. Monitor the OBD STATUS for P0711 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-230). If any other DTCs were indicated in step 18, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals between the ATF temperature sensor and the PCM. If the PCM was updated, substitute a known-good PCM (see page 14-9), then go to step 15. If the PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, go to step 15.



DTC P0712: Short in ATF Temperature Sensor Circuit

NOTE:

- Before you troubleshoot, record all freeze data and any on-board snapshot, and review General Troubleshooting Information (see page 14-4).
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

1. Turn the ignition switch ON (II).
2. Check the ATF TEMP SENSOR voltage in the DATA LIST with the HDS.

Is the ATF temperature sensor voltage 0.07 V or less?

YES—Go to step 3.

NO—Intermittent failure, the system is OK at this time. Check for intermittent short in the ATFT wire between the ATF temperature sensor and the PCM. ■

3. Turn the ignition switch OFF.
4. Disconnect the ATF temperature sensor connector.
5. Turn the ignition switch ON (II).
6. Check the ATF temperature sensor voltage in the DATA LIST with the HDS.

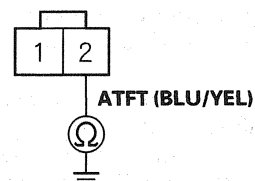
Is the ATF temperature sensor voltage 0.07 V or less?

YES—Go to step 7.

NO—Replace the ATF temperature sensor (see page 14-212), then go to step 11.
7. Turn the ignition switch OFF.
8. Jump the SCS line with the HDS.
9. Disconnect PCM connector C (44P).

10. Check for continuity between ATF temperature sensor connector terminal No. 2 and body ground.

ATF TEMPERATURE SENSOR CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair short to body ground in the wire between PCM connector terminal C28 and the ATF temperature sensor connector No. 2 terminal, then go to step 11.

NO—Go to step 17.

11. Reconnect all connectors.
12. Turn the ignition switch ON (II).
13. Clear the DTC with the HDS.
14. Start the engine in the P position, and let it run for at least 20 seconds.
15. Check for DTCs with the HDS.

Is DTC P0712 indicated?

YES—Check for intermittent short to body ground in the wire between the ATF temperature sensor and the PCM, then go to step 1.

NO—Go to step 16.

(cont'd)

Automatic Transmission

DTC Troubleshooting (cont'd)

16. Monitor the OBD STATUS for P0712 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. If any other DTCs were indicated in step 15, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for intermittent short to body ground in the wire between the ATF temperature sensor and the PCM, then go to step 1. If the screen indicates NOT COMPLETED, go to step 14.

17. Update the PCM if it does not have the latest software (see page 14-8), or substitute a known-good PCM (see page 14-9).
18. Start the engine in the P position, and let it run for at least 20 seconds.
19. Check for DTCs with the HDS.

Is DTC P0712 indicated?

YES—Check for intermittent short to body ground in the wire between the ATF temperature sensor and the PCM. If the PCM was updated, substitute a known-good PCM (see page 14-9), then go to step 18. If the PCM was substituted, go to step 1.

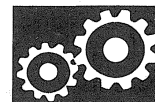
NO—Go to step 20.

20. Monitor the OBD STATUS for P0712 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-230). If any other DTCs were indicated in step 19, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for intermittent short to body ground in the wire between the ATF temperature sensor and the PCM. If the PCM was updated, substitute a known-good PCM (see page 14-9), then go to step 18. If the PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, go to step 18.



DTC P0713: Open in ATF Temperature Sensor Circuit

NOTE:

- Before you troubleshoot, record all freeze data and any on-board snapshot, and review General Troubleshooting Information (see page 14-4).
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

1. Turn the ignition switch ON (II).
2. Check the ATF TEMP SENSOR voltage in the DATA LIST with the HDS.

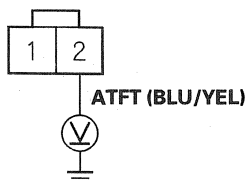
Does the ATF temperature sensor voltage exceed 4.93 V?

YES—Go to step 3.

NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the ATF temperature sensor and the PCM. ■

3. Turn the ignition switch OFF.
4. Disconnect the ATF temperature sensor connector at the transmission end cover.
5. Turn the ignition switch ON (II).
6. Measure the voltage between ATF temperature sensor connector terminal No. 2 and body ground.

ATF TEMPERATURE SENSOR CONNECTOR



Wire side of female terminals

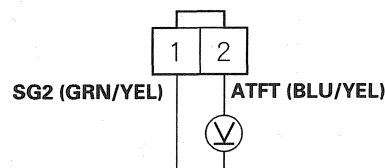
Is there about 5 V?

YES—Go to step 7.

NO—Go to step 8.

7. Measure the voltage between ATF temperature sensor connector terminals No. 1 and No. 2.

ATF TEMPERATURE SENSOR CONNECTOR



Wire side of female terminals

Is there about 5 V?

YES—Replace the ATF temperature sensor (see page 14-212), then go to step 12.

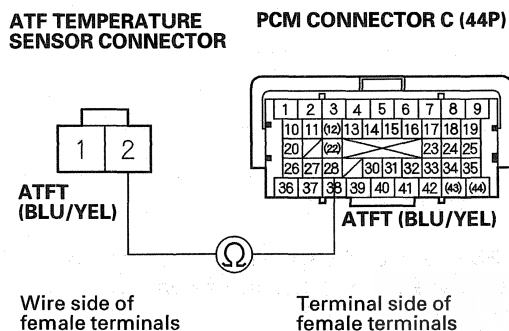
NO—Repair open in the wire between PCM connector terminal C14 and the ATF temperature sensor connector, then go to step 12.

(cont'd)

Automatic Transmission

DTC Troubleshooting (cont'd)

8. Turn the ignition switch OFF.
9. Jump the SCS line with the HDS.
10. Disconnect PCM connector C (44P).
11. Check for continuity between PCM connector terminal C28 and ATF temperature sensor connector terminal No. 2.



Is there continuity?

YES—Go to step 18.

NO—Repair open in the wire between PCM connector terminal C28 and the ATF temperature sensor connector, then go to step 12.

12. Reconnect all connectors.
13. Turn the ignition switch ON (II).
14. Clear the DTC with the HDS.
15. Start the engine in the P position, and let it run for at least 20 seconds.
16. Check for DTCs with the HDS.

Is DTC P0713 indicated?

YES—Check for poor connections or loose terminals between the ATF temperature sensor and the PCM, then go to step 1.

NO—Go to step 17.

17. Monitor the OBD STATUS for P0713 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. If any other DTCs were indicated in step 16, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals between the ATF temperature sensor and the PCM, then go to step 1. If the screen indicates NOT COMPLETED, go to step 15.

18. Update the PCM if it does not have the latest software (see page 14-8), or substitute a known-good PCM (see page 14-9).
19. Start the engine in the P position, and let it run for at least 20 seconds.
20. Check for DTCs with the HDS.

Is DTC P0713 indicated?

YES—Check for poor connections or loose terminals between the ATF temperature sensor and the PCM. If the PCM was updated, substitute a known-good PCM (see page 14-9), then go to step 19. If the PCM was substituted, go to step 1.

NO—Go to step 21.

21. Monitor the OBD STATUS for P0713 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-230). If any other DTCs were indicated in step 20, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals between the ATF temperature sensor and the PCM. If the PCM was updated, substitute a known-good PCM (see page 14-9), then go to step 19. If the PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, go to step 19.



DTC P0716: Problem in Input Shaft (Mainshaft) Speed Sensor Circuit

DTC P0717: Problem in Input Shaft (Mainshaft) Speed Sensor Circuit (No Signal Input)

NOTE:

- Before you troubleshoot, record all freeze data and any on-board snapshot, and review General Troubleshooting Information (see page 14-4).
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Check for proper input shaft (mainshaft) speed sensor installation (see page 14-209).
4. 4WD: Raise the vehicle on a lift, make sure it is securely supported, and allow all four wheels to rotate freely.
2WD: Raise the front of the vehicle, make sure it is securely supported, and allow the front wheels to rotate freely. Or raise the vehicle on a lift.
5. Start the engine, disable the VSA by pressing the VSA OFF switch, run the vehicle in the D position, and hold the vehicle at speeds over 12 mph (20 km/h) for at least 10 seconds. Slow down and stop the wheels.
6. Monitor the OBD STATUS for P0716 or P0717 in the DTCs MENU with the HDS.

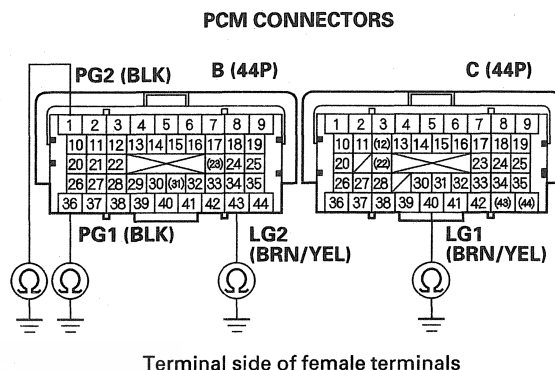
Does the screen indicate FAILED?

YES—Go to step 7.

NO—If the screen indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals between the input shaft (mainshaft) speed sensor and the PCM. If the screen indicates NOT COMPLETED, go to step 5.

7. Turn the ignition switch OFF.
8. Jump the SCS line with the HDS.

9. Disconnect PCM connectors B (44P) and C (44P), and the input shaft (mainshaft) speed sensor connector.
10. Check for continuity between PCM connector terminals B1, B36, B43, and C40 and body ground individually.



Is there continuity?

YES—Go to step 11.

NO—Repair open in the wires between PCM connector terminals B1, B36, B43, C40, and ground (G101, G102), or repair poor ground (G101, G102), then go to step 31.

11. Connect PCM connectors B (44P) and C (44P).
12. Turn the ignition switch ON (II).

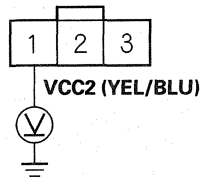
(cont'd)

Automatic Transmission

DTC Troubleshooting (cont'd)

13. Measure the voltage between input shaft (mainshaft) speed sensor connector terminal No. 1 and body ground.

INPUT SHAFT (MAINSHAFT)
SPEED SENSOR CONNECTOR



Wire side of female terminals

Is there about 5 V?

YES—Go to step 18.

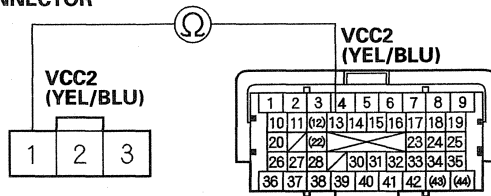
NO—Go to step 14.

14. Turn the ignition switch OFF.

15. Disconnect PCM connector C (44P).

16. Check for continuity between PCM connector terminal C13 and input shaft (mainshaft) speed sensor connector terminal No. 1.

INPUT SHAFT (MAINSHAFT)
SPEED SENSOR CONNECTOR



Wire side of
female terminals

Terminal side of
female terminals

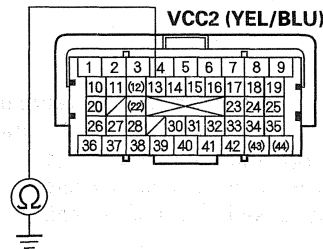
Is there continuity?

YES—Go to step 17.

NO—Repair open in the wire between PCM connector terminal C13 and the input shaft (mainshaft) speed sensor, then go to step 29.

17. Check for continuity between PCM connector terminal C13 and body ground.

PCM CONNECTOR C (44P)



Terminal side of female terminals

Is there continuity?

YES—Repair short to body ground in the wire between PCM connector terminal C13 and the input shaft (mainshaft) speed sensor, then go to step 29.

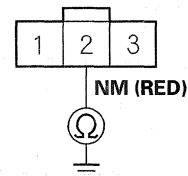
NO—Go to step 35.

18. Turn the ignition switch OFF.

19. Disconnect PCM connector B (44P).

20. Check for continuity between input shaft (mainshaft) speed sensor connector terminal No. 2 and body ground.

INPUT SHAFT (MAINSHAFT)
SPEED SENSOR CONNECTOR

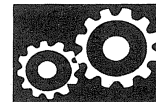


Wire side of female terminals

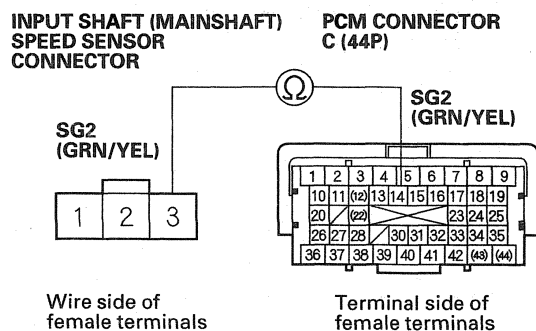
Is there continuity?

YES—Repair short to body ground in the wire between PCM connector terminal B39 and the input shaft (mainshaft) speed sensor, then go to step 29.

NO—Go to step 21.



21. Disconnect PCM connector C (44P).
22. Check for continuity between PCM connector terminal C14 and input shaft (mainshaft) speed sensor connector terminal No. 3.

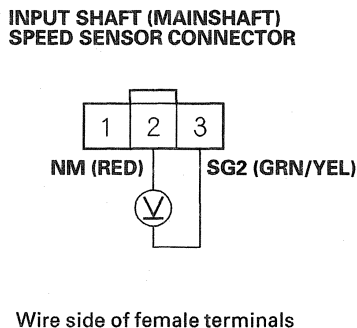


Is there continuity?

YES—Go to step 23.

NO—Repair open in the wire between the input shaft (mainshaft) speed sensor and PCM connector terminal C14, then go to step 29.

23. Connect PCM connectors B (44P) and C (44P).
24. Turn the ignition switch ON (II).
25. Measure the voltage between input shaft (mainshaft) speed sensor connector terminals No. 2 and No. 3.



Is there about 5 V?

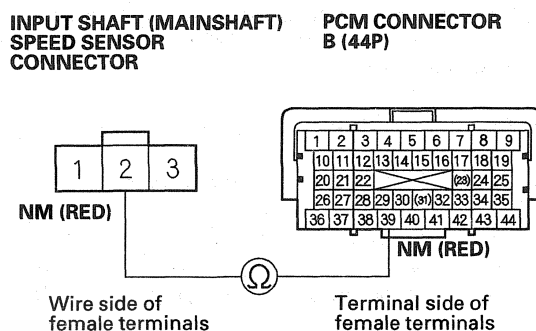
YES—Go to step 29.

NO—Go to step 26.

26. Turn the ignition switch OFF.

27. Disconnect PCM connector B (44P).

28. Check for continuity between PCM connector terminal B39 and input shaft (mainshaft) speed sensor connector terminal No. 2.



Is there continuity?

YES—Go to step 35.

NO—Repair open in the wire between PCM connector terminal B39 and the input shaft (mainshaft) speed sensor, then go to step 29.

(cont'd)

Automatic Transmission

DTC Troubleshooting (cont'd)

29. Reconnect all connectors.

30. Turn the ignition switch ON (II).

31. Clear the DTC with the HDS.

32. Start the engine, disable the VSA by pressing the VSA OFF switch, run the vehicle in the D position and hold the vehicle at speeds over 12 mph (20 km/h) for at least 10 seconds. Slow down and stop the wheels.

33. Check for DTCs with the HDS.

Is DTC P0716 or P0717 indicated?

YES—Check for poor connections or loose terminals between the input shaft (mainshaft) speed sensor and the PCM, then go to step 1.

NO—Go to step 34.

34. Monitor the OBD STATUS for P0716 or P0717 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. If any other DTCs were indicated in step 33, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals between the input shaft (mainshaft) speed sensor and the PCM, then go to step 1. If the screen indicates NOT COMPLETED, go to step 32.

35. Update the PCM if it does not have the latest software (see page 14-8), or substitute a known-good PCM (see page 14-9).

36. Start the engine, disable the VSA by pressing the VSA OFF switch, run the vehicle in the D position and hold the vehicle at speeds over 12 mph (20 km/h) for at least 10 seconds. Slow down and stop the wheels.

37. Check for DTCs with the HDS.

Is DTC P0716 or P0717 indicated?

YES—Check for poor connections or loose terminals between the input shaft (mainshaft) speed sensor and the PCM. If the PCM was updated, substitute a known-good PCM (see page 14-9), then go to step 36. If the PCM was substituted, go to step 1.

NO—Go to step 38.

38. Monitor the OBD STATUS for P0716 or P0717 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-230). If any other DTCs were indicated in step 37, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals between the input shaft (mainshaft) speed sensor and the PCM. If the PCM was updated, substitute a known-good PCM (see page 14-9), then go to step 36. If the PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, go to step 36.



DTC P0718: Input Shaft (Mainshaft) Speed Sensor Intermittent Failure

NOTE:

- Before you troubleshoot, record all freeze data and any on-board snapshot, and review General Troubleshooting Information (see page 14-4).
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Test-drive the vehicle at speeds over 12 mph (20 km/h) in the D position through all five gears.
4. Turn the ignition switch OFF, and repeat the test-drive in step 3.
5. Monitor the OBD STATUS for P0718 in the DTCs MENU with the HDS.

Does the screen indicate FAILED?

YES—Go to step 6.

NO—If the screen indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals between the input shaft (mainshaft) speed sensor and the PCM. If the screen indicates NOT COMPLETED, go to step 3.

6. Turn the ignition switch OFF.
7. Disconnect the input shaft (mainshaft) speed sensor connector, and inspect the connector and connector terminals to be sure they are making good contact.

Are the connector terminals OK?

YES—Go to step 8.

NO—Repair the connector terminals, then go to step 8.

8. Connect the input shaft (mainshaft) speed sensor connector.

9. Test-drive the vehicle at speeds over 12 mph (20 km/h) in the D position through all five gears.

10. Turn the ignition switch OFF, and repeat the test-drive in step 9.

11. Monitor the OBD STATUS for P0718 in the DTCs MENU with the HDS.

Does the screen indicate FAILED?

YES—Go to step 12.

NO—If the screen indicated PASSED, troubleshooting is complete. If the screen indicates NOT COMPLETED, go to step 9 and recheck.

12. Turn the ignition switch OFF.
13. Jump the SCS line with the HDS.
14. Disconnect PCM connector B (44P).
15. Disconnect the input shaft (mainshaft) speed sensor connector.

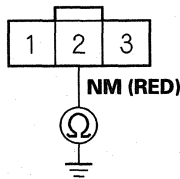
(cont'd)

Automatic Transmission

DTC Troubleshooting (cont'd)

16. Check for continuity between input shaft (mainshaft) speed sensor connector terminal No. 2 and body ground.

**INPUT SHAFT (MAINSHAFT)
SPEED SENSOR CONNECTOR**



Wire side of female terminals

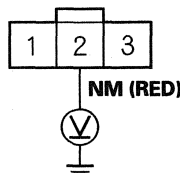
Is there continuity?

YES—Repair short to body ground in the wire between PCM connector terminal B39 and the input shaft (mainshaft) speed sensor, then go to step 23.

NO—Go to step 17.

17. Connect PCM connector B (44P).
18. Turn the ignition switch ON (II).
19. Measure the voltage between input shaft (mainshaft) speed sensor connector terminal No. 2 and body ground.

**INPUT SHAFT (MAINSHAFT)
SPEED SENSOR CONNECTOR**



Wire side of female terminals

Is there about 5 V?

YES—Replace the input shaft (mainshaft) speed sensor (see page 14-209), then go to step 23.

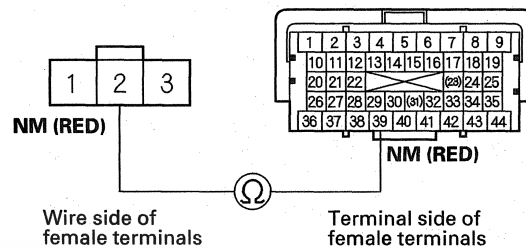
NO—Go to step 20.

20. Turn the ignition switch OFF.

21. Disconnect PCM connector B (44P).

22. Check for continuity between PCM connector terminal B39 and input shaft (mainshaft) speed sensor connector terminal No. 2.

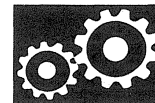
**INPUT SHAFT (MAINSHAFT)
SPEED SENSOR
CONNECTOR** **PCM CONNECTOR
B (44P)**



Is there continuity?

YES—Go to step 30.

NO—Repair open in the wire between PCM connector terminal B39 and the input shaft (mainshaft) speed sensor, then go to step 23.



23. Reconnect all connectors.

24. Turn the ignition switch ON (II).

25. Clear the DTC with the HDS.

26. Test-drive the vehicle at speeds over 12 mph (20 km/h) in the D position through all five gears.

27. Turn the ignition switch OFF, and repeat the test-drive in step 26.

28. Check for DTCs with the HDS.

Is DTC P0718 indicated?

YES—Check for poor connections or loose terminals between the input shaft (mainshaft) speed sensor and the PCM, then go to step 1.

NO—Go to step 29.

29. Monitor the OBD STATUS for P0718 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. If any other DTCs were indicated in step 28, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals between the input shaft (mainshaft) speed sensor and the PCM, then go to step 1. If the screen indicates NOT COMPLETED, go to step 26.

30. Update the PCM if it does not have the latest software (see page 14-8), or substitute a known-good PCM (see page 14-9).

31. Test-drive the vehicle at speeds over 12 mph (20 km/h) in the D position through all five gears.

32. Turn the ignition switch OFF, and repeat the test-drive in step 31.

33. Check for DTCs with the HDS.

Is DTC P0718 indicated?

YES—Check for poor connections or loose terminals between the input shaft (mainshaft) speed sensor and the PCM. If the PCM was updated, substitute a known-good PCM (see page 14-9), then go to step 31. If the PCM was substituted, go to step 1.

NO—Go to step 34.

34. Monitor the OBD STATUS for P0718 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-230). If any other DTCs were indicated in step 33, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals between the input shaft (mainshaft) speed sensor and the PCM. If the PCM was updated, substitute a known-good PCM (see page 14-9), then go to step 31. If the PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, go to step 31.

Automatic Transmission

DTC Troubleshooting (cont'd)

DTC P0721: Problem in Output Shaft (Countershaft) Speed Sensor Circuit

DTC P0722: Problem in Output Shaft (Countershaft) Speed Sensor Circuit (No Signal Input)

NOTE:

- Before you troubleshoot, record all freeze data and any on-board snapshot, and review General Troubleshooting Information (see page 14-4).
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Check for proper output shaft (countershaft) speed sensor installation (see page 14-209).
4. 4WD: Raise the vehicle on a lift, make sure it is securely supported, and allow all four wheels to rotate freely.
2WD: Raise the front of the vehicle, make sure it is securely supported, and allow the front wheels to rotate freely. Or raise the vehicle on a lift.
5. Start the engine, disable the VSA by pressing the VSA OFF button, run the vehicle in the D position with engine speed 2,000 rpm or higher for at least 10 seconds. Slow down and stop the wheels.
6. Monitor the OBD STATUS for P0721 or P0722 in the DTCs MENU with the HDS.

Does the screen indicate FAILED?

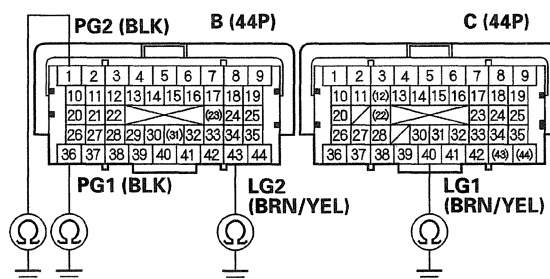
YES—Go to step 7.

NO—If the screen indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals between the output shaft (countershaft) speed sensor and the PCM. If the screen indicates NOT COMPLETED, go to step 5 and recheck.

7. Turn the ignition switch OFF.
8. Jump the SCS line with the HDS.

9. Disconnect PCM connectors B (44P), C (44P), and the output shaft (countershaft) speed sensor connector.
10. Check for continuity between PCM connector terminals B1, B36, B43, and C40 and body ground individually.

PCM CONNECTORS

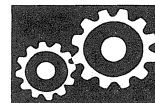


Is there continuity?

YES—Go to step 11.

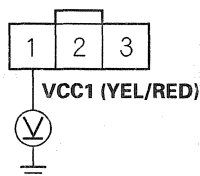
NO—Repair open in the wires between PCM connector terminals B1, B36, B43, C40, and ground (G101, G102), or repair poor ground (G101, G102), then go to step 28.

11. Connect PCM connectors B (44P) and C (44P).
12. Turn the ignition switch ON (II).



13. Measure the voltage between output shaft (countershaft) speed sensor connector terminal No. 1 and body ground.

OUTPUT SHAFT (COUNTERSHAFT) SPEED SENSOR CONNECTOR



Wire side of female terminals

Is there about 5 V?

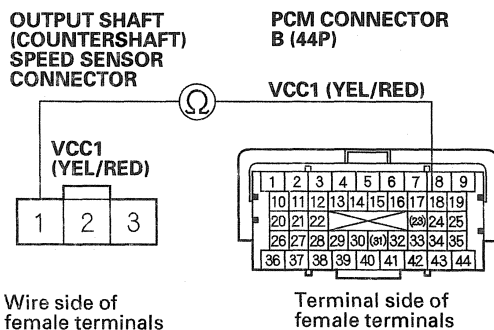
YES—Go to step 18.

NO—Go to step 14.

14. Turn the ignition switch OFF.

15. Disconnect PCM connector B (44P).

16. Check for continuity between PCM connector terminal B18 and output shaft (countershaft) speed sensor connector terminal No. 1.



Wire side of female terminals

Terminal side of female terminals

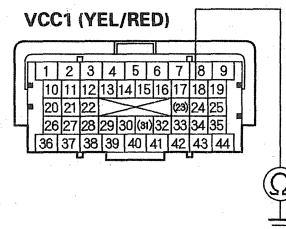
Is there continuity?

YES—Go to step 17.

NO—Repair open in the wire between PCM connector terminal B18 and the output shaft (countershaft) speed sensor, then go to step 28.

17. Check for continuity between PCM connector terminal B18 and body ground.

PCM CONNECTOR B (44P)



Terminal side of female terminals

Is there continuity?

YES—Repair short to body ground in the wire between PCM connector terminal B18 and the output shaft (countershaft) speed sensor, then go to step 28.

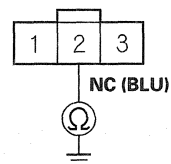
NO—Go to step 34.

18. Turn the ignition switch OFF.

19. Disconnect PCM connector B (44P).

20. Check for continuity between output shaft (countershaft) speed sensor connector terminal No. 2 and body ground.

OUTPUT SHAFT (COUNTERSHAFT) SPEED SENSOR CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair short to body ground in the wire between PCM connector terminal B40 and the output shaft (countershaft) speed sensor, then go to step 28.

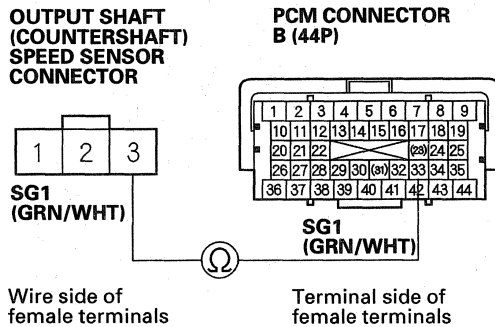
NO—Go to step 21

(cont'd)

Automatic Transmission

DTC Troubleshooting (cont'd)

21. Check for continuity between PCM connector terminal B33 and output shaft (countershaft) speed sensor connector terminal No. 3.



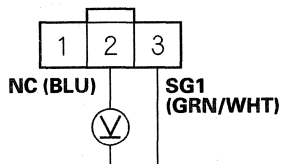
Is there continuity?

YES—Go to step 22.

NO—Repair open in the wire between the output shaft (countershaft) speed sensor and PCM connector terminal B33, then go to step 28.

22. Connect PCM connector B (44P).
23. Turn the ignition switch ON (II).
24. Measure the voltage between output shaft (countershaft) speed sensor connector terminals No. 2 and No. 3.

OUTPUT SHAFT (COUNTERSHAFT) SPEED SENSOR CONNECTOR



Wire side of female terminals

Is there about 5 V?

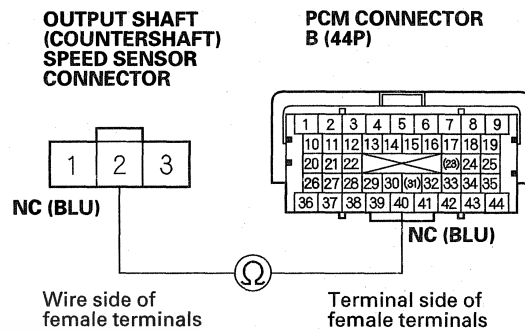
YES—Go to step 28.

NO—Go to step 25.

25. Turn the ignition switch OFF.

26. Disconnect PCM connector B (44P).

27. Check for continuity between PCM connector terminal B40 and output shaft (countershaft) speed sensor connector terminal No. 2.



Is there continuity?

YES—Go to step 34.

NO—Repair open in the wire between PCM connector terminal B40 and the output shaft (countershaft) speed sensor, then go to step 28.



28. Reconnect all connectors.

29. Turn the ignition switch ON (II).

30. Clear the DTC with the HDS.

31. Start the engine, disable the VSA by pressing the VSA OFF switch, run the vehicle in the D position with engine speed 2,000 rpm or higher for at least 10 seconds. Slow down and stop the wheels.

32. Check for DTCs with the HDS.

Is DTC P0721 or P0722 indicated?

YES—Check for poor connections or loose terminals between the output shaft (countershaft) speed sensor and the PCM, then go to step 1.

NO—Go to step 33.

33. Monitor the OBD STATUS for P0721 or P0722 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. If any other DTCs were indicated in step 32, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals between the output shaft (countershaft) speed sensor and the PCM, then go to step 1. If the screen indicates NOT COMPLETED, go to step 31.

34. Update the PCM if it does not have the latest software (see page 14-8), or substitute a known-good PCM (see page 14-9).

35. Start the engine, disable the VSA by pressing the VSA OFF switch, run the vehicle in the D position with engine speed 2,000 rpm or higher for at least 10 seconds. Slow down and stop the wheels.

36. Check for DTCs with the HDS.

Is DTC P0721 or P0722 indicated?

YES—Check for poor connections or loose terminals between the output shaft (countershaft) speed sensor and the PCM. If the PCM was updated, substitute a known-good PCM (see page 14-9), then go to step 35. If the PCM was substituted, go to step 1.

NO—Go to step 37.

37. Monitor the OBD STATUS for P0721 or P0722 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-230). If any other DTCs were indicated in step 36, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals between the output shaft (countershaft) speed sensor and the PCM. If the PCM was updated, substitute a known-good PCM (see page 14-9), then go to step 35. If the PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, go to step 35.

Automatic Transmission

DTC Troubleshooting (cont'd)

DTC P0723: Output Shaft (Countershaft) Speed Sensor Intermittent Failure

NOTE:

- Before you troubleshoot, record all freeze data and any on-board snapshot, and review General Troubleshooting Information (see page 14-4).
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Test-drive the vehicle in the D position through all five gears.
4. Turn the ignition switch OFF, and repeat the test-drive in step 3.
5. Monitor the OBD STATUS for P0723 in the DTCs MENU with the HDS.

Does the screen indicate FAILED?

YES—Go to step 6.

NO—If the screen indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals between the output shaft (countershaft) speed sensor and the PCM. If the screen indicates NOT COMPLETED, go to step 3 and recheck.

6. Turn the ignition switch OFF.
7. Disconnect the output shaft (countershaft) speed sensor connector, and inspect the connector and connector terminals to be sure they are making good contact.

Are the connector terminals OK?

YES—Go to step 8.

NO—Repair the connector terminals, then go to step 8.

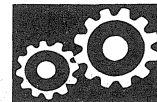
8. Connect the output shaft (countershaft) speed sensor connector.
9. Test-drive the vehicle in the D position through all five gears.
10. Repeat the test-drive in step 9.
11. Monitor the OBD STATUS for P0723 in the DTCs MENU with the HDS.

Does the screen indicate FAILED?

YES—Go to step 12.

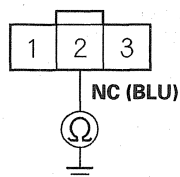
NO—Troubleshooting is complete. If the screen indicates NOT COMPLETED, go to step 9 and recheck.

12. Turn the ignition switch OFF.
13. Jump the SCS line with the HDS.
14. Disconnect PCM connector B (44P).
15. Disconnect the output shaft (countershaft) speed sensor connector.



16. Check for continuity between output shaft (countershaft) speed sensor connector terminal No. 2 and body ground.

OUTPUT SHAFT (COUNTERSHAFT) SPEED SENSOR CONNECTOR



Wire side of female terminals

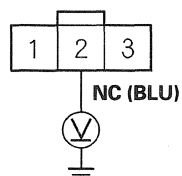
Is there continuity?

YES—Repair short to ground in the wire between PCM connector terminal B40 and the output shaft (countershaft) speed sensor, then go to step 23.

NO—Go to step 17.

17. Connect PCM connector B (44P).
18. Turn the ignition switch ON (II).
19. Measure the voltage between output shaft (countershaft) speed sensor connector terminal No. 2 and body ground.

OUTPUT SHAFT (COUNTERSHAFT) SPEED SENSOR CONNECTOR



Wire side of female terminals

Is there about 5 V?

YES—Replace the output shaft (countershaft) speed sensor (see page 14-209), then go to step 23.

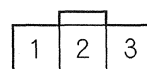
NO—Go to step 20.

20. Turn the ignition switch OFF.

21. Disconnect PCM connector B (44P).

22. Check for continuity between PCM connector terminal B40 and output shaft (countershaft) speed sensor connector terminal No. 2.

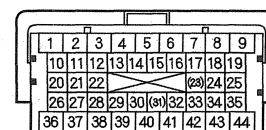
OUTPUT SHAFT (COUNTERSHAFT) SPEED SENSOR CONNECTOR



NC (BLU)

Wire side of female terminals

PCM CONNECTOR B (44P)



NC (BLU)

Terminal side of female terminals

Is there continuity?

YES—Go to step 27.

NO—Repair open in the wire between PCM connector terminal B40 and the output shaft (countershaft) speed sensor, then go to step 23.

(cont'd)

Automatic Transmission

DTC Troubleshooting (cont'd)

23. Reconnect all connectors.
24. Turn the ignition switch ON (II).
25. Clear the DTC with the HDS.
26. Test-drive the vehicle in the D position through all five gears.
27. Turn the ignition switch OFF, and repeat the test-drive in step 26.
28. Check for DTCs with the HDS.

Is DTC P0723 indicated?

YES—Check for poor connections or loose terminals between the input shaft (mainshaft) speed sensor and the PCM, then go to step 1.

NO—Go to step 29.

29. Monitor the OBD STATUS for P0723 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. If any other DTCs were indicated in step 28, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals between the output shaft (countershaft) speed sensor and the PCM, then go to step 1. If the screen indicates NOT COMPLETED, go to step 26.

30. Update the PCM if it does not have the latest software (see page 14-8), or substitute a known-good PCM (see page 14-9).
31. Test-drive the vehicle in the D position through all five gears.
32. Turn the ignition switch OFF, and repeat the test-drive in step 31.

33. Check for DTCs with the HDS.

Is DTC P0723 indicated?

YES—Check for poor connections or loose terminals between the output shaft (countershaft) speed sensor and the PCM. If the PCM was updated, substitute a known-good PCM (see page 14-9), then go to step 31. If the PCM was substituted, go to step 1.

NO—Go to step 34.

34. Monitor the OBD STATUS for P0723 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-230). If any other DTCs were indicated in step 33, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals between the output shaft (countershaft) speed sensor and the PCM. If the PCM was updated, substitute a known-good PCM (see page 14-9), then go to step 31. If the PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, go to step 31.



DTC P0731: Problem in 1st Clutch and 1st Clutch Hydraulic Circuit (1st gear incorrect ratio)

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review General Troubleshooting Information (see page 14-4).

1. Warm up the engine to normal operating temperature (the radiator fan comes on).
2. Make sure that the transmission is filled to the proper level, and check for fluid leaks.
3. Drain the ATF (see step 3 on page 14-214) through a strainer. Inspect the strainer for metal debris or excessive clutch material.

Does the strainer have metal debris or excessive clutch material?

YES—Replace the transmission, then go to step 11.

NO—Replace the ATF (see step 5 on page 14-214), then go to step 4.

4. Measure the line pressure (see page 14-188).

Is the line pressure within the service limit?

YES—Go to step 5.

NO—Repair the ATF pump and the regulator valve, or replace the transmission, then go to step 11.

5. Measure the 1st clutch pressure (see page 14-188).

Is the 1st clutch pressure within the service limit?

YES—Go to step 6.

NO—Shift valves B and C are stuck. Repair the shift valves and the hydraulic circuit, or replace the transmission, then go to step 11.

6. Clear the DTC with the HDS.

7. Test-drive under these condition:

- D position in 1st gear.
- Engine speed 1,000 rpm or more.
- Drive the vehicle at speeds over 7 mph (12 km/h), for at least 12 seconds.

8. Turn the ignition switch OFF, and repeat the test-drive in step 7.

9. Check for DTCs with the HDS.

Is DTC P0731 indicated?

YES—Repair the 1st clutch, or replace the transmission. ■

NO—Go to step 10.

10. Monitor the OBD STATUS for P0731 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Intermittent failure, the system is OK at this time. If any other DTCs were indicated in step 9, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicated FAILED, repair the 1st clutch, or replace the transmission. If the screen indicates NOT COMPLETED, go to step 7.

(cont'd)

Automatic Transmission

DTC Troubleshooting (cont'd)

11. Turn the ignition switch ON (II).
12. Clear the DTC with the HDS.
13. Test-drive under these condition:
 - D position in 1st gear.
 - Engine speed 1,000 rpm or more.
 - Drive the vehicle at speeds over 7 mph (12 km/h), for at least 12 seconds.
14. Turn the ignition switch OFF, and repeat the test-drive in step 13.
15. Check for DTCs with the HDS.

Is DTC P0731 indicated?

YES—Check for poor connections or loose terminals at the input shaft (mainshaft) speed sensor and the output shaft (countershaft) speed sensor and the PCM, then go to step 4.

NO—Go to step 16.

16. Monitor the OBD STATUS for P0731 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. If any other DTCs were indicated in step 15, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the input shaft (mainshaft) speed sensor and the output shaft (countershaft) speed sensor and the PCM, then go to step 4. If the screen indicates NOT COMPLETED, go to step 13.



DTC P0732: Problem in 2nd Clutch and 2nd Clutch Hydraulic Circuit (2nd gear incorrect ratio)

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review General Troubleshooting Information (see page 14-4).

1. Warm up the engine to normal operating temperature (the radiator fan comes on).
2. Make sure that the transmission is filled to the proper level, and check for fluid leaks.
3. Drain the ATF (see step 3 on page 14-214) through a strainer. Inspect the strainer for metal debris or excessive clutch material.

Does the strainer have metal debris or excessive clutch material?

YES—Replace the transmission, then go to step 11.

NO—Replace the ATF (see step 5 on page 14-214), then go to step 4.

4. Measure the line pressure (see page 14-188).

Is the line pressure within the service limit?

YES—Go to step 5.

NO—Repair the ATF pump and the regulator valve, or replace the transmission, then go to step 11.

5. Measure the 2nd clutch pressure (see page 14-188).

Is the 2nd clutch pressure within the service limit?

YES—Go to step 6.

NO—Shift valves A, B, and C are stuck. Repair the shift valves and the hydraulic circuit, or replace the transmission, then go to step 11.

6. Clear the DTC with the HDS.

7. Test-drive under these condition:

- D position in 2nd gear.
- Engine speed 1,000 rpm or more.
- Drive the vehicle at speeds over 7 mph (12 km/h), for at least 12 seconds.

8. Turn the ignition switch OFF, and repeat the test-drive in step 7.

9. Check for DTCs with the HDS.

Is DTC P0732 indicated?

YES—Repair the 2nd clutch, or replace the transmission. ■

NO—Go to step 10.

10. Monitor the OBD STATUS for P0732 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Intermittent failure, the system is OK at this time. If any other DTCs were indicated in step 9, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicated FAILED, repair the 2nd clutch, or replace the transmission. If the screen indicates NOT COMPLETED, go to step 7.

(cont'd)

Automatic Transmission

DTC Troubleshooting (cont'd)

11. Turn the ignition switch ON (II).
12. Clear the DTC with the HDS.
13. Test-drive under these condition:
 - D position in 2nd gear.
 - Engine speed 1,000 rpm or more.
 - Drive the vehicle at speeds over 7 mph (12 km/h), for at least 12 seconds.
14. Turn the ignition switch OFF, and repeat the test-drive in step 13.
15. Check for DTCs with the HDS.

Is DTC P0732 indicated?

YES—Check for poor connections or loose terminals at the input shaft (mainshaft) speed sensor and the output shaft (countershaft) speed sensor and the PCM, then go to step 4.

NO—Go to step 16.

16. Monitor the OBD STATUS for P0732 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. If any other DTCs were indicated in step 15, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the input shaft (mainshaft) speed sensor and the output shaft (countershaft) speed sensor and the PCM, then go to step 4. If the screen indicates NOT COMPLETED, go to step 13.



DTC P0733: Problem in 3rd Clutch and 3rd Clutch Hydraulic Circuit (3rd gear incorrect ratio)

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review General Troubleshooting Information (see page 14-4).

1. Warm up the engine to normal operating temperature (the radiator fan comes on).
2. Make sure that the transmission is filled to the proper level, and check for fluid leaks.
3. Drain the ATF (see step 3 on page 14-214) through a strainer. Inspect the strainer for metal debris or excessive clutch material.

Does the strainer have metal debris or excessive clutch material?

YES—Replace the transmission, then go to step 11.

NO—Replace the ATF (see step 5 on page 14-214), then go to step 4.

4. Measure the line pressure (see page 14-188).

Is the line pressure within the service limit?

YES—Go to step 5.

NO—Repair the ATF pump and the regulator valve, or replace the transmission, then go to step 11.

5. Measure the 3rd clutch pressure (see page 14-188).

Is the 3rd clutch pressure within service limit?

YES—Go to step 6.

NO—Shift valves A, B, and C are stuck. Repair the shift valves and the hydraulic circuit, or replace the transmission, then go to step 11.

6. Clear the DTC with the HDS.

7. Test-drive under these condition:

- D position in 3rd gear.
- Engine speed 1,000 rpm or more.
- Drive the vehicle at speeds over 7 mph (12 km/h), for at least 12 seconds.

8. Turn the ignition switch OFF, and repeat the test-drive in step 7.

9. Check for DTCs with the HDS.

Is DTC P0733 indicated?

YES—Repair the 3rd clutch, or replace the transmission. ■

NO—Go to step 10.

10. Monitor the OBD STATUS for P0733 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Intermittent failure, the system is OK at this time. If any other DTCs were indicated in step 9, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicated FAILED, repair the 3rd clutch, or replace the transmission. If the screen indicates NOT COMPLETED, go to step 7.

(cont'd)

Automatic Transmission

DTC Troubleshooting (cont'd)

11. Turn the ignition switch ON (II).
12. Clear the DTC with the HDS.
13. Test-drive under these condition:
 - D position in 3rd gear.
 - Engine speed 1,000 rpm or more.
 - Drive the vehicle at speeds over 7 mph (12 km/h), for at least 12 seconds.
14. Turn the ignition switch OFF, and repeat the test-drive in step 13.
15. Check for DTCs with the HDS.

Is DTC P0733 indicated?

YES—Check for poor connections or loose terminals at the input shaft (mainshaft) speed sensor and the output shaft (countershaft) speed sensor and the PCM, then go to step 4.

NO—Go to step 16.

16. Monitor the OBD STATUS for P0733 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. If any other DTCs were indicated in step 15, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the input shaft (mainshaft) speed sensor and the output shaft (countershaft) speed sensor and the PCM, then go to step 4. If the screen indicates NOT COMPLETED, go to step 13.



DTC P0734: Problem in 4th Clutch and 4th Clutch Hydraulic Circuit (4th gear incorrect ratio)

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review General Troubleshooting Information (see page 14-4).

1. Warm up the engine to normal operating temperature (the radiator fan comes on).
2. Make sure that the transmission is filled to the proper level, and check for fluid leaks.
3. Drain the ATF (see step 3 on page 14-214) through a strainer. Inspect the strainer for metal debris or excessive clutch material.

Does the strainer have metal debris or excessive clutch material?

YES—Replace the transmission, then go to step 11.

NO—Replace the ATF (see step 5 on page 14-214), then go to step 4.

4. Measure the line pressure (see page 14-188).

Is the line pressure within service limit?

YES—Go to step 5.

NO—Repair the ATF pump and the regulator valve, or replace the transmission, then go to step 11.

5. Measure the 4th clutch pressure (see page 14-188).

Is the 4th clutch pressure within the service limit?

YES—Go to step 6.

NO—Shift valves A, B, C, and D are stuck. Repair the shift valves and the hydraulic circuit, or replace the transmission, then go to step 11.

6. Clear the DTC with the HDS.

7. Test-drive under these condition:

- D position in 4th gear.
- Engine speed 1,000 rpm or more.
- Drive the vehicle at speeds over 7 mph (12 km/h), for at least 12 seconds.

8. Turn the ignition switch OFF, and repeat the test-drive in step 7.

9. Check for DTCs with the HDS.

Is DTC P0734 indicated?

YES—Repair the 4th clutch, or replace the transmission. ■

NO—Go to step 10.

10. Monitor the OBD STATUS for P0734 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Intermittent failure, the system is OK at this time. If any other DTCs were indicated in step 9, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicated FAILED, repair the 4th clutch, or replace the transmission. If the screen indicates NOT COMPLETED, go to step 7.

(cont'd)

Automatic Transmission

DTC Troubleshooting (cont'd)

11. Turn the ignition switch ON (II).
12. Clear the DTC with the HDS.
13. Test-drive under these condition:
 - D position in 4th gear.
 - Engine speed 1,000 rpm or more.
 - Drive the vehicle at speeds over 7 mph (12 km/h), for at least 12 seconds.
14. Turn the ignition switch OFF, and repeat the test-drive in step 13.
15. Check for DTCs with the HDS.

Is DTC P0734 indicated?

YES—Check for poor connections or loose terminals at the input shaft (mainshaft) speed sensor and the output shaft (countershaft) speed sensor and the PCM, then go to step 4.

NO—Go to step 16.

16. Monitor the OBD STATUS for P0734 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. If any other DTCs were indicated in step 15, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the input shaft (mainshaft) speed sensor and the output shaft (countershaft) speed sensor and the PCM, then go to step 4. If the screen indicates NOT COMPLETED, go to step 13.



DTC P0735: Problem in 5th Clutch and 5th Clutch Hydraulic Circuit

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review General Troubleshooting Information (see page 14-4).

1. Warm up the engine to normal operating temperature (the radiator fan comes on).
2. Make sure that the transmission is filled to the proper level, and check for fluid leaks.
3. Drain the ATF (see step 3 on page 14-214) through a strainer. Inspect the strainer for metal debris or excessive clutch material.

Does the strainer have metal debris or excessive clutch material?

YES—Replace the transmission, then go to step 11.

NO—Replace the ATF (see step 5 on page 14-214), then go to step 4.

4. Measure the line pressure (see page 14-188).

Is the line pressure within service limit?

YES—Go to step 5.

NO—Repair the ATF pump and the regulator valve, or replace the transmission, then go to step 11.

5. Measure the 5th clutch pressure (see page 14-188).

Is the 5th clutch pressure within service limit?

YES—Go to step 6.

NO—Shift valves A, B, C, and D are stuck. Repair the shift valves and the hydraulic circuit, or replace the transmission, then go to step 11.

6. Clear the DTC with the HDS.

7. Test-drive under these condition:

- D position in 5th gear.
- Engine speed 1,000 rpm or more.
- Drive the vehicle at speeds over 7 mph (12 km/h), for at least 12 seconds.

8. Turn the ignition switch OFF, and repeat the test-drive in step 7.

9. Check for DTCs with the HDS.

Is DTC P0735 indicated?

YES—Repair the 5th clutch, or replace the transmission. ■

NO—Go to step 10.

10. Monitor the OBD STATUS for P0735 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Intermittent failure, the system is OK at this time. If any other DTCs were indicated in step 9, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicated FAILED, repair the 5th clutch, or replace the transmission. If the screen indicates NOT COMPLETED, go to step 7.

(cont'd)

Automatic Transmission

DTC Troubleshooting (cont'd)

11. Turn the ignition switch ON (II).
12. Clear the DTC with the HDS.
13. Test-drive under these condition:
 - D position in 5th gear.
 - Engine speed 1,000 rpm or more.
 - Drive the vehicle at speeds over 7 mph (12 km/h), for at least 12 seconds.
14. Turn the ignition switch OFF, and repeat the test-drive in step 13.
15. Check for DTCs with the HDS.

Is DTC P0735 indicated?

YES—Check for poor connections or loose terminals at the input shaft (mainshaft) speed sensor and the output shaft (countershaft) speed sensor and the PCM, then go to step 4.

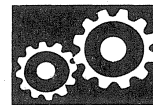
NO—Go to step 16.

16. Monitor the OBD STATUS for P0735 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. If any other DTCs were indicated in step 15, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the input shaft (mainshaft) speed sensor and the output shaft (countershaft) speed sensor and the PCM, then go to step 4. If the screen indicates NOT COMPLETED, go to step 13.



DTC P0741: Torque Converter Clutch Hydraulic Circuit Stuck OFF

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review General Troubleshooting Information (see page 14-4).

1. Warm up the engine to normal operating temperature (the radiator fan comes on).
2. Make sure that the transmission is filled to the proper level, and check for fluid leaks.
3. Drain the ATF (see step 3 on page 14-214) through a strainer. Inspect the strainer for metal debris or excessive clutch material.

Does the strainer have metal debris or excessive clutch material?

YES—Replace the transmission. ■

NO—Replace the ATF (see step 5 on page 14-214), then go to step 4.

4. Turn the ignition switch ON (II).
5. Clear the DTC with the HDS.
6. Select Lockup Solenoid Test in Miscellaneous Test Menu, and check that the torque converter clutch solenoid valve operates with the HDS.

Do you hear a clicking?

YES—Go to step 7.

NO—Replace the torque converter clutch solenoid valve (see page 14-192), then go to step 13.

7. Select Clutch Pressure Control (Linear) Solenoid C in the Miscellaneous Test Menu, and test A/T clutch pressure control solenoid valve C with the HDS.

Does the screen indicate NORMAL?

YES—Go to step 8.

NO—Follow the instructions indicated on the HDS for the test result, but if the HDS has not determined the cause of the failure, go to step 12. If any part was replaced, go to step 13.

8. Run the engine until the ECT SENSOR value reaches 176 °F (80 °C).

9. Test-drive the vehicle at a constant speed of 60 mph (96 km/h) for at least 22 seconds.

10. Turn the ignition switch OFF, and repeat the test-drive in step 9.

11. Monitor the OBD STATUS for P0741 in the DTCs MENU with the HDS.

Does the screen indicate FAILED?

YES—Repair the faulty torque converter clutch mechanism, the torque converter clutch hydraulic circuit, the lock-up shift valve, or the lock-up control valve, or replace the transmission. ■

NO—If the screen indicates PASSED, intermittent failure, the system is OK at this time. If the screen indicates NOT COMPLETED, go to step 9.

12. Inspect A/T clutch pressure control solenoid valve C (see page 14-204).

Does A/T clutch pressure control solenoid valve C work properly?

YES—Repair the hydraulic system related to the lock-up shift valve, the lock-up control valve, and the lock-up timing valve, or replace the transmission, then go to step 13.

NO—Replace A/T clutch pressure control solenoid valve C (see page 14-207), then go to step 13.

(cont'd)

Automatic Transmission

DTC Troubleshooting (cont'd)

13. Turn the ignition switch ON (II).
14. Clear the DTC with the HDS.
15. Test-drive the vehicle at a constant speed of 60 mph (96 km/h) for at least 22 seconds.
16. Turn the ignition switch OFF, and repeat the test-drive in step 15.
17. Check for DTCs with the HDS.

Is DTC P0741 indicated?

YES—Go to step 6.

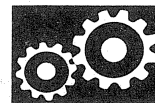
NO—Go to step 18.

18. Monitor the OBD STATUS for P0741 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. If any other DTCs were indicated in step 17, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, go to step 6. If the screen indicates NOT COMPLETED, go to step 15.



DTC P0746: A/T Clutch Pressure Control Solenoid Valve A Stuck OFF

DTC P0747: A/T Clutch Pressure Control Solenoid Valve A Stuck ON

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review General Troubleshooting Information (see page 14-4).

1. Warm up the engine to normal operating temperature (the radiator fan comes on).
2. Make sure that the transmission is filled to the proper level, and check for fluid leaks.
3. Drain the ATF (see step 3 on page 14-214) through a strainer. Inspect the strainer for metal debris or excessive clutch material.

Does the strainer have metal debris or excessive clutch material?

YES—Replace the transmission, then go to step 12.

NO—Replace the ATF (see step 5 on page 14-214), then go to step 4.

4. Turn the ignition switch ON (II).
5. Clear the DTC with the HDS.
6. Test-drive the vehicle in the D position through all five gears.
7. Turn the ignition switch OFF, and repeat the test-drive in step 6.
8. Monitor the OBD STATUS for P0746 or P0747 in the DTCs MENU with the HDS.

Does the screen indicate FAILED?

YES—Go to step 9.

NO—If the screen indicates PASSED, intermittent failure, the system is OK at this time. If the screen indicates NOT COMPLETED, go to step 6.

9. Clear the DTC with the HDS.

10. Select Clutch Pressure Control (Linear) Solenoid A in the Miscellaneous Test Menu, and test A/T clutch pressure control solenoid valve A with the HDS.

Is the result NORMAL?

YES—Intermittent failure, the system is OK at this time. ■

NO—Follow the instructions indicated on the HDS by the test result, if the tester has not determined the cause of the failure, go to step 11. If any part was replaced, go to step 12.

11. Inspect A/T clutch pressure control solenoid valve A (see page 14-196).

Does A/T clutch pressure control solenoid valve A work properly?

YES—Repair the hydraulic system related to CPC valve A, or replace the transmission, then go to step 12.

NO—Replace A/T clutch pressure control solenoid valve A (see page 14-202), then go to step 12.

12. Turn the ignition switch ON (II).
13. Clear the DTC with the HDS.
14. Test-drive the vehicle in the D position through all five gears.
15. Turn the ignition switch OFF, and repeat the test-drive in step 14.

(cont'd)

Automatic Transmission

DTC Troubleshooting (cont'd)

16. Check for DTCs with the HDS.

Is DTC P0746 or P0747 indicated?

YES—Go to step 9.

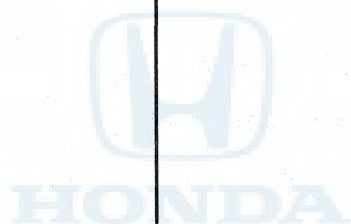
NO—Go to step 17.

17. Monitor the OBD STATUS for P0746 or P0747 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. If any other DTCs were indicated in step 16, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, go to step 9. If the screen indicates NOT COMPLETED, go to step 12.





DTC P0751: Shift Solenoid Valve A Stuck OFF

DTC P0752: Shift Solenoid Valve A Stuck ON

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review General Troubleshooting Information (see page 14-4).

1. Warm up the engine to normal operating temperature (the radiator fan comes on).
2. Make sure that the transmission is filled to the proper level, and check for fluid leaks.
3. Drain the ATF (see step 3 on page 14-214) through a strainer. Inspect the strainer for metal debris or excessive clutch material.

Does the strainer have metal debris or excessive clutch material?

YES—Replace the transmission, then go to step 14.

NO—Replace the ATF (see step 5 on page 14-214), then go to step 4.

4. Turn the ignition switch ON (II).
5. Clear the DTC with the HDS.
6. Test-drive the vehicle in the D position through all five gears.
7. Turn the ignition switch OFF, and repeat the test-drive in step 6.
8. Monitor the OBD STATUS for P0751 or P0752 in the DTCs MENU with the HDS.

Does the screen indicate FAILED?

YES—Go to step 9.

NO—If the screen indicates PASSED, intermittent failure, the system is OK at this time. If the screen indicates NOT COMPLETED, go to step 6.

9. Clear the DTC with the HDS.

10. Select Shift Solenoid A in the Miscellaneous Test Menu, and check that shift solenoid valve A operates with the HDS.

Is a clicking sound heard?

YES—Go to step 11.

NO—Replace shift solenoid valve A (see page 14-192), then go to step 14.

11. Test-drive the vehicle in the D position through all five gears.
12. Turn the ignition switch OFF, and repeat the test-drive in step 11.
13. Monitor the OBD STATUS for P0751 or P0752 in the DTCs MENU with the HDS.

Does the screen indicate FAILED?

YES—Repair shift valve A, or replace the transmission, then go to step 14.

NO—If the screen indicates PASSED, intermittent failure, the system is OK at this time. If the screen indicates NOT COMPLETED, go to step 11.

14. Turn the ignition switch ON (II).
15. Clear the DTC with the HDS.
16. Test-drive the vehicle in the D position through all five gears.
17. Turn the ignition switch OFF, and repeat the test-drive in step 16.

(cont'd)

Automatic Transmission

DTC Troubleshooting (cont'd)

18. Check for DTCs with the HDS.

Is DTC P0751 or P0752 indicated?

YES—Go to step 9.

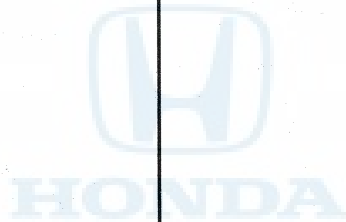
NO—Go to step 19.

19. Monitor the OBD STATUS for P0751 or P0752 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. If any other DTCs were indicated in step 18, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, go to step 9. If the screen indicates NOT COMPLETED, go to step 16.





DTC P0756: Shift Solenoid Valve B Stuck OFF

DTC P0757: Shift Solenoid Valve B Stuck ON

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review General Troubleshooting Information (see page 14-4).

1. Warm up the engine to normal operating temperature (the radiator fan comes on).
2. Make sure that the transmission is filled to the proper level, and check for fluid leaks.
3. Drain the ATF (see step 3 on page 14-214) through a strainer. Inspect the strainer for metal debris or excessive clutch material.

Does the strainer have metal debris or excessive clutch material?

YES—Replace the transmission. ■

NO—Replace the ATF (see step 5 on page 14-214), then go to step 4.

4. Turn the ignition switch ON (II).
5. Clear the DTC with the HDS.
6. Test-drive the vehicle in the D position through all five gears.
7. Turn the ignition switch OFF, and repeat the test-drive in step 6.
8. Monitor the OBD STATUS for P0756 or P0757 in the DTCs MENU with the HDS.

Does the screen indicate FAILED?

YES—Go to step 9.

NO—If the screen indicates PASSED, intermittent failure, the system is OK at this time. If the screen indicates NOT COMPLETED, go to step 6.

9. Clear the DTC with the HDS.

10. Select Shift Solenoid B in the Miscellaneous Test Menu, and check that shift solenoid valve B operates with the HDS.

Is a clicking sound heard?

YES—Go to step 11.

NO—Replace shift solenoid valve B (see page 14-192), then go to step 14.

11. Test-drive the vehicle in the D position through all five gears.
12. Turn the ignition switch OFF, and repeat the test-drive in step 11.
13. Monitor the OBD STATUS for P0756 or P0757 in the DTCs MENU with the HDS.

Does the screen indicate FAILED?

YES—Repair shift valve B, or replace the transmission, then go to step 14.

NO—If the screen indicates PASSED, intermittent failure, the system is OK at this time. If the screen indicates NOT COMPLETED, go to step 11.

14. Turn the ignition switch ON (II).
15. Clear the DTC with the HDS.
16. Test-drive the vehicle in the D position through all five gears.
17. Turn the ignition switch OFF, and repeat the test-drive in step 16.

(cont'd)

Automatic Transmission

DTC Troubleshooting (cont'd)

18. Check for DTCs with the HDS.

Is DTC P0756 or P0757 indicated?

YES—Go to step 9.

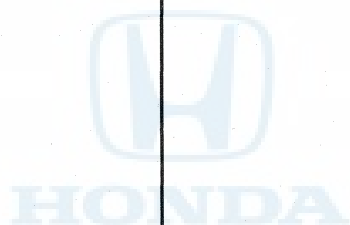
NO—Go to step 19.

19. Monitor the OBD STATUS for P0756 or P0757 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. If any other DTCs were indicated in step 18, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, go to step 9. If the screen indicates NOT COMPLETED, go to step 16.





DTC P0761: Shift Solenoid Valve C Stuck OFF

DTC P0762: Shift Solenoid Valve C Stuck ON

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review General Troubleshooting Information (see page 14-4).

1. Warm up the engine to normal operating temperature (the radiator fan comes on).
2. Make sure that the transmission is filled to the proper level, and check for fluid leaks.
3. Drain the ATF (see step 3 on page 14-214) through a strainer. Inspect the strainer for metal debris or excessive clutch material.

Does the strainer have metal debris or excessive clutch material?

YES—Replace the transmission, then go to step 14.

NO—Replace the ATF (see step 5 on page 14-214), then go to step 4.

4. Turn the ignition switch ON (II).
5. Clear the DTC with the HDS.
6. Test-drive the vehicle in the D position through all five gears.
7. Turn the ignition switch OFF, and repeat the test-drive in step 6.
8. Monitor the OBD STATUS for P0761 or P0762 in the DTCs MENU with the HDS.

Does the screen indicate FAILED?

YES—Go to step 9.

NO—If the screen indicates PASSED, intermittent failure, the system is OK at this time. If the screen indicates NOT COMPLETED, go to step 6.

9. Clear the DTC with the HDS.

10. Select Shift Solenoid C in the Miscellaneous Test Menu, and check that shift solenoid valve C operates with the HDS.

Is a clicking sound heard?

YES—Go to step 11.

NO—Replace shift solenoid valve C (see page 14-192), then go to step 14.

11. Test-drive the vehicle in the D position through all five gears.
12. Turn the ignition switch OFF, and repeat the test-drive in step 11.
13. Monitor the OBD STATUS for P0761 or P0762 in the DTCs MENU with the HDS.

Does the screen indicate FAILED?

YES—Repair shift valve C, or replace the transmission, then go to step 14.

NO—If the screen indicates PASSED, intermittent failure, the system is OK at this time. If the screen indicates NOT COMPLETED, go to step 11.

14. Turn the ignition switch ON (II).
15. Clear the DTC with the HDS.
16. Test-drive the vehicle in the D position through all five gears.
17. Turn the ignition switch OFF, and repeat the test-drive in step 16.

(cont'd)

Automatic Transmission

DTC Troubleshooting (cont'd)

18. Check for DTCs with the HDS.

Is DTC P0761 or P0762 indicated?

YES—Go to step 9.

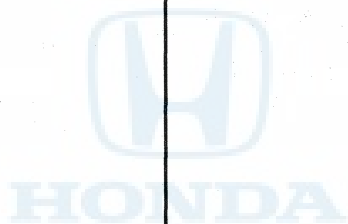
NO—Go to step 19.

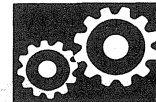
19. Monitor the OBD STATUS for P0761 or P0762 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. If any other DTCs were indicated in step 18, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, go to step 9. If the screen indicates NOT COMPLETED, go to step 16.





DTC P0776: A/T Clutch Pressure Control Solenoid Valve B Stuck OFF

DTC P0777: A/T Clutch Pressure Control Solenoid Valve B Stuck ON

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review General Troubleshooting Information (see page 14-4).

1. Warm up the engine to normal operating temperature (the radiator fan comes on).
2. Make sure that the transmission is filled to the proper level, and check for fluid leaks.
3. Drain the ATF (see step 3 on page 14-214) through a strainer. Inspect the strainer for metal debris or excessive clutch material.

Does the strainer have metal debris or excessive clutch material?

YES—Replace the transmission, then go to step 14.

NO—Replace the ATF (see step 5 on page 14-214), then go to step 4.

4. Turn the ignition switch ON (II).
5. Clear the DTC with the HDS.
6. Test-drive the vehicle in the D position through all five gears.
7. Turn the ignition switch OFF, and repeat the test-drive in step 6.
8. Monitor the OBD STATUS for P0776 or P0777 in the DTCs MENU with the HDS.

Does the screen indicate FAILED?

YES—Go to step 9.

NO—If the screen indicates PASSED, intermittent failure, the system is OK at this time. If the screen indicates NOT COMPLETED, go to step 6.

9. Clear the DTC with the HDS.

10. Select Clutch Pressure Control (Linear) Solenoid B in the Miscellaneous Test Menu, and test A/T clutch pressure control solenoid valve B with the HDS.

Does the screen indicate NORMAL?

YES—Intermittent failure, the system is OK at this time. ■

NO—Follow the instructions indicated on the HDS for the test result, if the HDS has not determined the cause of the failure, go to step 11. If any part was replaced, go to step 12.

11. Inspect A/T clutch pressure control solenoid valve B (see page 14-199).

Does A/T clutch pressure control solenoid valve B work properly?

YES—Repair the hydraulic system related to CPC valve B and shift valve D, or replace the transmission, then go to step 12.

NO—Replace A/T clutch pressure control valve B (see page 14-202), then go to step 11.

12. Turn the ignition switch ON (II).
13. Clear the DTC with the HDS.
14. Test-drive the vehicle in the D position through all five gears.
15. Turn the ignition switch OFF, and repeat the test-drive in step 14.

(cont'd)

Automatic Transmission

DTC Troubleshooting (cont'd)

16. Check for DTCs with the HDS.

Is DTC P0776 or P0777 indicated?

YES—Go to step 9.

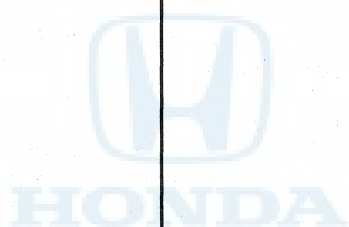
NO—Go to step 17.

17. Monitor the OBD STATUS for P0776 or P0777 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. If any other DTCs were indicated in step 16, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, go to step 9. If the screen indicates NOT COMPLETED, go to step 14.





DTC P0780: Problem in Shift Control System

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review General Troubleshooting Information (see page 14-4).

1. Warm up the engine to normal operating temperature (the radiator fan comes on).
2. Make sure that the transmission is filled to the proper level, and check for fluid leaks.
3. Drain the ATF (see step 3 on page 14-214) through a strainer. Inspect the strainer for metal debris or excessive clutch material.

Does the strainer have metal debris or excessive clutch material?

YES—Replace the transmission, then go to step 14.

NO—Replace the ATF (see step 5 on page 14-214), then go to step 4.

4. Turn the ignition switch ON (II).
5. Clear the DTC with the HDS.
6. Test-drive the vehicle in the D position through all five gears.
7. Turn the ignition switch OFF, and repeat the test-drive in step 6.
8. Monitor the OBD STATUS for P0780 in the DTCs MENU with the HDS.

Does the screen indicate FAILED?

YES—Go to step 9.

NO—If the screen indicates PASSED, intermittent failure, the system is OK at this time. If the screen indicates NOT COMPLETED, go to step 6.

9. Clear the DTC with the HDS.

10. Run the engine until the ECT SENSOR value reaches 176 °F (80 °C).
11. Test-drive the vehicle in the D position through all five gears.
12. Turn the ignition switch OFF, and repeat the test-drive in step 11.
13. Monitor the OBD STATUS for P0780 in the DTCs MENU with the HDS.

Does the screen indicate FAILED?

YES—Repair shift valve D, or replace the transmission, then go to step 14.

NO—If the screen indicates PASSED, intermittent failure, the system is OK at this time. If the screen indicates NOT COMPLETED, go to step 11.

14. Turn the ignition switch ON (II).
15. Clear the DTC with the HDS.
16. Test-drive the vehicle in the D position through all five gears.
17. Turn the ignition switch OFF, and repeat the test-drive in step 16.

(cont'd)

Automatic Transmission

DTC Troubleshooting (cont'd)

18. Check for DTCs with the HDS.

Is DTC P0780 indicated?

YES—Go to step 9.

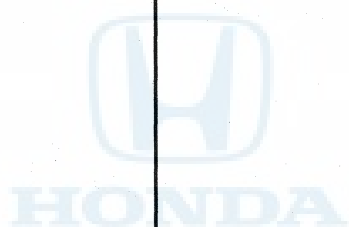
NO—Go to step 19.

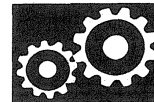
19. Monitor the OBD STATUS for P0780 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. If any other DTCs were indicated in step 18, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, go to step 9. If the screen indicates NOT COMPLETED, go to step 16.





DTC P0847: Short in 3rd Clutch Transmission Fluid Pressure Switch Circuit, or 3rd Clutch Transmission Fluid Pressure Switch Stuck ON

NOTE:

- Before you troubleshoot, record all freeze data and any on-board snapshot, and review General Troubleshooting Information (see page 14-4).
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Check the 3rd PRESSURE SWITCH in the DATA LIST with the HDS when not in 3rd gear.

Is the 3rd PRESSURE SWITCH OFF?

YES—Go to step 4.

NO—Go to step 7.

4. Start the engine, and warm it up to normal operating temperature (the radiator fan comes on).
5. Drive the vehicle in 3rd gear in the D3 position for at least 2 seconds, then shift into the D position, and drive in 4th gear for at least 2 seconds.
6. Monitor the OBD STATUS for P0847 in the DTCs MENU with the HDS.

Does the screen indicate FAILED?

YES—Go to step 7.

NO—If the screen indicates PASSED, intermittent failure, the system is OK at this time. Check for intermittent short to body ground in the wire between the 3rd clutch transmission fluid pressure switch and the PCM. If the screen indicates NOT COMPLETED, go to step 4.

7. Turn the ignition switch OFF.
8. Disconnect the 3rd clutch transmission fluid pressure switch connector.
9. Turn the ignition switch ON (II).
10. Check the 3rd PRESSURE SWITCH in the DATA LIST with the HDS.

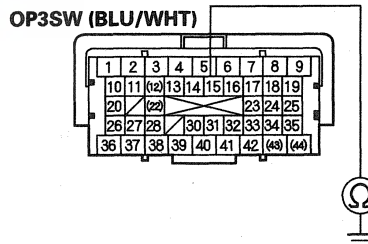
Is the 3rd PRESSURE SWITCH OFF?

YES—Replace the 3rd clutch transmission fluid pressure switch (see page 14-210), then go to step 15.

NO—Go to step 11.

11. Turn the ignition switch OFF.
12. Jump the SCS line with the HDS.
13. Disconnect PCM connector C (44P).
14. Check for continuity between PCM connector terminal C15 and body ground.

PCM CONNECTOR C (44P)



Terminal side of female terminals

Is there continuity?

YES—Repair short to body ground in the wire between PCM connector terminal C15 and the 3rd clutch transmission fluid pressure switch, then go to step 15.

NO—Go to step 22.

(cont'd)

Automatic Transmission

DTC Troubleshooting (cont'd)

15. Reconnect all connectors.
16. Turn the ignition switch ON (II).
17. Clear the DTC with the HDS.
18. Start the engine, and warm it up to normal operating temperature (the radiator fan comes on).
19. Drive the vehicle in 3rd gear in the D3 position for at least 2 seconds, then shift to the D position, and drive in 4th gear for at least 2 seconds.
20. Check for DTCs with the HDS.

Is DTC P0847 indicated?

YES—Check for intermittent short to body ground in the wire between the 3rd clutch transmission fluid pressure switch and the PCM, then go to step 1.

NO—Go to step 21.

21. Monitor the OBD STATUS for P0847 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. If any other DTCs were indicated in step 20, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for intermittent short to body ground in the wire between the 3rd clutch transmission fluid pressure switch and the PCM, then go to step 1. If the screen indicates NOT COMPLETED, go to step 18.

22. Update the PCM if it does not have the latest software (see page 14-8), or substitute a known-good PCM (see page 14-9).
23. Start the engine, and warm it up to normal operating temperature (the radiator fan comes on).
24. Drive the vehicle in 3rd gear in the D3 position for at least 2 seconds, then shift to the D position, and drive in 4th gear for at least 2 seconds.

25. Check for DTCs with the HDS.

Is DTC P0847 indicated?

YES—Check for intermittent short to body ground in the wire between the 3rd clutch transmission fluid pressure switch and the PCM. If the PCM was updated, substitute a known-good PCM (see page 14-9), then go to step 23. If the PCM was substituted, go to step 1.

NO—Go to step 26.

26. Monitor the OBD STATUS for P0847 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-230). If any other DTCs were indicated in step 25, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for intermittent short to body ground in the wire between the 3rd clutch transmission fluid pressure switch and the PCM. If the PCM was updated, substitute a known-good PCM (see page 14-9), then go to step 23. If the PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, go to step 23.



DTC P0848: Open in 3rd Clutch Transmission Fluid Pressure Switch Circuit, or 3rd Clutch Transmission Fluid Pressure Switch Stuck OFF

NOTE:

- Before you troubleshoot, record all freeze data and any on-board snapshot, and review General Troubleshooting Information (see page 14-4).
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine, and warm it up to normal operating temperature (the radiator fan comes on).
4. Drive the vehicle in 3rd gear in the D3 position, and check the DATA LIST with the HDS that the SHIFT COMMAND indicates 3rd.
5. Check the 3rd PRESSURE SWITCH in the DATA LIST with the HDS.

Is the 3rd PRESSURE SWITCH ON?

YES—Go to step 6.

NO—Go to step 8.

6. Drive the vehicle in 3rd gear in the D3 position for at least 2 seconds, then shift into the D position, and drive in 4th gear for at least 2 seconds.

7. Monitor the OBD STATUS for P0848 in the DTCs MENU with the HDS.

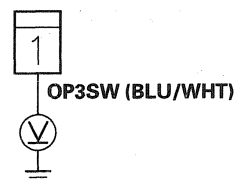
Does the screen indicate FAILED?

YES—Go to step 8.

NO—If the screen indicates PASSED, intermittent failure, the system is OK at this time. Check for intermittent short to body ground in the wire between the 3rd clutch transmission fluid pressure switch and the PCM. If the screen indicates NOT COMPLETED, go to step 5.

8. Turn the ignition switch OFF.
9. Disconnect the 3rd clutch transmission fluid pressure switch connector.
10. Turn the ignition switch ON (II).
11. Measure the voltage between the 3rd clutch transmission fluid pressure switch connector terminal and body ground.

3RD CLUTCH TRANSMISSION FLUID PRESSURE SWITCH CONNECTOR



Wire side of female terminals

Is there about 5 V?

YES—Replace the 3rd clutch transmission fluid pressure switch (see page 14-210), then go to step 16.

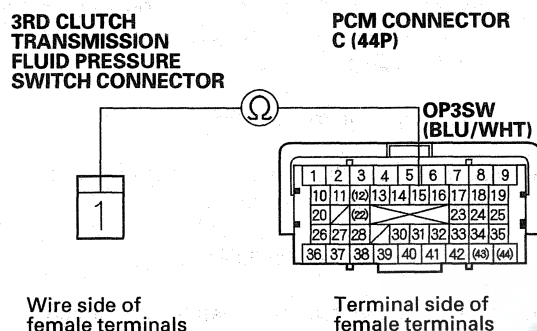
NO—Go to step 12.

(cont'd)

Automatic Transmission

DTC Troubleshooting (cont'd)

12. Turn the ignition switch OFF.
13. Jump the SCS line with the HDS.
14. Disconnect PCM connector C (44P).
15. Check for continuity between PCM connector terminal C15 and the 3rd clutch transmission fluid pressure switch connector terminal.



Is there continuity?

YES—Go to step 23.

NO—Repair open in the wire between PCM connector terminal C15 and the 3rd clutch transmission fluid pressure switch, then go to step 16.

16. Reconnect all connectors.
17. Turn the ignition switch ON (II).
18. Clear the DTC with the HDS.
19. Start the engine, and warm it up to normal operating temperature (the radiator fan comes on).
20. Drive the vehicle in 3rd gear in the D3 position for at least 2 seconds, then shift to the D position, and drive in 4th gear for at least 2 seconds.
21. Check for DTCs with the HDS.

Is DTC P0848 indicated?

YES—Check for poor connections or loose terminals between the 3rd clutch transmission fluid pressure switch and the PCM, then go to step 1.

NO—Go to step 22.

22. Monitor the OBD STATUS for P0848 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. If any other DTCs were indicated in step 21, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals between the 3rd clutch transmission fluid pressure switch and the PCM, then go to step 1. If the screen indicates NOT COMPLETED, go to step 19.

23. Update the PCM if it does not have the latest software (see page 14-8), or substitute a known-good PCM (see page 14-9).
24. Start the engine, and warm it up to normal operating temperature (the radiator fan comes on).
25. Drive the vehicle in 3rd gear in the D3 position for at least 2 seconds, then shift to the D position, and drive in 4th gear for at least 2 seconds.



26. Check for DTCs with the HDS.

Is DTC P0848 indicated?

YES—Check for poor connections or loose terminals between the 3rd clutch transmission fluid pressure switch and the PCM. If the PCM was updated, substitute a known-good PCM (see page 14-9), then go to step 24. If the PCM was substituted, go to step 1.

NO—Go to step 27.

27. Monitor the OBD STATUS for P0848 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-230). If any other DTCs were indicated in step 26, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals between the 3rd clutch transmission fluid pressure switch and the PCM. If the PCM was updated, substitute a known-good PCM (see page 14-9), then go to step 24. If the PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, go to step 24.

Automatic Transmission

DTC Troubleshooting (cont'd)

DTC P0872: Short in 4th Clutch Transmission Fluid Pressure Switch Circuit, or 4th Clutch Transmission Fluid Pressure Switch Stuck ON

NOTE:

- Before you troubleshoot, record all freeze data and any on-board snapshot, and review General Troubleshooting Information (see page 14-4).
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Check the 4th PRESSURE SWITCH in the DATA LIST with the HDS when not in 4th gear.

Is the 4th PRESSURE SWITCH OFF?

YES—Go to step 4.

NO—Go to step 7.

4. Start the engine, and warm it up to normal operating temperature (the radiator fan comes on).
5. Drive the vehicle in 4th gear in the D position for at least 2 seconds, then drive in 5th gear for at least 2 seconds.
6. Monitor the OBD STATUS for P0872 in the DTCs MENU with the HDS.

Does the screen indicate FAILED?

YES—Go to step 7.

NO—If the screen indicates PASSED, intermittent failure, the system is OK at this time. Check for intermittent short to body ground in the wire between the 4th clutch transmission fluid pressure switch and the PCM. If the screen indicates NOT COMPLETED, go to step 5.

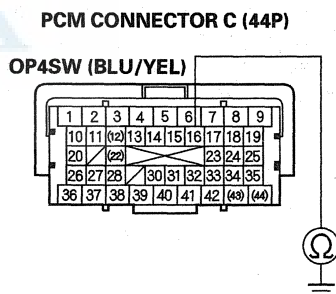
7. Turn the ignition switch OFF.
8. Disconnect the 4th clutch transmission fluid pressure switch connector.
9. Turn the ignition switch ON (II).
10. Check the 4th PRESSURE SWITCH in the DATA LIST with the HDS.

Is the 4th PRESSURE SWITCH OFF?

YES—Replace the 4th clutch transmission fluid pressure switch (see page 14-211), then go to step 15.

NO—Go to step 11.

11. Turn the ignition switch OFF.
12. Jump the SCS line with the HDS.
13. Disconnect PCM connector C (44P).
14. Check for continuity between PCM connector terminal C16 and body ground.

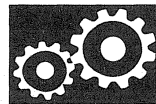


Terminal side of female terminals

Is there continuity?

YES—Repair short to body ground in the wire between PCM connector terminal C16 and the 4th clutch transmission fluid pressure switch, then go to step 15.

NO—Go to step 22.



15. Reconnect all connectors.
16. Turn the ignition switch ON (II).
17. Clear the DTC with the HDS.
18. Start the engine, and warm it up to normal operating temperature (the radiator fan comes on).
19. Drive the vehicle in 4th gear in the D position, for at least 2 seconds, then drive in 5th gear for at least 2 seconds.
20. Check for DTCs with the HDS.

Is DTC P0872 indicated?

YES—Check for intermittent short to body ground in the wire between the 4th clutch transmission fluid pressure switch and the PCM, then go to step 1.

NO—Go to step 21.

21. Monitor the OBD STATUS for P0872 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. If any other DTCs were indicated in step 20, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for intermittent short to body ground in the wire between the 4th clutch transmission fluid pressure switch and the PCM, then go to step 1. If the screen indicates NOT COMPLETED, go to step 18.

22. Update the PCM if it does not have the latest software (see page 14-8), or substitute a known-good PCM (see page 14-9).
23. Start the engine, and warm it up to normal operating temperature (the radiator fan comes on).
24. Drive the vehicle in 4th gear in the D position, for at least 2 seconds, then drive in 5th gear for at least 2 seconds.

25. Check for DTCs with the HDS.

Is DTC P0872 indicated?

YES—Check for intermittent short to body ground in the wire between the 4th clutch transmission fluid pressure switch and the PCM. If the PCM was updated, substitute a known-good PCM (see page 14-9), then go to step 23. If the PCM was substituted, go to step 1.

NO—Go to step 26.

26. Monitor the OBD STATUS for P0872 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-230). If any other DTCs were indicated in step 25, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for intermittent short to body ground in the wire between the 4th clutch transmission fluid pressure switch and the PCM. If the PCM was updated, substitute a known-good PCM (see page 14-9), then go to step 23. If the PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, go to step 23.

Automatic Transmission

DTC Troubleshooting (cont'd)

DTC P0873: Open in 4th Clutch Transmission Fluid Pressure Switch Circuit, or 4th Clutch Transmission Fluid Pressure Switch Stuck OFF

NOTE:

- Before you troubleshoot, record all freeze data and any on-board snapshot, and review General Troubleshooting Information (see page 14-4).
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine, and warm it up to normal operating temperature (the radiator fan comes on).
4. Drive the vehicle in 4th gear in the D position for at least 2 seconds, then drive in 5th gear for at least 2 seconds.
5. Check the 4th PRESSURE SWITCH in the DATA LIST with the HDS.

Is the 4th PRESSURE SWITCH ON?

YES—Go to step 6.

NO—Go to step 8.

6. Drive the vehicle in 4th gear in the D position for at least 2 seconds, then drive in 5th gear for at least 2 seconds.

7. Monitor the OBD STATUS for P0873 in the DTCs MENU with the HDS.

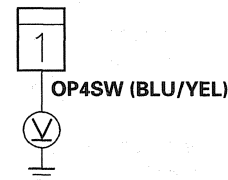
Does the screen indicate FAILED?

YES—Go to step 8.

NO—If the screen indicates PASSED, intermittent failure, the system is OK at this time. Check for intermittent short to body ground in the wire between the 4th clutch transmission fluid pressure switch and the PCM. If the screen indicates NOT COMPLETED, go to step 5.

8. Turn the ignition switch OFF.
9. Disconnect the 4th clutch transmission fluid pressure switch connector.
10. Turn the ignition switch ON (II).
11. Measure the voltage between the 4th clutch transmission fluid pressure switch connector terminal and body ground.

4TH CLUTCH TRANSMISSION FLUID PRESSURE SWITCH CONNECTOR

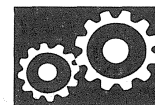


Wire side of female terminals

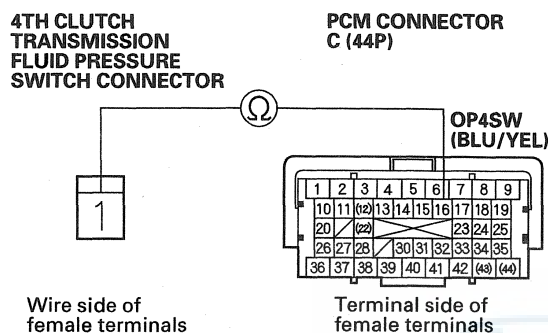
Is there about 5 V?

YES—Replace the 4th clutch transmission fluid pressure switch (see page 14-211), then go to step 16.

NO—Go to step 12.



12. Turn the ignition switch OFF.
13. Jump the SCS line with the HDS.
14. Disconnect PCM connector C (44P).
15. Check for continuity between PCM connector terminal C16 and the 4th clutch transmission fluid pressure switch connector terminal.



Is there continuity?

YES—Go to step 23.

NO—Repair open in the wire between PCM connector terminal C16 and the 4th clutch transmission fluid pressure switch, then go to step 16.

16. Reconnect all connectors.
17. Turn the ignition switch ON (II).
18. Clear the DTC with the HDS.
19. Start the engine, and warm it up to normal operating temperature (the radiator fan comes on).
20. Drive the vehicle in 4th gear in the D position, for at least 2 seconds, then drive in 5th gear for at least 2 seconds.
21. Check for DTCs with the HDS.

Is DTC P0873 indicated?

YES—Check for poor connections or loose terminals between the 4th transmission fluid pressure switch and the PCM, then go to step 1.

NO—Go to step 22.

22. Monitor the OBD STATUS for P0873 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. If any other DTCs were indicated in step 21, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals between the 4th transmission fluid pressure switch and the PCM, then go to step 1. If the screen indicates NOT COMPLETED, go to step 19.

23. Update the PCM if it does not have the latest software (see page 14-8), or substitute a known-good PCM (see page 14-9).
24. Start the engine, and warm it up to normal operating temperature (the radiator fan comes on).
25. Drive the vehicle in 4th gear in the D position, for at least 2 seconds, then drive in 5th gear for at least 2 seconds.

(cont'd)

Automatic Transmission

DTC Troubleshooting (cont'd)

26. Check for DTCs with the HDS.

Is DTC P0873 indicated?

YES—Check for poor connections or loose terminals between the 4th clutch transmission fluid pressure switch and the PCM. If the PCM was updated, substitute a known-good PCM (see page 14-9), then go to step 24. If the PCM was substituted, go to step 1.

NO—Go to step 27.

27. Monitor the OBD STATUS for P0873 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-230). If any other DTCs were indicated in step 26, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals between the 4th clutch transmission fluid pressure switch and the PCM. If the PCM was updated, substitute a known-good PCM (see page 14-9), then go to step 24. If the PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, go to step 24.



DTC P0962: Problem in A/T Clutch Pressure Control Solenoid Valve A Circuit

NOTE:

- Before you troubleshoot, record all freeze data and any on-board snapshot, and review General Troubleshooting Information (see page 14-4).
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine, and wait for at least 1 second.
4. Check for DTCs with the HDS.

Is DTC P0962 indicated?

YES—Go to step 8.

NO—Go to step 5.

5. Select Clutch Pressure Control Solenoid Control in the Miscellaneous Test Menu, and test A/T clutch pressure control solenoid valve A with the HDS.

Is the result NORMAL?

YES—Go to step 6.

NO—Go to step 8.

6. Command A/T clutch pressure control solenoid valve A at 1.0 A in Clutch Pressure Control Solenoid Control menu.
7. Monitor the OBD STATUS for P0962 in the DTCs MENU with the HDS.

Does the screen indicate FAILED?

YES—Go to step 5.

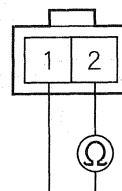
NO—If the screen indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals between A/T clutch pressure control solenoid valve A and the PCM. If the screen indicates NOT COMPLETED, go to step 4.

8. Turn the ignition switch OFF.

9. Disconnect the A/T clutch pressure control solenoid valve A connector.

10. Measure the resistance between A/T clutch pressure control solenoid valve A connector terminals No. 1 and No. 2.

A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE A CONNECTOR



Terminal side of male terminals

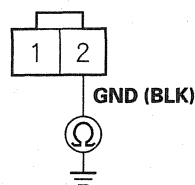
Is there 3—10 Ω ?

YES—Go to step 11.

NO—Replace A/T clutch pressure control solenoid valve A (see page 14-202), then go to step 19.

11. Check for continuity between A/T clutch pressure control solenoid valve A connector terminal No. 2 and body ground.

A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE A CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Go to step 12.

NO—Repair open in the wire between A/T clutch pressure control solenoid valve A and ground (G101, G102) (see page 22-77), or repair poor ground (G101, G102), then go to step 19.

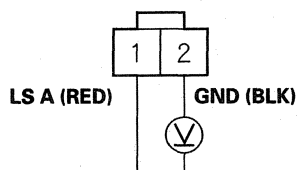
(cont'd)

Automatic Transmission

DTC Troubleshooting (cont'd)

12. Turn the ignition switch ON (II).
13. Measure the voltage between A/T clutch pressure control solenoid valve A connector terminals No. 1 and No. 2.

**A/T CLUTCH PRESSURE CONTROL
SOLENOID VALVE A CONNECTOR**



Wire side of female terminals

Is there battery voltage?

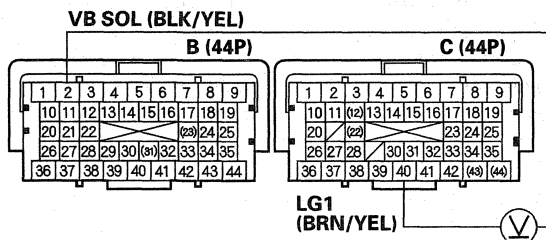
YES—Go to step 14.

NO—Repair open or short in the wire between PCM connector terminal C19 and A/T clutch pressure control solenoid valve A, then go to step 19.

14. Turn the ignition switch OFF.
15. Jump the SCS line with the HDS.
16. Disconnect PCM connectors B (44P) and C (44P).
17. Turn the ignition switch ON (II).

18. Measure the voltage between PCM connector terminals B2 and C40.

PCM CONNECTORS



Terminal side of female terminals

Is there battery voltage?

YES—Go to step 25.

NO—Check for a blown No. 6 fuse in the driver's under-dash fuse/relay box. If the fuse is OK, repair an open in the wire between PCM connector terminal B2 and the driver's under-dash fuse/relay box, then go to step 19.



19. Reconnect all connectors.
20. Turn the ignition switch ON (II).
21. Clear the DTC with the HDS.
22. Start the engine, and wait for at least 1 second.
23. Check for DTCs with the HDS.

Is DTC P0962 indicated?

YES—Check for poor connections or loose terminals between A/T clutch pressure control solenoid valve A and the PCM, then go to step 1.

NO—Go to step 24.

24. Monitor the OBD STATUS for P0962 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. If any other DTCs were indicated in step 23, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals between A/T clutch pressure control solenoid valve A and the PCM, then go to step 1. If the screen indicates NOT COMPLETED, go to step 22.

25. Update the PCM if it does not have the latest software (see page 14-8), or substitute a known-good PCM (see page 14-9).
26. Start the engine, and wait for at least 1 second.

27. Check for DTCs with the HDS.

Is DTC P0962 indicated?

YES—Check for poor connections or loose terminals between A/T clutch pressure control solenoid valve A and the PCM. If the PCM was updated, substitute a known-good PCM (see page 14-9), then go to step 26. If the PCM was substituted, go to step 1.

NO—Go to step 28.

28. Monitor the OBD STATUS for P0962 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-230). If any other DTCs were indicated in step 27, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals between A/T clutch pressure control solenoid valve A and the PCM. If the PCM was updated, substitute a known-good PCM (see page 14-9), then go to step 26. If the PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, go to step 26.

Automatic Transmission

DTC Troubleshooting (cont'd)

DTC P0963: Problem in A/T Clutch Pressure Control Solenoid Valve A

NOTE:

- Before you troubleshoot, record all freeze data and any on-board snapshot, and review General Troubleshooting Information (see page 14-4).
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine, and wait for at least 1 second.
4. Check for DTCs with the HDS.

Is DTC P0963 indicated?

YES—Go to step 8.

NO—Go to step 5.

5. Select Clutch Pressure Control Solenoid Control in the Miscellaneous Test Menu, and test A/T clutch pressure control solenoid valve A with the HDS.

Does the screen indicate NORMAL?

YES—Go to step 6.

NO—Go to step 8.

6. Command A/T clutch pressure control solenoid valve A at 0.2 A in Clutch Pressure Control Solenoid Control menu.

7. Monitor the OBD STATUS for P0963 in the DTCs MENU with the HDS.

Does the screen indicate FAILED?

YES—Go to step 8.

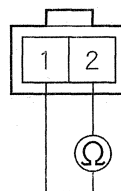
NO—If the screen indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals between A/T clutch pressure control solenoid valve A and the PCM. If the screen indicates NOT COMPLETED, go to step 5.

8. Turn the ignition switch OFF.

9. Disconnect the A/T clutch pressure control solenoid valve A connector.

10. Measure the resistance between A/T clutch pressure control solenoid valve A connector terminals No. 1 and No. 2.

A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE A CONNECTOR



Terminal side of male terminals

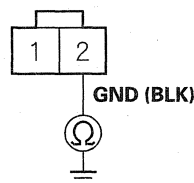
Is there 3–10 Ω?

YES—Go to step 11.

NO—Replace A/T clutch pressure control solenoid valve A (see page 14-202), then go to step 12.

11. Check for continuity between A/T clutch pressure control solenoid valve A connector terminal No. 2 and body ground.

A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE A CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Go to step 18.

NO—Repair open in the wire between A/T clutch pressure control solenoid valve A and ground (G101, G102) (see page 22-77), or repair poor ground (G101, G102), then go to step 12.



12. Reconnect all connectors.

13. Turn the ignition switch ON (II).

14. Clear the DTC with the HDS.

15. Start the engine, and wait for at least 1 second.

16. Check for DTCs with the HDS.

Is DTC P0963 indicated?

YES—Check for poor connections or loose terminals between A/T clutch pressure control solenoid valve A and the PCM, then go to step 1.

NO—Go to step 17.

17. Monitor the OBD STATUS for P0963 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. If any other DTCs were indicated in step 16, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals between A/T clutch pressure control solenoid valve A and the PCM, then go to step 1. If the screen indicates NOT COMPLETED, go to step 15.

18. Update the PCM if it does not have the latest software (see page 14-8), or substitute a known-good PCM (see page 14-9).

19. Start the engine, and wait for at least 1 second.

20. Check for DTCs with the HDS.

Is DTC P0963 indicated?

YES—Check for poor connections or loose terminals between A/T clutch pressure control solenoid valve A and the PCM. If the PCM was updated, substitute a known-good PCM (see page 14-9), then go to step 19. If the PCM was substituted, go to step 1.

NO—Go to step 21.

21. Monitor the OBD STATUS for P0963 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-230). If any other DTCs were indicated in step 20, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals between A/T clutch pressure control solenoid valve A and the PCM. If the PCM was updated, substitute a known-good PCM (see page 14-9), then go to step 19. If the PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, go to step 19.

Automatic Transmission

DTC Troubleshooting (cont'd)

DTC P0966: Problem in A/T Clutch Pressure Control Solenoid Valve B Circuit

NOTE:

- Before you troubleshoot, record all freeze data and any on-board snapshot, and review General Troubleshooting Information (see page 14-4).
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine, and wait for at least 1 second.
4. Check for DTCs with the HDS.

Is DTC P0966 indicated?

YES—Go to step 8.

NO—Go to step 5.

5. Select Clutch Pressure Control Solenoid Control in the Miscellaneous Test Menu, and test A/T clutch pressure control solenoid valve B with the HDS.

Does the screen indicate NORMAL?

YES—Go to step 6.

NO—Go to step 8.

6. Command A/T clutch pressure control solenoid valve B at 1.0 A in Clutch Pressure Control Solenoid Control menu.

7. Monitor the OBD STATUS for P0966 in the DTCs MENU with the HDS.

Does the screen indicate FAILED?

YES—Go to step 8.

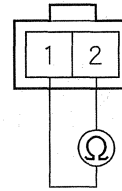
NO—If the screen indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals between A/T clutch pressure control solenoid valve B and the PCM. If the screen indicates NOT COMPLETED, go to step 5.

8. Turn the ignition switch OFF.

9. Disconnect the A/T clutch pressure control solenoid valve B connector.

10. Measure the resistance between A/T clutch pressure control solenoid valve B connector terminals No. 1 and No. 2.

A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE B CONNECTOR



Terminal side of male terminals

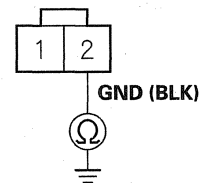
Is there 3–10 Ω ?

YES—Go to step 11.

NO—Replace A/T clutch pressure control solenoid valve B (see page 14-202), then go to step 19.

11. Check for continuity between A/T clutch pressure control solenoid valve B connector terminal No. 2 and body ground.

A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE B CONNECTOR

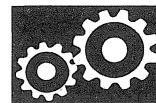


Wire side of female terminals

Is there continuity?

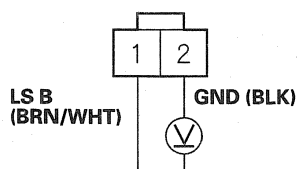
YES—Go to step 12.

NO—Repair open in the wire between A/T clutch pressure control solenoid valve B and ground (G101, G102) (see page 22-77), or repair poor ground (G101, G102), then go to step 19.



12. Turn the ignition switch ON (II).
13. Measure the voltage between A/T clutch pressure control solenoid valve B connector terminals No. 1 and No. 2.

**A/T CLUTCH PRESSURE CONTROL
SOLENOID VALVE B CONNECTOR**



Wire side of female terminals

Is there battery voltage?

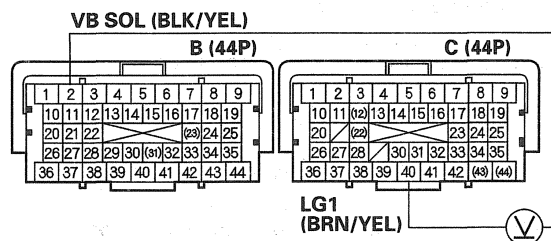
YES—Go to step 14.

NO—Repair open or short in the wire between PCM connector terminal B25 and A/T clutch pressure control solenoid valve B, then go to step 19.

14. Turn the ignition switch OFF.
15. Jump the SCS line with the HDS.
16. Disconnect PCM connectors B (44P) and C (44P).
17. Turn the ignition switch ON (II).

18. Measure the voltage between PCM connector terminals B2 and C40.

PCM CONNECTORS



Terminal side of female terminals

Is there battery voltage?

YES—Go to step 25.

NO—Check for a blown No. 6 fuse in the driver's under-dash fuse/relay box. If the fuse is OK, repair an open in the wire between PCM connector terminal B2 and the driver's under-dash fuse/relay box, then go to step 19.

(cont'd)

Automatic Transmission

DTC Troubleshooting (cont'd)

19. Reconnect all connectors.
20. Turn the ignition switch ON (II).
21. Clear the DTC with the HDS.
22. Start the engine, and wait for at least 1 second.
23. Check for DTCs with the HDS.

Is DTC P0966 indicated?

YES—Check for poor connections or loose terminals between A/T clutch pressure control solenoid valve B and the PCM, then go to step 1.

NO—Go to step 24.

24. Monitor the OBD STATUS for P0966 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. If any other DTCs were indicated in step 23, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals between A/T clutch pressure control solenoid valve B and the PCM, then go to step 1. If the screen indicates NOT COMPLETED, go to step 22.

25. Update the PCM if it does not have the latest software (see page 14-8), or substitute a known-good PCM (see page 14-9).
26. Start the engine, and wait for at least 1 second.

27. Check for DTCs with the HDS.

Is DTC P0966 indicated?

YES—Check for poor connections or loose terminals between A/T clutch pressure control solenoid valve B and the PCM. If the PCM was updated, substitute a known-good PCM (see page 14-9), then go to step 26. If the PCM was substituted, go to step 1.

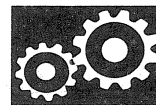
NO—Go to step 28.

28. Monitor the OBD STATUS for P0966 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-230). If any other DTCs were indicated in step 27, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals between A/T clutch pressure control solenoid valve B and the PCM. If the PCM was updated, substitute a known-good PCM (see page 14-9), then go to step 26. If the PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, go to step 26.



DTC P0967: Problem in A/T Clutch Pressure Control Solenoid Valve B

NOTE:

- Before you troubleshoot, record all freeze data and any on-board snapshot, and review General Troubleshooting Information (see page 14-4).
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine, and wait for at least 1 second.
4. Check for DTCs with the HDS.

Is DTC P0967 indicated?

YES—Go to step 8.

NO—Go to step 5.

5. Select Clutch Pressure Control Solenoid Control in the Miscellaneous Test Menu, and test A/T clutch pressure control solenoid valve B with the HDS.

Does the screen indicate NORMAL?

YES—Go to step 6.

NO—Go to step 8.

6. Command A/T clutch pressure control solenoid valve B at 0.2 A in Clutch Pressure Control Solenoid Control menu.

7. Monitor the OBD STATUS for P0967 in the DTCs MENU with the HDS.

Does the screen indicate FAILED?

YES—Go to step 8.

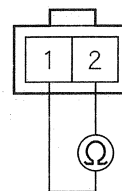
NO—If the screen indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals between A/T clutch pressure control solenoid valve and the PCM. If the screen indicates NOT COMPLETED, go to step 5.

8. Turn the ignition switch OFF.

9. Disconnect the A/T clutch pressure control solenoid valve B connector.

10. Measure the resistance between A/T clutch pressure control solenoid valve B connector terminals No. 1 and No. 2.

A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE B CONNECTOR



Terminal side of male terminals

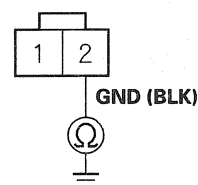
Is there 3—10 Ω ?

YES—Go to step 11.

NO—Replace A/T clutch pressure control solenoid valve B (see page 14-202), then go to step 12.

11. Check for continuity between A/T clutch pressure control solenoid valve B connector terminal No. 2 and body ground.

A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE B CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Go to step 18.

NO—Repair open in the wire between A/T clutch pressure control solenoid valve B and ground (G101, G102) (see page 22-77), or repair poor ground (G101, G102), then go to step 12.

(cont'd)

Automatic Transmission

DTC Troubleshooting (cont'd)

12. Reconnect all connectors.

13. Turn the ignition switch ON (II).

14. Clear the DTC with the HDS.

15. Start the engine, and wait for at least 1 second.

16. Check for DTCs with the HDS.

Is DTC P0967 indicated?

YES—Check for poor connections or loose terminals between A/T clutch pressure control solenoid valve B and the PCM, then go to step 1.

NO—Go to step 17.

17. Monitor the OBD STATUS for P0967 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. If any other DTCs were indicated in step 16, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals between A/T clutch pressure control solenoid valve B and the PCM, then go to step 1. If the screen indicates NOT COMPLETED, go to step 15.

18. Update the PCM if it does not have the latest software (see page 14-8), or substitute a known-good PCM (see page 14-9).

19. Start the engine, and wait for at least 1 second.

20. Check for DTCs with the HDS.

Is DTC P0967 indicated?

YES—Check for poor connections or loose terminals between A/T clutch pressure control solenoid valve B and the PCM. If the PCM was updated, substitute a known-good PCM (see page 14-9), then go to step 19. If the PCM was substituted, go to step 1.

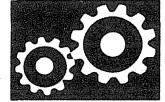
NO—Go to step 21.

21. Monitor the OBD STATUS for P0967 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-230). If any other DTCs were indicated in step 20, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals between A/T clutch pressure control solenoid valve B and the PCM. If the PCM was updated, substitute a known-good PCM (see page 14-9), then go to step 19. If the PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, go to step 19.



DTC P0970: Problem in A/T Clutch Pressure Control Solenoid Valve C Circuit

NOTE:

- Before you troubleshoot, record all freeze data and any on-board snapshot, and review General Troubleshooting Information (see page 14-4).
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine, and wait for at least 1 second.
4. Check for DTCs with the HDS.

Is DTC P0970 indicated?

YES—Go to step 8.

NO—Go to step 5.

5. Select Clutch Pressure Control Solenoid Control in the Miscellaneous Test Menu, and test A/T clutch pressure control solenoid valve C with the HDS.

Does the screen indicate NORMAL?

YES—Go to step 8.

NO—Go to step 6.

6. Command A/T clutch pressure control solenoid valve C at 1.0 A in Clutch Pressure Control Solenoid Control menu.
7. Monitor the OBD STATUS for P0970 in the DTCs MENU with the HDS.

Does the screen indicate FAILED?

YES—Go to step 8.

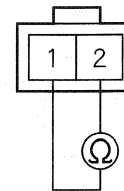
NO—If the screen indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals between A/T clutch pressure control solenoid valve C and the PCM. If the screen indicates NOT COMPLETED, go to step 5.

8. Turn the ignition switch OFF.

9. Disconnect the A/T clutch pressure control solenoid valve C connector.

10. Measure the resistance between A/T clutch pressure control solenoid valve C connector terminals No. 1 and No. 2.

A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE C CONNECTOR



Terminal side of male terminals

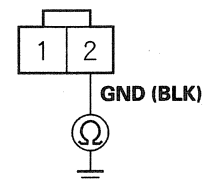
Is there 3–10 Ω?

YES—Go to step 11.

NO—Replace A/T clutch pressure control solenoid valve C (see page 14-207), then go to step 19.

11. Check for continuity between A/T clutch pressure control solenoid valve C connector terminal No. 2 and body ground.

A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE C CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Go to step 12.

NO—Repair open in the wire between A/T clutch pressure control solenoid valve C and ground (G101, G102) (see page 22-77), or repair poor ground (G101, G102), then go to step 19.

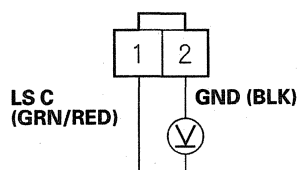
(cont'd)

Automatic Transmission

DTC Troubleshooting (cont'd)

12. Turn the ignition switch ON (II).
13. Measure the voltage between A/T clutch pressure control solenoid valve C connector terminals No. 1 and No. 2.

A/T CLUTCH PRESSURE CONTROL
SOLENOID VALVE C CONNECTOR



Wire side of female terminals

Is there battery voltage?

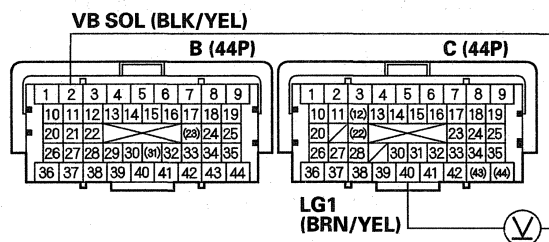
YES—Go to step 14.

NO—Repair open or short in the wire between PCM connector terminal B35 and A/T clutch pressure control solenoid valve C, then go to step 19.

14. Turn the ignition switch OFF.
15. Jump the SCS line with the HDS.
16. Disconnect PCM connectors B (44P) and C (44P).
17. Turn the ignition switch ON (II).

18. Measure the voltage between PCM connector terminals B2 and C40.

PCM CONNECTORS



Terminal side of female terminals

Is there battery voltage?

YES—Go to step 25.

NO—Check for a blown No. 6 fuse in the driver's under-dash fuse/relay box. If the fuse is OK, repair an open in the wire between PCM connector terminal B2 and the driver's under-dash fuse/relay box, then go to step 19.



19. Reconnect all connectors.
20. Turn the ignition switch ON (II).
21. Clear the DTC with the HDS.
22. Start the engine, and wait for at least 1 second.
23. Check for DTCs with the HDS.

Is DTC P0970 indicated?

YES—Check for poor connections or loose terminals between A/T clutch pressure control solenoid valve C and the PCM, then go to step 1.

NO—Go to step 24.

24. Monitor the OBD STATUS for P0970 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. If any other DTCs were indicated in step 23, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals between A/T clutch pressure control solenoid valve C and the PCM, then go to step 1. If the screen indicates NOT COMPLETED, go to step 22.

25. Update the PCM if it does not have the latest software (see page 14-8), or substitute a known-good PCM (see page 14-9).
26. Start the engine, and wait for at least 1 second.

27. Check for DTCs with the HDS.

Is DTC P0970 indicated?

YES—Check for poor connections or loose terminals between A/T clutch pressure control solenoid valve C and the PCM. If the PCM was updated, substitute a known-good PCM (see page 14-9), then go to step 26. If the PCM was substituted, go to step 1.

NO—Go to step 28.

28. Monitor the OBD STATUS for P0970 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-230). If any other DTCs were indicated in step 27, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals between A/T clutch pressure control solenoid valve C and the PCM. If the PCM was updated, substitute a known-good PCM (see page 14-9), then go to step 26. If the PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, go to step 26.

Automatic Transmission

DTC Troubleshooting (cont'd)

DTC P0971: Problem in A/T Clutch Pressure Control Solenoid Valve C

NOTE:

- Before you troubleshoot, record all freeze data and any on-board snapshot, and review General Troubleshooting Information (see page 14-4).
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine, and wait for at least 1 second.
4. Check for DTCs with the HDS.

Is DTC P0971 indicated?

YES—Go to step 8.

NO—Go to step 5.

5. Select Clutch Pressure Control Solenoid Control in the Miscellaneous Test Menu, and test A/T clutch pressure control solenoid valve C with the HDS.

Does the screen indicate NORMAL?

YES—Go to step 8.

NO—Go to step 6.

6. Command A/T clutch pressure control solenoid valve C at 0.2 A in Clutch Pressure Control Solenoid Control menu.
7. Monitor the OBD STATUS for P0971 in the DTCs MENU with the HDS.

Does the screen indicate FAILED?

YES—Go to step 8.

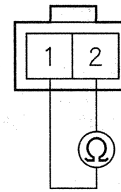
NO—If the screen indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals between A/T clutch pressure control solenoid valve C and the PCM. If the screen indicates NOT COMPLETED, go to step 5.

8. Turn the ignition switch OFF.

9. Disconnect the A/T clutch pressure control solenoid valve C connector.

10. Measure the resistance between A/T clutch pressure control solenoid valve C connector terminals No. 1 and No. 2.

A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE C CONNECTOR



Terminal side of male terminals

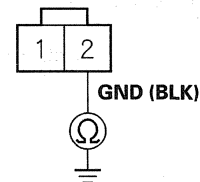
Is there 3–10 Ω ?

YES—Go to step 11.

NO—Replace A/T clutch pressure control solenoid valve C (see page 14-207), then go to step 12.

11. Check for continuity between A/T clutch pressure control solenoid valve C connector terminal No. 2 and body ground.

A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE C CONNECTOR

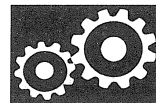


Wire side of female terminals

Is there continuity?

YES—Go to step 18.

NO—Repair open in the wire between A/T clutch pressure control solenoid valve C and ground (G101, G102) (see page 22-77), or repair poor ground (G101, G102), then go to step 12.



12. Reconnect all connectors.
13. Turn the ignition switch ON (II).
14. Clear the DTC with the HDS.
15. Start the engine, and wait for at least 1 second.
16. Check for DTCs with the HDS.

Is DTC P0971 indicated?

YES—Check for poor connections or loose terminals between A/T clutch pressure control solenoid valve C and the PCM, then go to step 1.

NO—Go to step 17.

17. Monitor the OBD STATUS for P0971 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. If any other DTCs were indicated in step 16, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals between A/T clutch pressure control solenoid valve C and the PCM, then go to step 1. If the screen indicates NOT COMPLETED, go to step 15.

18. Update the PCM if it does not have the latest software (see page 14-8), or substitute a known-good PCM (see page 14-9).
19. Start the engine, and wait for at least 1 second.

20. Check for DTCs with the HDS.

Is DTC P0971 indicated?

YES—Check for poor connections or loose terminals between A/T clutch pressure control solenoid valve C and the PCM. If the PCM was updated, substitute a known-good PCM (see page 14-9), then go to step 18. If the PCM was substituted, go to step 1.

NO—Go to step 21.

21. Monitor the OBD STATUS for P0971 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-230). If any other DTCs were indicated in step 20, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals between A/T clutch pressure control solenoid valve C and the PCM. If the PCM was updated, substitute a known-good PCM (see page 14-9), then go to step 19. If the PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, go to step 19.

Automatic Transmission

DTC Troubleshooting (cont'd)

DTC P0973: Short in Shift Solenoid Valve A Circuit

NOTE:

- Before you troubleshoot, record all freeze data and any on-board snapshot, and review General Troubleshooting Information (see page 14-4).
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine in the P position, and wait for at least 1 second.
4. Test-drive the vehicle in 1st gear in the D position for at least 1 second.
5. Check for DTCs with the HDS.

Is DTC P0973 indicated?

YES—Go to step 10.

NO—Go to step 6.

6. Select Shift Solenoid A in the Miscellaneous Test Menu, and test shift solenoid valve A with the HDS.

Is a clicking sound heard?

YES—Go to step 7.

NO—Go to step 10.

7. Start the engine in the P position, and wait for at least 1 second.
8. Test-drive the vehicle in 1st gear in the D position for at least 1 second.

9. Monitor the OBD STATUS for P0973 in the DTCs MENU with the HDS.

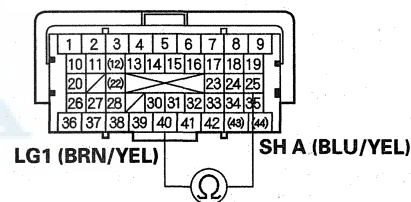
Does the screen indicate FAILED?

YES—Go to step 10.

NO—If the screen indicates PASSED, intermittent failure, the system is OK at this time. Check for intermittent short to body ground in the wire between shift solenoid valve A and the PCM. If the screen indicates NOT COMPLETED, go to step 6.

10. Turn the ignition switch OFF.
11. Jump the SCS line with the HDS.
12. Disconnect PCM connector C (44P).
13. Measure the resistance between PCM connector terminals C25 and C40.

PCM CONNECTOR C (44P)

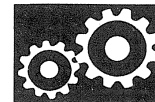


Terminal side of female terminals

Is there less than 12 Ω ?

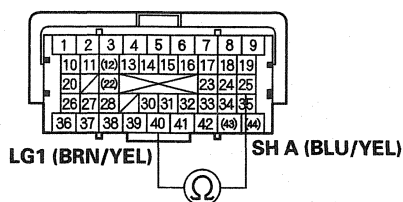
YES—Go to step 14.

NO—Go to step 26.



14. Disconnect the solenoid harness connector.
15. Check for continuity between PCM connector terminals C25 and C40.

PCM CONNECTOR C (44P)



Terminal side of female terminals

Is there continuity?

YES—Repair short to body ground in the wire between PCM connector terminal C25 and the solenoid harness connector, then go to step 19.

NO—Go to step 16.

16. Inspect shift solenoid valve A (see page 14-192).

Is shift solenoid valve A OK?

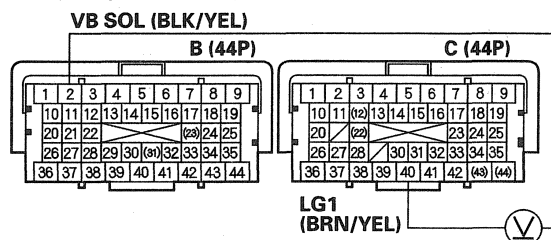
YES—Go to step 17.

NO—Replace shift solenoid valve A (see page 14-192), then go to step 19.

17. Turn the ignition switch ON (II).

18. Measure the voltage between PCM connector terminals B2 and C40.

PCM CONNECTORS



Terminal side of female terminals

Is there battery voltage?

YES—Go to step 26.

NO—Check for a blown No. 6 fuse in the driver's under-dash fuse/relay box. If the fuse is OK, repair an open in the wire between PCM connector terminal B2 and the driver's under-dash fuse/relay box, then go to step 19.

(cont'd)

Automatic Transmission

DTC Troubleshooting (cont'd)

19. Reconnect all connectors.
20. Turn the ignition switch ON (II).
21. Clear the DTC with the HDS.
22. Start the engine in the P position, and wait for at least 1 second.
23. Test-drive the vehicle in 1st gear in the D position for at least 1 second.
24. Check for DTCs with the HDS.

Is DTC P0973 indicated?

YES—Check for intermittent short to body ground in the wire between shift solenoid valve A and the PCM, then go to step 1.

NO—Go to step 25.

25. Monitor the OBD STATUS for P0973 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. If any other DTCs were indicated in step 24, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for intermittent short to body ground in the wire between shift solenoid valve A and the PCM, then go to step 1. If the screen indicates NOT COMPLETED, go to step 22.

26. Update the PCM if it does not have the latest software (see page 14-8), or substitute a known-good PCM (see page 14-9).

27. Start the engine in the P position, and wait for at least 1 second.
28. Test-drive the vehicle in 1st gear in the D position for at least 1 second.
29. Check for DTCs with the HDS.

Is DTC P0973 indicated?

YES—Check for intermittent short to body ground in the wire between shift solenoid valve A and the PCM. If the PCM was updated, substitute a known-good PCM (see page 14-9), then go to step 27. If the PCM was substituted, go to step 1.

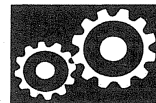
NO—Go to step 30.

30. Monitor the OBD STATUS for P0973 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-230). If any other DTCs were indicated in step 29, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for intermittent short to body ground in the wire between shift solenoid valve A and the PCM. If the PCM was updated, substitute a known-good PCM (see page 14-9), then go to step 27. If the PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, go to step 27.



DTC P0974: Open in Shift Solenoid Valve A Circuit

NOTE:

- Before you troubleshoot, record all freeze data and any on-board snapshot, and review General Troubleshooting Information (see page 14-4).
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine in the P position, and wait for at least 1 second.
4. Test-drive the vehicle in 1st gear in the D position for at least 1 second.
5. Check for DTCs with the HDS.

Is DTC P0974 indicated?

YES—Go to step 10.

NO—Go to step 6.

6. Select Shift Solenoid A in the Miscellaneous Test Menu, and test shift solenoid valve A with the HDS.

Is a clicking sound heard?

YES—Go to step 7.

NO—Go to step 10.

7. Start the engine in the P position, and wait for at least 1 second.
8. Test-drive the vehicle in 1st gear in the D position for at least 1 second.
9. Monitor the OBD STATUS for P0974 in the DTCs MENU with the HDS.

Does the screen indicate FAILED?

YES—Go to step 10.

NO—If the screen indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals between shift solenoid valve A and the PCM. If the screen indicates NOT COMPLETED, go to step 6.

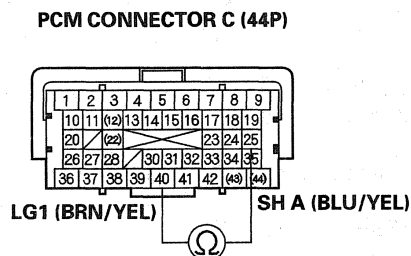
10. Turn the ignition switch OFF.
11. Jump the SCS line with the HDS.
12. Disconnect PCM connector C (44P).

(cont'd)

Automatic Transmission

DTC Troubleshooting (cont'd)

13. Measure the resistance between PCM connector terminals C25 and C40.



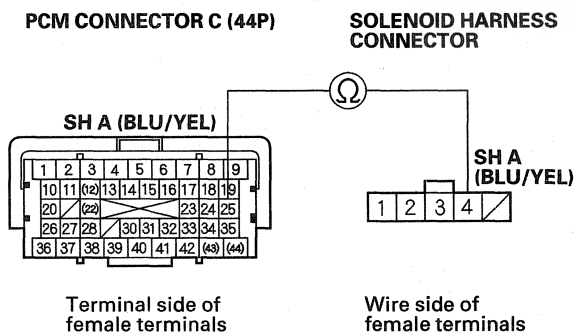
Terminal side of female terminals

Is there 12–25 Ω ?

YES—Go to step 25.

NO—Go to step 14.

14. Disconnect the solenoid harness connector.
15. Check for continuity between PCM connector terminal C25 and solenoid harness connector terminal No. 4.



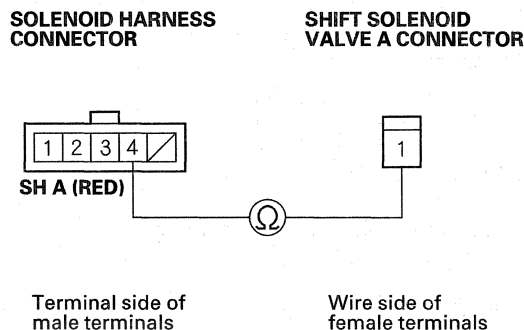
Is there continuity?

YES—Go to step 16.

NO—Repair open in the wire between PCM connector terminal C25 and the solenoid harness connector, then go to step 18.

16. Remove the solenoid harness connector (see page 14-192).

17. Check for continuity between solenoid harness connector terminal No. 4 and the shift solenoid valve A connector terminal.

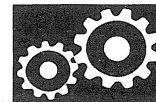


Is there continuity?

YES—Replace shift solenoid valve A (see page 14-192), then go to step 18.

NO—Replace the solenoid harness (see page 14-192), then go to step 18.

18. Reconnect all connectors.
19. Turn the ignition switch ON (II).
20. Clear the DTC with the HDS.



21. Start the engine in the P position, and wait for at least 1 second.
22. Test-drive the vehicle in 1st gear in the D position for at least 1 second.
23. Check for DTCs with the HDS.

Is DTC P0974 indicated?

YES—Check for poor connections or loose terminals between shift solenoid valve A and the PCM, then go to step 1.

NO—Go to step 24.

24. Monitor the OBD STATUS for P0974 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. If any other DTCs were indicated in step 23, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals between shift solenoid valve A and the PCM, then go to step 1. If the screen indicates NOT COMPLETED, go to step 21.

25. Update the PCM if it does not have the latest software (see page 14-8), or substitute a known-good PCM (see page 14-9).

26. Start the engine in the P position, and wait for at least 1 second.

27. Test-drive the vehicle in 1st gear in the D position for at least 1 second.

28. Check for DTCs with the HDS.

Is DTC P0974 indicated?

YES—Check for intermittent short to body ground in the wire between shift solenoid valve C and the PCM. If the PCM was updated, substitute a known-good PCM (see page 14-9), then go to step 26. If the PCM was substituted, go to step 1.

NO—Go to step 29.

29. Monitor the OBD STATUS for P0974 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-230). If any other DTCs were indicated in step 28, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals between shift solenoid valve A and the PCM. If the PCM was updated, substitute a known-good PCM (see page 14-9), then go to step 26. If the PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, go to step 26.

Automatic Transmission

DTC Troubleshooting (cont'd)

DTC P0976: Short in Shift Solenoid Valve B Circuit

NOTE:

- Before you troubleshoot, record all freeze data and any on-board snapshot, and review General Troubleshooting Information (see page 14-4).
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine in the P position, and wait for at least 1 second.
4. Test-drive the vehicle so that it shifts from 1st to 4th gear in the D position, then drive the vehicle in 4th gear for at least 1 second.
5. Check for DTCs with the HDS.

Is DTC P0976 indicated?

YES—Go to step 10.

NO—Go to step 6.

6. Select Shift Solenoid B in the Miscellaneous Test Menu, and test shift solenoid valve B with the HDS.

Is a clicking sound heard?

YES—Go to step 7.

NO—Go to step 10.

7. Start the engine in the P position, and wait for at least 1 second.
8. Test-drive the vehicle so that it shifts from 1st to 4th gear in the D position, then drive the vehicle in 4th gear for at least 1 second.

9. Monitor the OBD STATUS for P0976 in the DTCs MENU with the HDS.

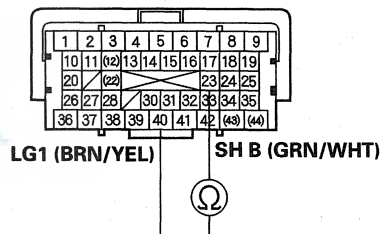
Does the screen indicate FAILED?

YES—Go to step 10.

NO—If the screen indicates PASSED, intermittent failure, the system is OK at this time. Check for intermittent short to body ground in the wire between shift solenoid valve B and the PCM. If the screen indicates NOT COMPLETED, go to step 6.

10. Turn the ignition switch OFF.
11. Jump the SCS line with the HDS.
12. Disconnect PCM connector C (44P).
13. Measure the resistance between PCM connector terminals C23 and C40.

PCM CONNECTOR C (44P)

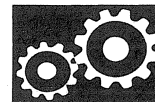


Terminal side of female terminals

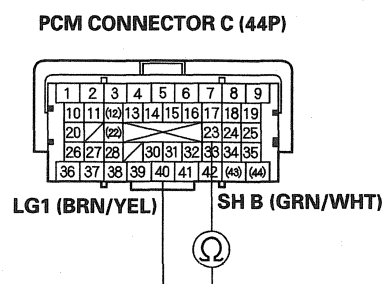
Is there less than 12 Ω ?

YES—Go to step 14.

NO—Go to step 26.



14. Disconnect the solenoid harness connector.
15. Check for continuity between PCM connector terminals C23 and C40.



Terminal side of female terminals

Is there continuity?

YES—Repair short to body ground in the wire between PCM connector terminal C23 and the solenoid harness connector, then go to step 19.

NO—Go to step 16.

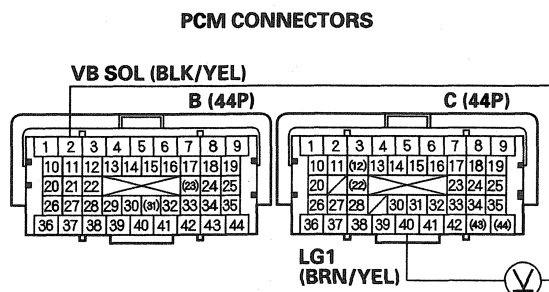
16. Inspect shift solenoid valve B (see page 14-192).

Is shift solenoid valve B OK?

YES—Go to step 17.

NO—Replace shift solenoid valve B (see page 14-192), then go to step 19.

17. Turn the ignition switch ON (II).
18. Measure the voltage between PCM connector terminals B2 and C40.



Terminal side of female terminals

Is there battery voltage?

YES—Go to step 26.

NO—Check for a blown No. 6 fuse in the driver's under-dash fuse/relay box. If the fuse is OK, repair an open in the wire between PCM connector terminal B2 and the driver's under-dash fuse/relay box, then go to step 19.

(cont'd)

Automatic Transmission

DTC Troubleshooting (cont'd)

19. Reconnect all connectors.
20. Turn the ignition switch ON (II).
21. Clear the DTC with the HDS.
22. Start the engine in the P position, and wait for at least 1 second.
23. Test-drive the vehicle so that it shifts from 1st to 4th gear in the D position, then drive the vehicle in 4th gear for at least 1 second.
24. Check for DTCs with the HDS.

Is DTC P0976 indicated?

YES—Check for intermittent short to body ground in the wire between shift solenoid valve B and the PCM, then go to step 1.

NO—Go to step 25.

25. Monitor the OBD STATUS for P0976 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. If any other DTCs were indicated in step 24, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for intermittent short to body ground in the wire between shift solenoid valve B and the PCM, then go to step 1. If the screen indicates NOT COMPLETED, go to step 22.

26. Update the PCM if it does not have the latest software (see page 14-8), or substitute a known-good PCM (see page 14-9).

27. Start the engine in the P position, and wait for at least 1 second.

28. Test-drive the vehicle so that it shifts from 1st to 4th gear in the D position, then drive the vehicle in 4th gear for at least 1 second.

29. Check for DTCs with the HDS.

Is DTC P0976 indicated?

YES—Check for intermittent short to body ground in the wire between shift solenoid valve B and the PCM. If the PCM was updated, substitute a known-good PCM (see page 14-9), then go to step 27. If the PCM was substituted, go to step 1.

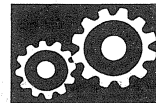
NO—Go to step 30.

30. Monitor the OBD STATUS for P0976 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-230). If any other DTCs were indicated in step 29, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for intermittent short to body ground in the wire between shift solenoid valve B and the PCM. If the PCM was updated, substitute a known-good PCM (see page 14-9), then go to step 27. If the PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, go to step 27.



DTC P0977: Open in Shift Solenoid Valve B Circuit

NOTE:

- Before you troubleshoot, record all freeze data and any on-board snapshot, and review General Troubleshooting Information (see page 14-4).
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine in the P position, and wait for at least 1 second.
4. Test-drive the vehicle so that it shifts from 1st to 4th gear in the D position, then drive the vehicle in 4th gear for at least 1 second.
5. Check for DTCs with the HDS.

Is DTC P0977 indicated?

YES—Go to step 10.

NO—Go to step 6.

6. Select Shift Solenoid B in the Miscellaneous Test Menu, and test shift solenoid valve B with the HDS.

Is a clicking sound heard?

YES—Go to step 7.

NO—Go to step 10.

7. Start the engine in the P position, and wait for at least 1 second.
8. Test-drive the vehicle so that it shifts from 1st to 4th gear in the D position, then drive the vehicle in 4th gear for at least 1 second.
9. Monitor the OBD STATUS for P0977 in the DTCs MENU with the HDS.

Does the screen indicate FAILED?

YES—Go to step 10.

NO—If the screen indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals between shift solenoid valve B and the PCM. If the screen indicates NOT COMPLETED, go to step 6.

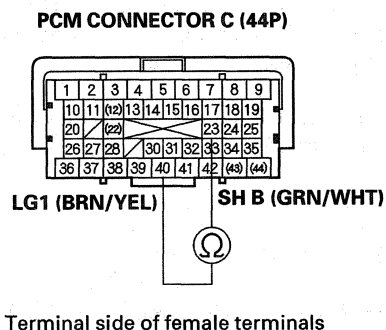
10. Turn the ignition switch OFF.
11. Jump the SCS line with the HDS.
12. Disconnect PCM connector C (44P).

(cont'd)

Automatic Transmission

DTC Troubleshooting (cont'd)

13. Measure the resistance between PCM connector terminals C23 and C40.

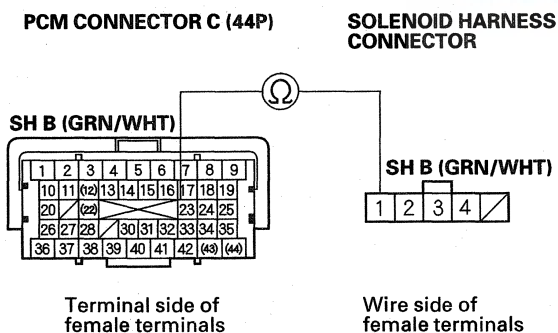


Is there 12–25 Ω?

YES—Go to step 25.

NO—Go to step 14.

14. Disconnect the solenoid harness connector.
15. Check for continuity between PCM connector terminal C23 and solenoid harness connector terminal No. 1.



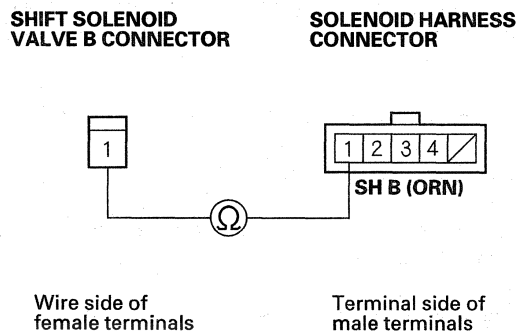
Is there continuity?

YES—Go to step 16.

NO—Repair open in the wire between PCM connector terminal C23 and the solenoid harness connector, then go to step 18.

16. Remove the solenoid harness connector (see page 14-192).

17. Check for continuity between solenoid harness connector terminal No. 1 and the shift solenoid valve B connector terminal.

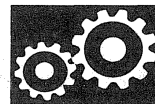


Is there continuity?

YES—Replace shift solenoid valve B (see page 14-192), then go to step 18.

NO—Replace the solenoid harness (see page 14-192), then go to step 18.

18. Reconnect all connectors.
19. Turn the ignition switch ON (II).
20. Clear the DTC with the HDS.



21. Start the engine in the P position, and wait for at least 1 second.

22. Test-drive the vehicle so that it shifts from 1st to 4th gear in the D position, then drive the vehicle in 4th gear for at least 1 second.

23. Check for DTCs with the HDS.

Is DTC P0977 indicated?

YES—Check for poor connections or loose terminals between shift solenoid valve B and the PCM, then go to step 1.

NO—Go to step 24.

24. Monitor the OBD STATUS for P0977 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. If any other DTCs were indicated in step 23, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals between shift solenoid valve B and the PCM, then go to step 1. If the screen indicates NOT COMPLETED, go to step 21.

25. Update the PCM if it does not have the latest software (see page 14-8), or substitute a known-good PCM (see page 14-9).

26. Start the engine in the P position, and wait for at least 1 second.

27. Test-drive the vehicle so that it shifts from 1st to 4th gear in the D position, then drive the vehicle in 4th gear for at least 1 second.

28. Check for DTCs with the HDS.

Is DTC P0977 indicated?

YES—Check for poor connections or loose terminals between shift solenoid valve B and the PCM. If the PCM was updated, substitute a known-good PCM (see page 14-9), then go to step 26. If the PCM was substituted, go to step 1.

NO—Go to step 29.

29. Monitor the OBD STATUS for P0977 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-230). If any other DTCs were indicated in step 28, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals between shift solenoid valve B and the PCM. If the PCM was updated, substitute a known-good PCM (see page 14-9), then go to step 26. If the PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, go to step 26.

Automatic Transmission

DTC Troubleshooting (cont'd)

DTC P0979: Short in Shift Solenoid Valve C Circuit

NOTE:

- Before you troubleshoot, record all freeze data and any on-board snapshot, and review General Troubleshooting Information (see page 14-4).
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine in the P position, and wait for at least 1 second.
4. Test-drive the vehicle in 1st gear in the D position for at least 1 second.
5. Check for DTCs with the HDS.

Is DTC P0979 indicated?

YES—Go to step 10.

NO—Go to step 6.

6. Select Shift Solenoid C in the Miscellaneous Test Menu, and test shift solenoid valve C with the HDS.

Is a clicking sound heard?

YES—Go to step 7.

NO—Go to step 10.

7. Start the engine in the P position, and wait for at least 1 second.
8. Test-drive the vehicle in 1st gear in the D position for at least 1 second.

9. Monitor the OBD STATUS for P0979 in the DTCs MENU with the HDS.

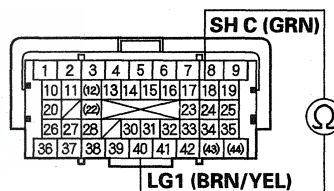
Does the screen indicate FAILED?

YES—Go to step 10.

NO—If the screen indicates PASSED, intermittent failure, the system is OK at this time. Check for intermittent short to body ground in the wire between shift solenoid valve C and the PCM. If the screen indicates NOT COMPLETED, go to step 6.

10. Turn the ignition switch OFF.
11. Jump the SCS line with the HDS.
12. Disconnect PCM connector C (44P).
13. Measure the resistance between PCM connector terminals C18 and C40.

PCM CONNECTOR C (44P)



Terminal side of female terminals

Is there less than 12 Ω ?

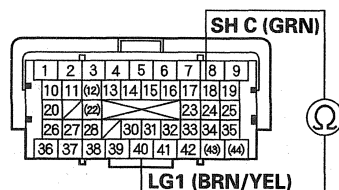
YES—Go to step 14.

NO—Go to step 26.



14. Disconnect the solenoid harness connector.
15. Check for continuity between PCM connector terminals C18 and C40.

PCM CONNECTOR C (44P)



Terminal side of female terminals

Is there continuity?

YES—Repair short to body ground in the wire between PCM connector terminal C18 and the solenoid harness connector, then go to step 19.

NO—Go to step 16.

16. Inspect shift solenoid valve C (see page 14-192).

Is shift solenoid valve C OK?

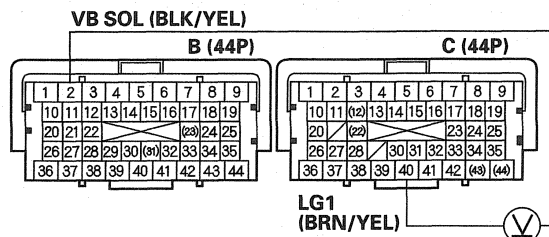
YES—Go to step 17.

NO—Replace shift solenoid valve C (see page 14-192), then go to step 19.

17. Turn the ignition switch ON (II).

18. Measure the voltage between PCM connector terminals B2 and C40.

PCM CONNECTORS



Terminal side of female terminals

Is there battery voltage?

YES—Go to step 26.

NO—Check for a blown No. 6 fuse in the driver's under-dash fuse/relay box. If the fuse is OK, repair an open in the wire between PCM connector terminal B2 and the driver's under-dash fuse/relay box, then go to step 19.

(cont'd)

Automatic Transmission

DTC Troubleshooting (cont'd)

19. Reconnect all connectors.
20. Turn the ignition switch ON (II).
21. Clear the DTC with the HDS.
22. Start the engine in the P position, and wait for at least 1 second.
23. Test-drive the vehicle in 1st gear in the D position for at least 1 second.
24. Check for DTCs with the HDS.

Is DTC P0979 indicated?

YES—Check for intermittent short to body ground in the wire between shift solenoid valve C and the PCM, then go to step 1.

NO—Go to step 25.

25. Monitor the OBD STATUS for P0979 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. If any other DTCs were indicated in step 24, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for intermittent short to body ground in the wire between shift solenoid valve C and the PCM, then go to step 1. If the screen indicates NOT COMPLETED, go to step 22.

26. Update the PCM if it does not have the latest software (see page 14-8), or substitute a known-good PCM (see page 14-9).

27. Start the engine in the P position, and wait for at least 1 second.
28. Test-drive the vehicle in 1st gear in the D position for at least 1 second.

29. Check for DTCs with the HDS.

Is DTC P0979 indicated?

YES—Check for intermittent short to body ground in the wire between shift solenoid valve C and the PCM. If the PCM was updated, substitute a known-good PCM (see page 14-9), then go to step 27. If the PCM was substituted, go to step 1.

NO—Go to step 30.

30. Monitor the OBD STATUS for P0979 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-230). If any other DTCs were indicated in step 29, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for intermittent short to body ground in the wire between shift solenoid valve C and the PCM. If the PCM was updated, substitute a known-good PCM (see page 14-9), then go to step 27. If the PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, go to step 27.



DTC P0980: Open in Shift Solenoid Valve C Circuit

NOTE:

- Before you troubleshoot, record all freeze data and any on-board snapshot, and review General Troubleshooting Information (see page 14-4).
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine in the P position, and wait for at least 1 second.
4. Test-drive the vehicle in 1st gear in the D position for at least 1 second.
5. Check for DTCs with the HDS.

Is DTC P0980 indicated?

YES—Go to step 9.

NO—Go to step 6.

6. Select Shift Solenoid C in the Miscellaneous Test Menu, and test shift solenoid valve C with the HDS.

Is a clicking sound heard?

YES—Go to step 7.

NO—Go to step 9.

7. Start the engine in the P position, and wait for at least 1 second.
8. Test-drive the vehicle in 1st gear in the D position for at least 1 second.

9. Monitor the OBD STATUS for P0980 in the DTCs MENU with the HDS.

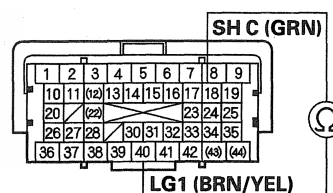
Does the screen indicate FAILED?

YES—Go to step 10.

NO—If the screen indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals between shift solenoid valve C and the PCM. If the screen indicates NOT COMPLETED, go to step 6.

10. Turn the ignition switch OFF.
11. Jump the SCS line with the HDS.
12. Disconnect PCM connector C (44P).
13. Measure the resistance between PCM connector terminals C18 and C40.

PCM CONNECTOR C (44P)



Terminal side of female terminals

Is there 12–25 Ω?

YES—Go to step 25.

NO—Go to step 14.

(cont'd)

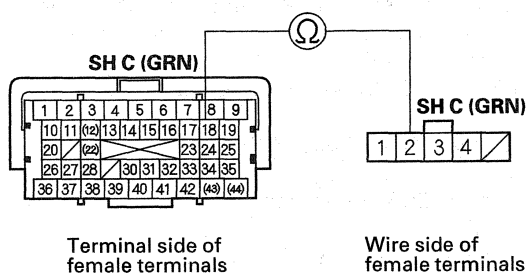
Automatic Transmission

DTC Troubleshooting (cont'd)

14. Disconnect the solenoid harness connector.
15. Check for continuity between PCM connector terminal C18 and solenoid harness connector terminal No. 2.

PCM CONNECTOR C (44P)

SOLENOID HARNESS CONNECTOR



Is there continuity?

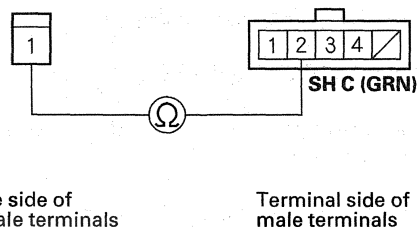
YES—Go to step 16.

NO—Repair open in the wire between PCM connector terminal C18 and the solenoid harness connector, then go to step 18.

16. Remove the solenoid harness connector (see page 14-192).
17. Check for continuity between solenoid harness connector terminal No. 2 and the shift solenoid valve C connector terminal.

SHIFT SOLENOID VALVE C CONNECTOR

SOLENOID HARNESS CONNECTOR

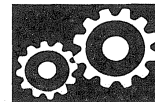


Is there continuity?

YES—Replace shift solenoid valve C (see page 14-192), then go to step 18.

NO—Replace the solenoid harness (see page 14-192), then go to step 18.

18. Reconnect all connectors.
19. Turn the ignition switch ON (II).
20. Clear the DTC with the HDS.
21. Start the engine in the P position, and wait for at least 1 second.
22. Test-drive the vehicle in 1st gear in the D position for at least 1 second.



23. Check for DTCs with the HDS.

Is DTC P0980 indicated?

YES—Check for poor connections or loose terminals between shift solenoid valve C and the PCM, then go to step 1.

NO—Go to step 24.

24. Monitor the OBD STATUS for P0980 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. If any other DTCs were indicated in step 23, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals between shift solenoid valve C and the PCM, then go to step 1. If the screen indicates NOT COMPLETED, go to step 21.

25. Update the PCM if it does not have the latest software (see page 14-8), or substitute a known-good PCM (see page 14-9).
26. Start the engine in the P position, and wait for at least 1 second.
27. Test-drive the vehicle in 1st gear in the D position for at least 1 second.

28. Check for DTCs with the HDS.

Is DTC P0980 indicated?

YES—Check for poor connections or loose terminals between shift solenoid valve C and the PCM. If the PCM was updated, substitute a known-good PCM (see page 14-9), then go to step 26. If the PCM was substituted, go to step 1.

NO—Go to step 29.

29. Monitor the OBD STATUS for P0980 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-230). If any other DTCs were indicated in step 28, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals between shift solenoid valve C and the PCM. If the PCM was updated, substitute a known-good PCM (see page 14-9), then go to step 26. If the PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, go to step 26.

Automatic Transmission

DTC Troubleshooting (cont'd)

DTC P2769: Short in Torque Converter Clutch Solenoid Valve Circuit

NOTE:

- Before you troubleshoot, record all freeze data and any on-board snapshot, and review General Troubleshooting Information (see page 14-4).
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine in the P position, and warm it up to normal operating temperature (the radiator fan comes on).
4. Test-drive the vehicle at a constant speed of 37 mph (60 km/h) in 5th gear in the D position for at least 1 second.
5. Check for DTCs with the HDS.

Is DTC P2769 indicated?

YES—Go to step 10.

NO—Go to step 6.

6. Select Lockup Solenoid Test in the Miscellaneous Test Menu, and test the torque converter clutch solenoid valve with the HDS.

Is a clicking sound heard?

YES—Go to step 7.

NO—Go to step 10.

7. Start the engine in the P position, and warm it up to normal operating temperature (the radiator fan comes on).
8. Test-drive the vehicle at a constant speed of 37 mph (60 km/h) in 5th gear in the D position for at least 1 second.

9. Monitor the OBD STATUS for P2769 in the DTCs MENU with the HDS.

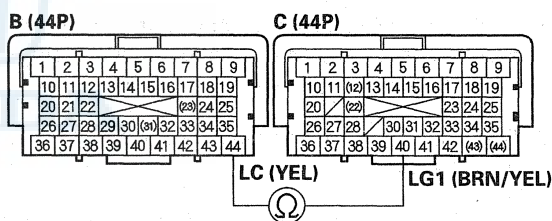
Does the screen indicate FAILED?

YES—Go to step 10.

NO—If the screen indicates PASSED, intermittent failure, the system is OK at this time. Check for intermittent short to body ground in the wire between the torque converter clutch solenoid valve and the PCM. If the screen indicates NOT COMPLETED, go to step 6.

10. Turn the ignition switch OFF.
11. Jump the SCS line with the HDS.
12. Disconnect PCM connectors B (44P) and C (44P).
13. Measure the resistance between PCM connector terminals B44 and C40.

PCM CONNECTORS



Terminal side of female terminals

Is there less than 12 Ω ?

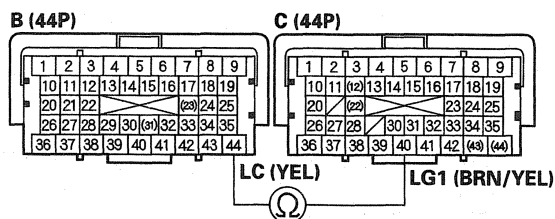
YES—Go to step 14.

NO—Go to step 26.



14. Disconnect the solenoid harness connector.
15. Check for continuity between PCM connector terminals B44 and C40.

PCM CONNECTORS



Terminal side of female terminals

Is there continuity?

YES—Repair short to body ground in the wire between PCM connector terminal B44 and the solenoid harness connector, then go to step 19.

NO—Go to step 16.

16. Inspect the torque converter clutch solenoid valve (see page 14-192).

Is the torque converter clutch solenoid valve OK?

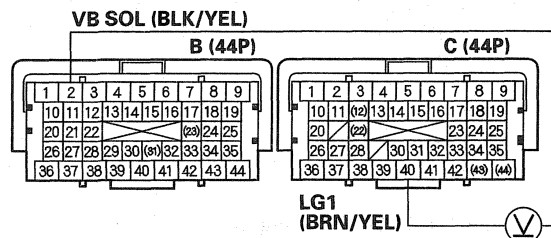
YES—Go to step 17.

NO—Replace the torque converter clutch solenoid valve (see page 14-192), then go to step 19.

17. Turn the ignition switch ON (II).

18. Measure the voltage between PCM connector terminals B2 and C40.

PCM CONNECTORS



Terminal side of female terminals

Is there battery voltage?

YES—Go to step 26.

NO—Check for a blown No. 6 fuse in the driver's under-dash fuse/relay box. If the fuse is OK, repair an open in the wire between PCM connector terminal B2 and the driver's under-dash fuse/relay box, then go to step 19.

(cont'd)

Automatic Transmission

DTC Troubleshooting (cont'd)

19. Reconnect all connectors.
20. Turn the ignition switch ON (II).
21. Clear the DTC with the HDS.
22. Start the engine in the P position, and warm it to normal operating temperature (the radiator fan comes on).
23. Test-drive the vehicle at a constant speed of 37 mph (60 km/h) in 5th gear in the D position for at least 1 second.
24. Check for DTCs with the HDS.

Is DTC P2769 indicated?

YES—Check for intermittent short to body ground in the wire between the torque converter clutch solenoid valve and the PCM, then go to step 1.

NO—Go to step 25.

25. Monitor the OBD STATUS for P2769 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. If any other DTCs were indicated in step 24, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for intermittent short to body ground in the wire between the torque converter clutch solenoid valve and the PCM, then go to step 1. If the screen indicates NOT COMPLETED, go to step 22.

26. Update the PCM if it does not have the latest software (see page 14-8), or substitute a known-good PCM (see page 14-9).
27. Start the engine in the P position, and warm it to normal operating temperature (the radiator fan comes on).
28. Test-drive the vehicle at a constant speed of 37 mph (60 km/h) in 5th gear in the D position for at least 1 second.
29. Check for DTCs with the HDS.

Is DTC P2769 indicated?

YES—Check for intermittent short to body ground in the wire between the torque converter clutch solenoid valve and the PCM. If the PCM was updated, substitute a known-good PCM (see page 14-9), then go to step 27. If the PCM was substituted, go to step 1.

NO—Go to step 30.

30. Monitor the OBD STATUS for P2769 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-230). If any other DTCs were indicated in step 29, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for intermittent short to body ground in the wire between the torque converter clutch solenoid valve and the PCM. If the PCM was updated, substitute a known-good PCM (see page 14-9), then go to step 27. If the PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, go to step 27.



DTC P2770: Open in Torque Converter Clutch Solenoid Valve Circuit

NOTE:

- Before you troubleshoot, record all freeze data and any on-board snapshot, and review General Troubleshooting Information (see page 14-4).
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine in the P position, and warm it up to normal operating temperature (the radiator fan comes on).
4. Test-drive the vehicle at a constant speed of 37 mph (60 km/h) in 5th gear in the D position for at least 1 second.
5. Check for DTCs with the HDS.

Is DTC P2770 indicated?

YES—Go to step 10.

NO—Go to step 6.

6. Select Lockup Solenoid Test in the Miscellaneous Test Menu, and test the torque converter clutch solenoid valve with the HDS.

Is a clicking sound heard?

YES—Go to step 7.

NO—Go to step 10.

7. Start the engine in the P Position, and warm it up to normal operating temperature (the radiator fan comes on).
8. Test-drive the vehicle at a constant speed of 37 mph (60 km/h) in 5th gear in the D position for at least 1 second.

9. Monitor the OBD STATUS for P2770 in the DTCs MENU with the HDS.

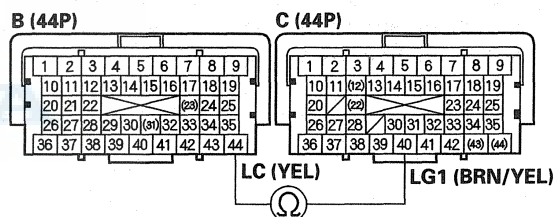
Does the screen indicate FAILED?

YES—Go to step 10.

NO—If the screen indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals between the torque converter clutch solenoid valve and the PCM. If the screen indicates NOT COMPLETED, go to step 6.

10. Turn the ignition switch OFF.
11. Jump the SCS line with the HDS.
12. Disconnect PCM connectors B (44P) and C (44P).
13. Measure the resistance between PCM connector terminals B44 and C40.

PCM CONNECTORS



Terminal side of female terminals

Is there 12–25 Ω ?

YES—Go to step 25.

NO—Go to step 14.

(cont'd)

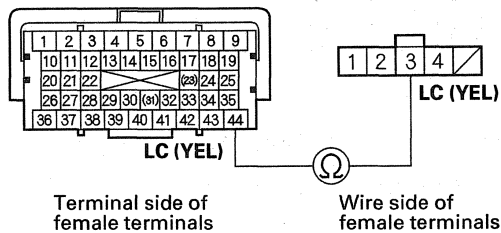
Automatic Transmission

DTC Troubleshooting (cont'd)

14. Disconnect the solenoid harness connector.
15. Check for continuity between PCM connector terminal B44 and solenoid harness connector terminal No. 3.

PCM CONNECTOR B (44P)

SOLENOID HARNESS CONNECTOR



Is there continuity?

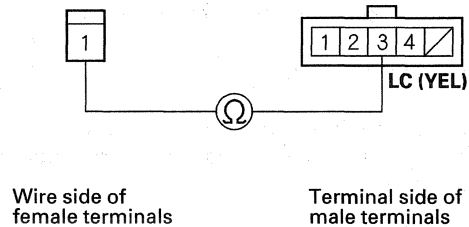
YES—Go to step 16.

NO—Repair open in the wire between PCM connector terminal B44 and the solenoid harness connector, then go to step 15.

16. Remove the solenoid harness connector (see page 14-192).
17. Check for continuity between solenoid harness connector terminal No. 3 and the torque converter clutch solenoid valve connector terminal.

TORQUE CONVERTER CLUTCH SOLENOID VALVE CONNECTOR

SOLENOID HARNESS CONNECTOR



Is there continuity?

YES—Replace the torque converter clutch solenoid valve (see page 14-192), then go to step 18.

NO—Replace the solenoid harness (see page 14-192), then go to step 18.



18. Reconnect all connectors.
19. Turn the ignition switch ON (II).
20. Clear the DTC with the HDS.
21. Start the engine in the P position, and warm it to normal operating temperature (the radiator fan comes on).
22. Test-drive the vehicle at a constant speed of 37 mph (60 km/h) in 5th gear in the D position for at least 1 second.
23. Check for DTCs with the HDS.

Is DTC P2770 indicated?

YES—Check for poor connections or loose terminals between the torque converter clutch solenoid valve and the PCM, then go to step 1.

NO—Go to step 24.

24. Monitor the OBD STATUS for P2770 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. If any other DTCs were indicated in step 25, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals between the torque converter clutch solenoid valve and the PCM, then go to step 1. If the screen indicates NOT COMPLETED, go to step 21.

25. Update the PCM if it does not have the latest software (see page 14-8), or substitute a known-good PCM (see page 14-9).
26. Start the engine in the P position, and warm it to normal operating temperature (the radiator fan comes on).
27. Test-drive the vehicle at a constant speed of 37 mph (60 km/h) in 5th gear in the D position for at least 1 second.

(cont'd)

Automatic Transmission

DTC Troubleshooting (cont'd)

28. Check for DTCs with the HDS.

Is DTC P2770 indicated?

YES—Check for poor connections or loose terminals between the torque converter clutch solenoid valve and the PCM. If the PCM was updated, substitute a known-good PCM (see page 14-9), then go to step 26. If the PCM was substituted, go to step 1.

NO—Go to step 29.

29. Monitor the OBD STATUS for P2770 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

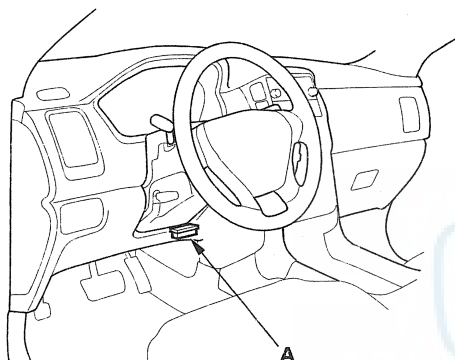
YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-230). If any other DTCs were indicated in step 28, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals between the torque converter clutch solenoid valve and the PCM. If the PCM was updated, substitute a known-good PCM (see page 14-9), then go to step 26. If the PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, go to step 26.



Road Test

1. Warm up the engine to normal operating temperature (the radiator fan comes on).
2. Apply the parking brake, and block both rear wheels. Start the engine, then shift to the D position while pressing the brake pedal. Press the accelerator pedal, and release it suddenly. The engine should not stall.
3. Repeat step 2 in all shift lever positions.
4. Connect the HDS to the DLC (A), and go to the A/T data list.



5. Test-drive the vehicle on a flat road in the D position. Check for abnormal noise and clutch slippage. While driving, check that the shift points occur at the proper speeds by monitoring the accelerator pedal position sensor voltage with the HDS and comparing your shift point speeds and voltage to those in the table. (The accelerator pedal position sensor voltage represents the throttle opening.)

Upshift: D Position

Accelerator pedal position sensor voltage: 0.75 V

1st→2nd	12—13 mph (19—21 km/h)
2nd→3rd	19—21 mph (31—33 km/h)
3rd→4th	25—29 mph (40—46 km/h)
4th→5th	45—49 mph (72—78 km/h)
Lock-up ON	47—50 mph (76—80 km/h)

Accelerator pedal position sensor voltage: 2.5 V

1st→2nd	29—32 mph (47—51 km/h)
2nd→3rd	50—54 mph (80—86 km/h)
3rd→4th	76—80 mph (121—127 km/h)
4th→5th	94—98 mph (151—157 km/h)
Lock-up ON	102—106 mph (164—170 km/h)

Fully-opened throttle

Accelerator pedal position sensor voltage: 4.5 V

1st→2nd	36—40 mph (58—64 km/h)
2nd→3rd	64—68 mph (102—108 km/h)
3rd→4th	100—104 mph (160—166 km/h)

(cont'd)

Automatic Transmission

Road Test (cont'd)

Downshift: D Position

Accelerator pedal position sensor voltage: 0.75 V	
Lock-up OFF	44—48 mph (70—77 km/h)
5th→4th	39—41 mph (62—66 km/h)
4th→3rd	18—21 mph (29—33 km/h)
2nd→1st	9—11 mph (14—18 km/h)
Accelerator pedal position sensor voltage: 2.5 V	
Lock-up OFF	90—94 mph (145—151 km/h)
5th→4th	73—76 mph (118—122 km/h)
4th→3rd	53—56 mph (86—90 km/h)
3rd→2nd	25—29 mph (40—46 km/h)
2nd→1st	9—11 mph (14—18 km/h)
Fully-opened throttle Accelerator pedal position sensor voltage: 4.5 V	
4th→3rd	89—93 mph (142—148 km/h)
3rd→2nd	58—62 mph (93—99 km/h)
2nd→1st	32—34 mph (51—55 km/h)

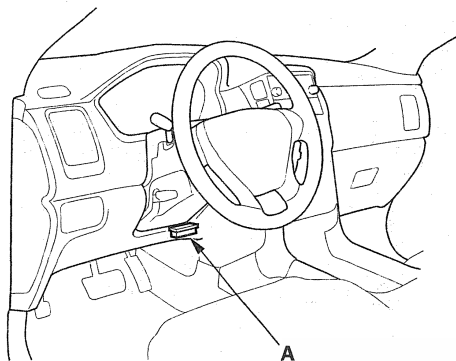
6. Drive the vehicle in 4th or 5th gear in the D position, then shift to the 2 position. The vehicle should immediately begin to slow down from engine braking.
7. Shift to the 1 position, accelerate from a stop at full throttle, and check for abnormal noise and clutch slippage. Upshifts should not occur in this position.
8. Shift to the 2 position, accelerate from a stop at full throttle, and check for abnormal noise and clutch slippage. Upshifts and downshifts should not occur in this position.
9. Shift to the R position, accelerate from a stop at full throttle momentarily, and check for abnormal noise and clutch slippage.
10. Park the vehicle on a slope (about 16-degrees), apply the brake, and shift into the P position. Release the brake; the vehicle should not move.

NOTE: Always use the brake to hold the vehicle, when stopped on an incline in gear. Depending on the grade of the incline, the vehicle could roll backwards if the brake is released.



Stall Speed Test

1. Make sure the transmission fluid is filled to the proper level (see page 14-213).
2. Apply parking brake, and block all four wheels.
3. Connect the HDS to the DLC (A), and go to the A/T data list.



4. Make sure the A/C switch OFF.
5. After the engine has warmed up to normal operating temperature (the radiator fan comes on), shift to the 2 position.
6. Firmly press and hold the brake pedal, then press the accelerator pedal fully for 6 to 8 seconds, and note engine speed. Do not move the shift lever while raising engine speed.
7. Allow 2 minutes for cooling, then repeat the test in the D, 1, and R positions.

NOTE:

- Do not test stall speed for at least 10 seconds at a time.
- Stall speed tests should be used for diagnostic purposes only.
- Stall speed tests should be the same in the D, 2, 1, and R positions.
- Do not test stall speed with the A/T pressure gauges installed.

Stall Speed rpm:

Specification: 1,950 rpm

Service Limit: 1,800—2,100 rpm

8. If any of the stall speeds are out of the service limit, problems and probable causes are listed in the table.

Problem	Probable causes
Stall speed rpm high in the D, 2, 1, and R positions	<ul style="list-style-type: none">• ATF pump output low• Clogged ATF strainer• Regulator valve stuck• Slipping clutch
Stall speed rpm high in the 1 position	<ul style="list-style-type: none">• Slippage of 1st clutch• Slippage of 1st gear one-way clutch
Stall speed rpm high in the 2 position	Slippage of 2nd clutch
Stall speed rpm high in the R position	Slippage of 5th clutch
Stall speed rpm low in the D, 2, 1, and R positions	<ul style="list-style-type: none">• Engine output low• Engine throttle valve closed• Torque converter one-way clutch slipping

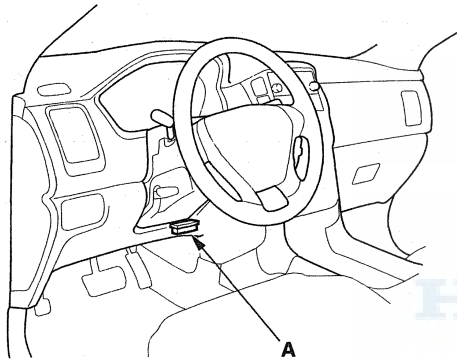
Automatic Transmission

Pressure Test

Special Tools Required

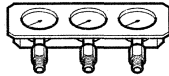
- A/T oil pressure gauge set
07406-0020400 or 07406-0020401
- A/T pressure hose, 2,210 mm 07MAJ-PY4011A
- A/T pressure hose adapter 07MAJ-PY40120

1. Make sure the transmission fluid is filled to the proper level (see page 14-213).
2. Raise the vehicle, and make sure it is securely supported.
3. Allow the all four wheels to rotate freely.
4. Remove the splash shield.
5. Connect the HDS to the DLC (A).



6. Connect the oil pressure gauge to the line pressure inspection port (A). Do not allow dust or other foreign particles to enter the port while connecting the gauge.

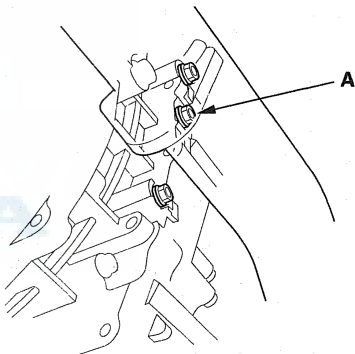
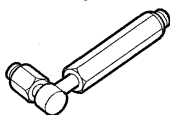
**A/T OIL PRESSURE
GAUGE SET W/PANEL**
07406-0020400 or
07406-0020401



**A/T PRESSURE
HOSE, 2,210 mm**
07MAJ-PY4011A
(3 required)



**A/T PRESSURE
HOSE ADAPTER**
07MAJ-PY40120
(3 required)



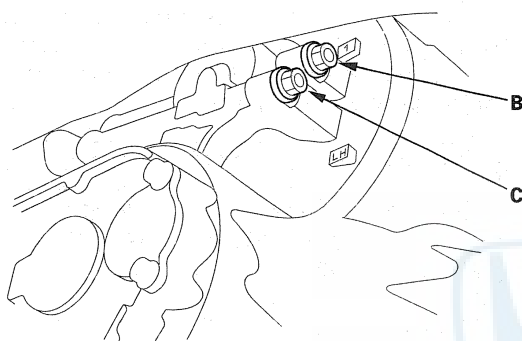
7. Start the engine in the P position, and warm up to normal operating temperature (the radiator fan comes on).
8. Measure the line pressure at the line pressure inspection port (A) in the P or N position while holding the engine speed at 2,000 rpm.

NOTE: Higher pressure may be indicated if measurements are made in shift lever position other than P or N.

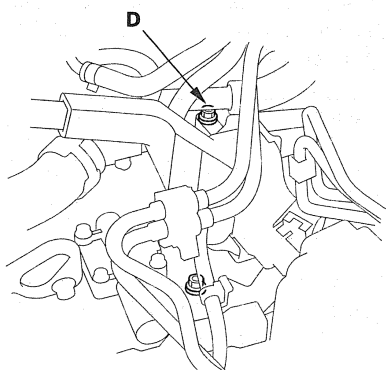
Pressure	Fluid Pressure	
	Standard	Service Limit
Line (A)	950—1,010 kPa (9.7—10.3 kgf/cm ² , 140—146 psi)	900 kPa (9.2 kgf/cm ² , 130 psi)



9. Turn the engine off, then disconnect the oil pressure gauge from the line pressure inspection port.
10. Install the sealing bolt to the line pressure inspection port with the new sealing washer, and tighten the bolts to 18 N·m (1.8 kgf·m, 13 lbf·ft). Do not reuse the old sealing washer.
11. Connect the oil pressure gauge to the 1st clutch pressure inspection port (B) and 1st-hold clutch pressure inspection port (C).



12. Remove the intake manifold cover and intake air duct, and connect the oil pressure gauge to the 2nd clutch pressure inspection port (D). Then temporarily install the intake air duct.



13. Start the engine, in the P position.
14. Shift into the 1 position, and measure the 1st clutch pressure at the 1st clutch pressure inspection port (B) and the 1st-hold clutch pressure at the 1st-hold clutch pressure inspection port (C) while holding the engine speed at 2,000 rpm.
15. Upshift to the 2 position by pushing the shift lever, and measure the 2nd clutch pressure at the 2nd clutch pressure inspection port (D) while holding the engine speed at 2,000 rpm.

Pressure	Fluid Pressure	
	Standard	Service Limit
1st clutch (B)	950—1,010 kPa (9.7—10.3 kgf/cm ² , 140—146 psi)	890 kPa (9.1 kgf/cm ² , 130 psi)
2nd clutch (D)		
1st-hold clutch (C)	800—880 kPa (8.2—9.0 kgf/cm ² , 120—130 psi)	760 kPa (7.7 kgf/cm ² , 110 psi)

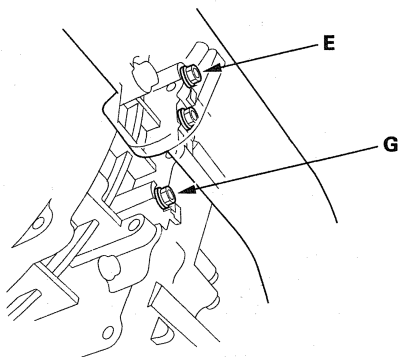
16. Turn the engine off, then disconnect the oil pressure gauges from the 1st clutch pressure, 1st-hold clutch pressure, and 2nd clutch pressure inspection ports.
17. Install the sealing bolts in the 1st clutch pressure, 1st-clutch hold clutch pressure, and 2nd clutch pressure inspection ports with the new sealing washers, and tighten the bolts to 18 N·m (1.8 kgf·m, 13 lbf·ft). Do not reuse the old sealing washers.

(cont'd)

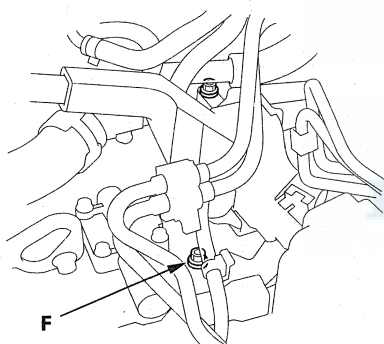
Automatic Transmission

Pressure Test (cont'd)

18. Connect the oil pressure gauge to the 3rd clutch pressure inspection port (E) and the 5th clutch pressure inspection port (G).



19. Connect the oil pressure gauge to the 4th clutch pressure inspection port (F).



20. Start the engine with the transmission in the P position while pressing the brake pedal.
21. Shift to the D3 position, and release the brake pedal; the transmission is in 1st gear.
22. Press the accelerator pedal to increase the engine speed to 2,500 rpm; the transmission shifts into 2nd gear.

23. Release the accelerator pedal; the engine speed decreases to 1,000 rpm with the transmission in 2nd gear.
24. Press the accelerator pedal very slowly so that the engine speed increases to 2,000 rpm in 5 seconds, then hold the accelerator; the transmission shifts into 3rd gear. Measure the 3rd clutch pressure at the 3rd clutch pressure inspection port (E) while holding the engine speed at 2,000 rpm.
25. Shift to the D position; the transmission shifts into 4th gear, then 5th gear. Measure the 4th clutch pressure at the 4th clutch pressure inspection port (F) and the 5th clutch pressure at the 5th clutch pressure inspection port (G) while holding the engine speed at 2,000 rpm.

Pressure	Fluid Pressure	
	Standard	Service Limit
3rd clutch (E)	950—1,010 kPa (9.7—10.3 kgf/cm ² , 140—146 psi)	890 kPa (9.1 kgf/cm ² , 130 psi)
4th clutch (F)		
5th clutch (G)		

26. Bring the engine back to an idle, then apply the brake pedal to stop the wheels from rotating.
27. Shift to the R position, then release the brake pedal. Raise the engine speed to 2,000 rpm, and measure the 5th clutch pressure at the 5th clutch pressure inspection port (G).

Pressure	Fluid Pressure	
	Standard	Service Limit
5th clutch (G) in R	950—1,010 kPa (9.7—10.3 kgf/cm ² , 140—146 psi)	890 kPa (9.1 kgf/cm ² , 130 psi)

28. Turn the engine off, then disconnect the oil pressure gauges from the 3rd, 4th, and 5th clutch pressure inspection ports.
29. Install the sealing bolts in the 3rd, 4th, and 5th clutch pressure inspection ports with the new sealing washers, and tighten the bolts to 18 N·m (1.8 kgf·m, 13 lbf·ft). Do not reuse the old sealing washers.



30. If any of the pressures are out of the service limit, problems and probable causes are listed in the table.

Problem	Probable causes
No or low line pressure	<ul style="list-style-type: none">• Torque converter• ATF pump• Regulator valve• Torque converter check valve• Low fluid level• Clogged ATF strainer
No or low 1st clutch pressure	<ul style="list-style-type: none">• 1st clutch• O-rings
No or low 2nd clutch pressure	<ul style="list-style-type: none">• 2nd clutch• O-rings
No or low 3rd clutch pressure	<ul style="list-style-type: none">• 3rd clutch• O-rings
No or low 4th clutch pressure	<ul style="list-style-type: none">• 4th clutch• O-rings
No or low 5th clutch pressure	<ul style="list-style-type: none">• 5th clutch• O-rings
No or low 5th clutch pressure in the R position	<ul style="list-style-type: none">• Servo valve• 5th clutch• O-rings
No or low 1st-hold clutch pressure	<ul style="list-style-type: none">• 1st-hold clutch• O-rings

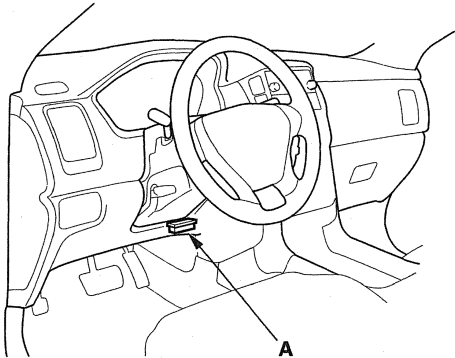
31. Install the intake air duct and the intake manifold cover.

32. Install the splash shield.

Automatic Transmission

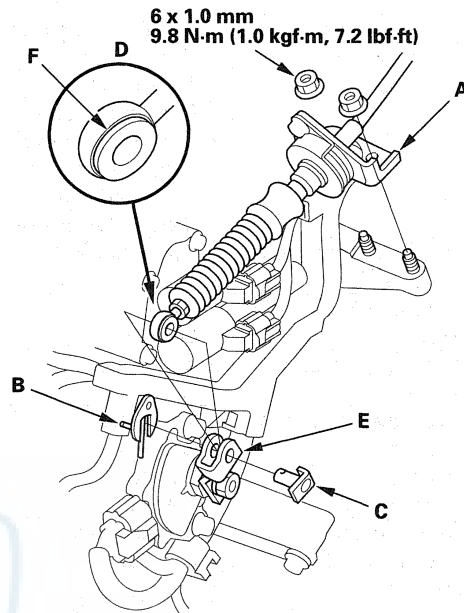
Shift Solenoid Valve A, B, and C, Torque Converter Clutch Solenoid Valve Test/Replacement

1. Connect the HDS to the DLC (A).



2. Choose Shift Solenoid A, B, C, and Lockup Solenoid Test in the Miscellaneous Test Menu on the HDS.
3. Check that shift solenoid valve A, B, C, and the torque converter clutch solenoid valve operate with the HDS. A clicking sound should be heard.
 - If a clicking sound is heard, the valves are OK. The test is complete, disconnect the HDS.
 - If no clicking sound is heard, go to step 4, and test the solenoid valves.
4. Make sure you have anti-theft codes for the audio system and the navigation system (if equipped), then write down the audio presets.
5. Disconnect the negative terminal from the battery, then disconnect the positive terminal.
6. Remove the battery hold-down bracket, and remove the battery and battery tray.
7. Remove the intake manifold cover and the intake air duct.
8. Remove the battery base and battery base bracket.

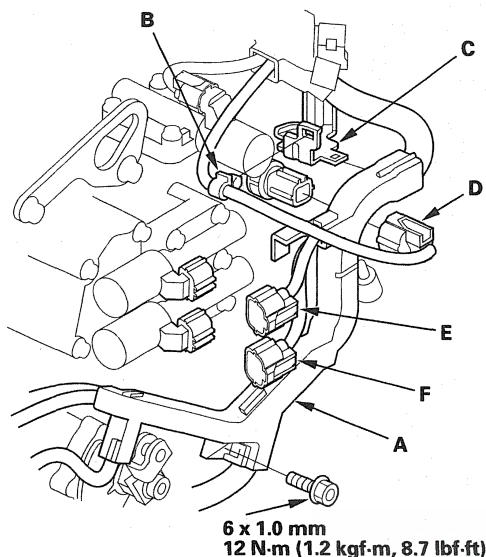
9. Remove the nuts securing the shift cable bracket (A).



10. Remove the spring clip/washer (B) and control pin (C), then separate the shift cable end (D) from the control lever (E).
11. Check the bushing (F) in the shift cable end for a proper fit and wear. If the bushing is loose or worn, replace the shift cable (see page 14-253).

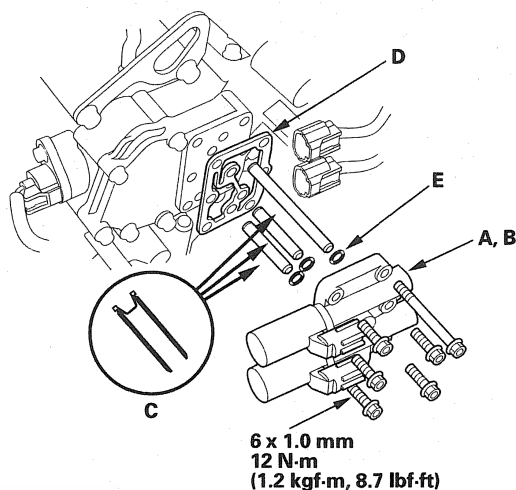


12. Remove the bolt securing the harness cover (A).

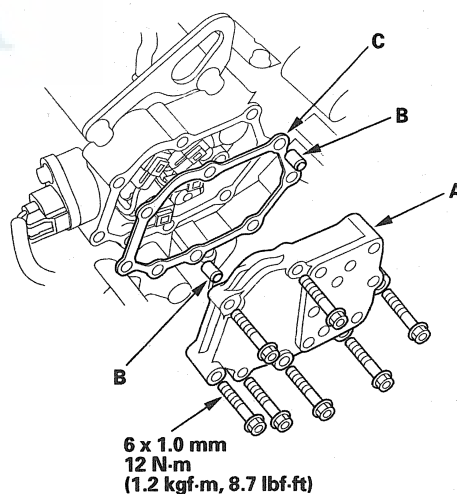


13. Remove the harness clamp (B) from the harness cover/clamp bracket (C), disconnect the 4th clutch transmission fluid pressure switch connector (D), then remove the harness cover from the bracket.
14. Disconnect the A/T clutch pressure control solenoid valve A connector (E), A/T clutch pressure control solenoid valve B connector (F), solenoid harness connector, transmission range switch connector, ATF temperature sensor connector, output shaft (countershaft) speed sensor connector, input shaft (mainshaft) speed sensor connector, and 3rd clutch transmission fluid pressure switch connector.

15. Remove A/T clutch pressure control solenoid valves A and B, ATF pipes (C), and gasket (D).



16. Replace the gasket and O-rings (E) with new ones when installing A/T clutch pressure control solenoid valves A and B.
17. Remove the solenoid valve cover (A), dowel pins (B), and gasket (C).



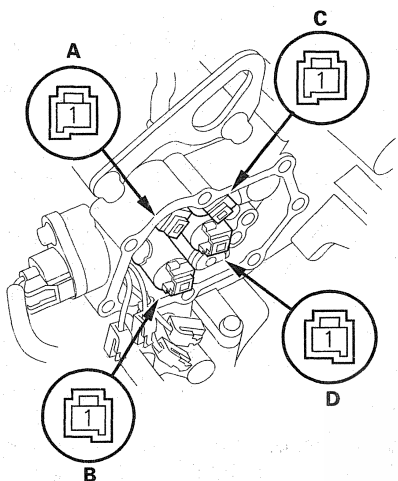
18. Replace the gasket with a new one when installing the solenoid cover.

(cont'd)

Automatic Transmission

Shift Solenoid Valve A, B, and C, Torque Converter Clutch Solenoid Valve Test/Replacement (cont'd)

19. Disconnect shift solenoid valve A connector (A), shift solenoid valve B connector (B), shift solenoid valve C connector (C), and torque converter clutch solenoid valve connector (D).

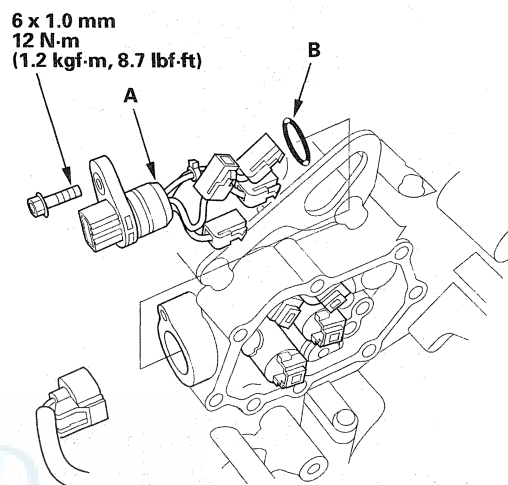


20. Measure the resistance of each solenoid valve between the connector terminal and body ground.

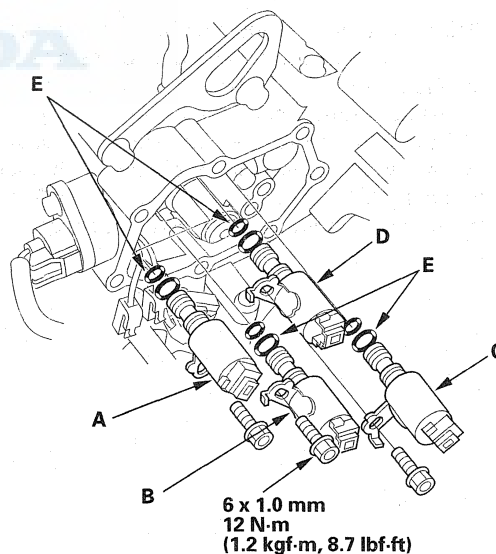
Standard: 12–25 Ω

- Replace the solenoid valve if the resistance is out of standard.
 - If the resistance is within the standard, go to step 21.
21. Connect the negative battery terminal to body ground, and connect the positive battery terminal to each solenoid valve terminal individually.
- If a clicking sound is heard, go to step 22 and replace the solenoid harness.
 - If no clicking sound is heard, go to step 23 and replace the shift solenoid valve.

22. Remove the solenoid harness connector (A), and replace it. Install a new O-ring (B) on the solenoid harness connector, and install the connector in the transmission housing, then go to step 29.

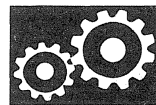


23. Remove the mounting bolts, then remove the solenoid valves.



24. Install new O-rings (two O-rings per solenoid valve) (E) on each reused solenoid valves.

NOTE: A new solenoid valve comes with new O-rings. If you install a new solenoid valve, use the O-rings provided on it.



25. Install shift solenoid valve B (black connector) by holding the shift solenoid valve body; make sure the mounting bracket contacts the accumulator body.

NOTE: Do not hold the solenoid valve connector to install the solenoid valve. Be sure to hold the solenoid valve body.

26. Install torque converter clutch solenoid valve (D) (black connector) by holding the solenoid valve body; make sure the mounting bracket contacts the accumulator body.
27. Install shift solenoid valve C (brown connector) by holding the shift solenoid valve body; make sure the mounting bracket contacts the bracket of torque converter clutch solenoid valve.

NOTE: Do not install shift solenoid valve C before installing torque converter clutch solenoid valve. If shift solenoid valve C is installed before installing torque converter clutch solenoid valve, it may damage to hydraulic control system.

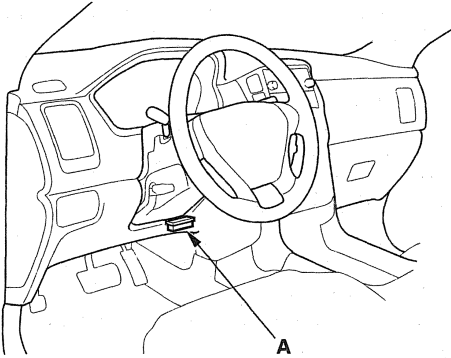
28. Install shift solenoid valve A (brown connector) by holding the shift solenoid valve body; make sure the mounting bracket contacts the accumulator body.
29. Connect the harness terminals to the solenoids:
- RED wire connector to shift solenoid valve A.
 - ORN wire connector to shift solenoid valve B.
 - GRN wire connector to shift solenoid valve C.
 - YEL wire connector to the torque converter clutch solenoid valve.
30. Install the shift solenoid valve cover, dowel pins, and a new gasket.

31. Install the new solenoid valve body gasket on the solenoid valve cover, and install the ATF pipes with the filter end in the transmission housing. Install new O-rings over the ATF pipes.
32. Install A/T clutch pressure control solenoid valves A and B.
33. Install the harness cover on the cover bracket, and secure it with the bolt.
34. Check the connectors for rust, dirt, or oil, clean or repair if necessary, then connect the connectors securely. Install the harness clamp on the bracket.
35. Apply molybdenum grease to the hole in the bushing in the cable end. Attach the shift cable end to the control lever, then insert the control pin into the control lever hole through the shift cable end, and secure the control pin with the spring clip/washer.
36. Secure the shift cable bracket with the nuts.
37. Install the battery base bracket and battery base.
38. Install the intake air duct and the intake manifold cover.
39. Install the battery tray, battery, and battery hold-down bracket, then connect the battery terminals.
40. Enter the anti-theft codes for the audio system and the navigation system (if equipped), then enter the audio presets. Set the clock (on vehicles without navigation).
41. Do the power window control unit reset procedure (see page 22-255).

Automatic Transmission

A/T Clutch Pressure Control Solenoid Valve A Test

1. Connect the HDS to the DLC (A).



2. Choose Clutch Pressure Control (Linear) Solenoid A in the Miscellaneous Test Menu on the HDS.

3. Test A/T clutch pressure control solenoid valve A with the HDS.

- If the valve tests OK, the test is complete. Disconnect the HDS.
- If the valve does not test OK, follow the instructions on the HDS.
- If the valve does not test OK, and the HDS does not determine the cause, go to step 4.

4. Make sure you have anti-theft codes for the audio system and the navigation system (if equipped), then write down the audio presets.

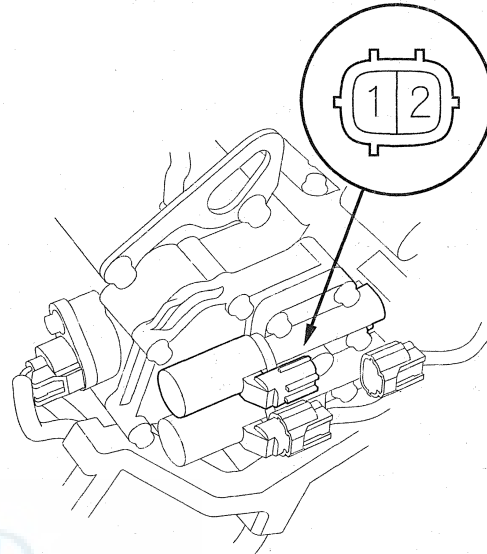
5. Disconnect the negative terminal from the battery, then disconnect the positive terminal.

6. Remove the battery hold-down bracket, and remove the battery and battery tray.

7. Remove the intake manifold cover and the intake air duct.

8. Remove the battery base and battery base bracket.

9. Disconnect the A/T clutch pressure control solenoid valve A connector.



10. Measure A/T clutch pressure control solenoid valve A resistance at the connector terminals.

Standard: 3—10 Ω

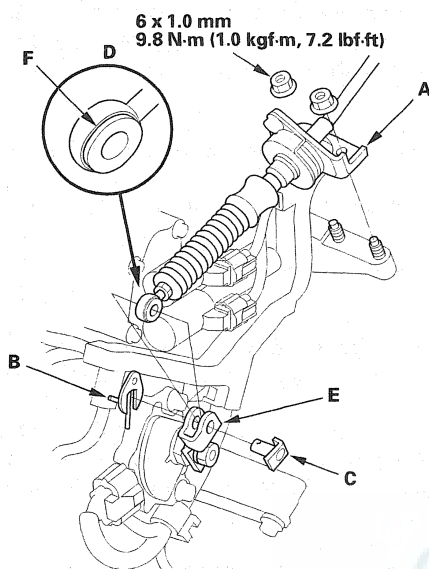
- If the resistance is out of standard, replace A/T clutch pressure control solenoid valve A (see page 14-202).
- If the resistance is within the standard, go to step 11.

11. Connect the negative battery terminal to solenoid valve A connector terminal No. 2, and connect the positive battery terminal to the connector terminal No. 1.

- If a clicking sound is heard, the valve is OK. Reconnect the connector, and install all removed parts.
- If no clicking sound is heard, go to step 12.



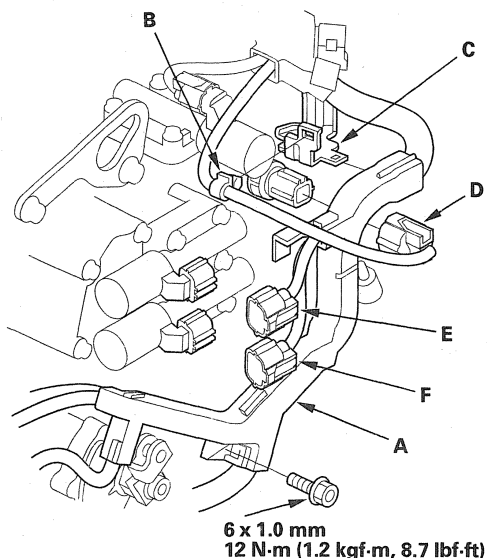
12. Remove the nuts securing the shift cable bracket (A).



13. Remove the spring clip/washer (B) and control pin (C), then separate the shift cable end (D) from the control lever (E).

14. Check the bushing (F) in the shift cable end for a proper fit and wear. If the bushing is loose or worn, replace the shift cable (see page 14-253).

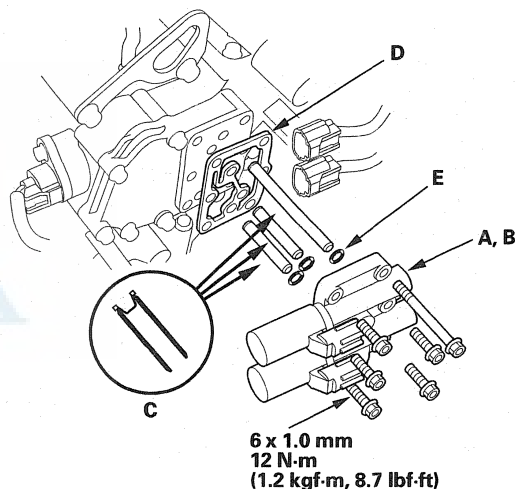
15. Remove the bolt securing the harness cover (A).



16. Remove the harness clamp (B) from the harness cover/clamp bracket (C), disconnect the 4th clutch transmission fluid pressure switch connector (D), then remove the harness cover from the bracket.

17. Disconnect the A/T clutch pressure control solenoid valve A connector (E), A/T clutch pressure control solenoid valve B connector (F), solenoid harness connector, transmission range switch connector, ATF temperature sensor connector, output shaft (countershaft) speed sensor connector, input shaft (mainshaft) speed sensor connector, and 3rd clutch transmission fluid pressure switch connector.

18. Remove A/T clutch pressure control solenoid valves A and B, ATF pipes (C), gasket (D), and O-rings (E).



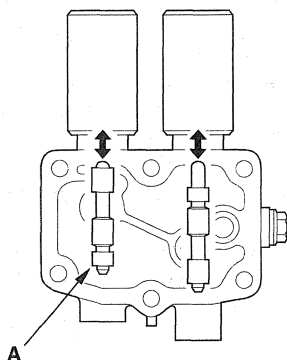
19. Check the fluid passage of the solenoid valve for contamination.

(cont'd)

Automatic Transmission

A/T Clutch Pressure Control Solenoid Valve A Test (cont'd)

20. Connect the negative battery terminal to A/T clutch pressure control solenoid valve A connector terminal No. 2, and connect the positive battery terminal to the connector terminal No. 1. Make sure A/T clutch pressure control solenoid valve A moves.

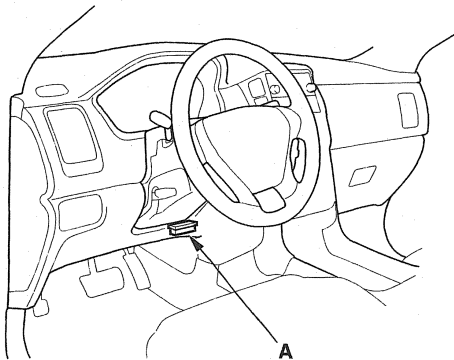


21. Disconnect one of the battery terminals and check valve movement at the fluid passage in the valve body mounting surface. If the valve binds or moves sluggishly, or if the solenoid valve does not operate, replace A/T clutch pressure control solenoid valves A and B.
22. Clean the mounting surfaces and fluid passages of the solenoid valve body and solenoid valve cover.
23. Install the new solenoid valve body gasket on the solenoid valve cover, and install the ATF pipes with the filter end in the transmission housing. Install new O-rings over the ATF pipes.
24. Install A/T clutch pressure control solenoid valves A and B.
25. Install the harness cover on the cover bracket, and secure it with the bolt.
26. Check the connectors for rust, dirt, or oil, clean or repair if necessary, then connect the connectors securely. Install the harness clamp on the bracket.
27. Apply molybdenum grease to the hole in the bushing in the cable end. Attach the shift cable end to the control lever, then insert the control pin into the control lever hole through the shift cable end, and secure the control pin with the spring clip/washer.
28. Secure the shift cable bracket with the nuts.
29. Install the battery base bracket and battery base.
30. Install the intake air duct and the intake manifold cover.
31. Install the battery tray, battery, and battery hold-down bracket, then connect the battery terminals.
32. Enter the anti-theft codes for the audio system and the navigation system (if equipped), then enter the audio presets. Set the clock (on vehicles without navigation).
33. Do the power window control unit reset procedure (see page 22-255).



A/T Clutch Pressure Control Solenoid Valve B Test

1. Connect the HDS to the DLC (A).



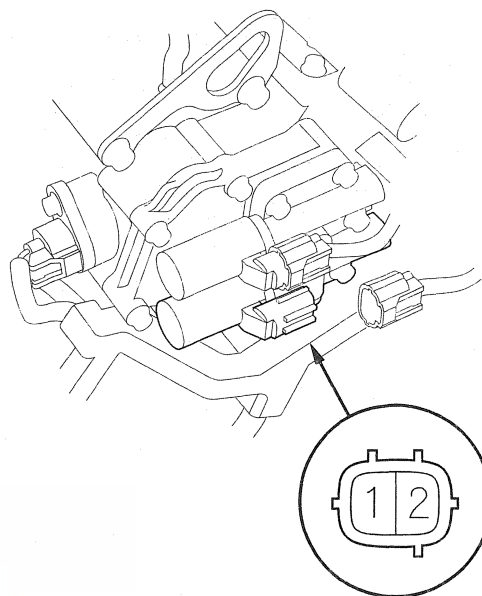
2. Select Clutch Pressure Control (Linear) Solenoid B in the Miscellaneous Test Menu on the HDS.

3. Test A/T clutch pressure control solenoid valve B with the HDS.

- If the valve tests OK, the test is complete. Disconnect the HDS.
- If the valve does not test OK, follow the instructions on the HDS.
- If the valve does not test OK, and the HDS does not determine the cause, go to step 4.

4. Make sure you have anti-theft codes for the audio system and the navigation system (if equipped), then write down the audio presets.
5. Disconnect the negative terminal from the battery, then disconnect the positive terminal.
6. Remove the battery hold-down bracket, and remove the battery and battery tray.
7. Remove the intake manifold cover and the intake air duct.
8. Remove the battery base and battery base bracket.

9. Disconnect the A/T clutch pressure control solenoid valve B connector.



10. Measure A/T clutch pressure control solenoid valve B resistance at the connector terminals.

Standard: 3—10 Ω

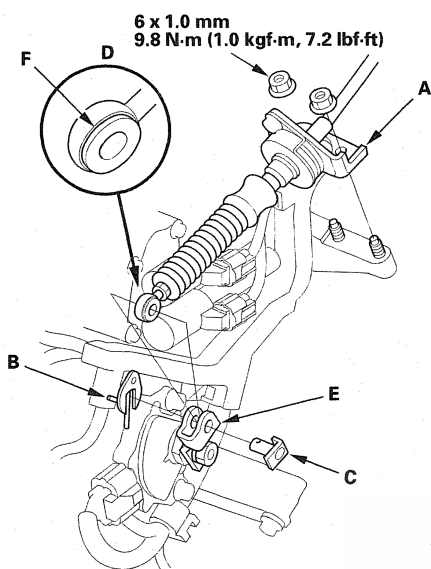
- If the resistance is out of standard, replace A/T clutch pressure control solenoid valve B (see page 14-202).
 - If the resistance is within the standard, go to step 11.
11. Connect the negative battery terminal to solenoid valve B connector terminal No. 2, and connect the positive battery terminal to the connector terminal No. 1.
 - If a clicking sound is heard, the valve is OK. Reconnect the connector, and install all removed parts.
 - If no clicking sound is heard, go to step 12.

(cont'd)

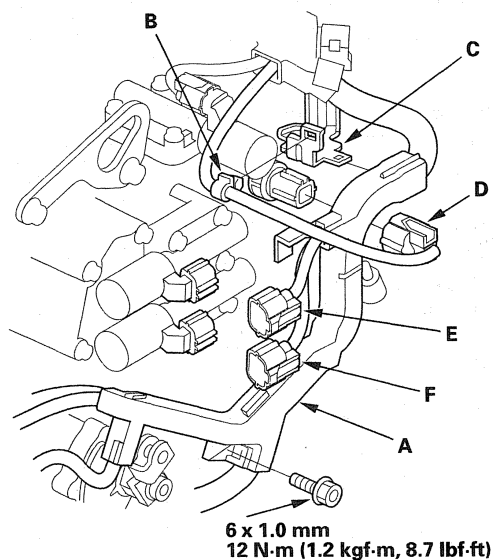
Automatic Transmission

A/T Clutch Pressure Control Solenoid Valve B Test (cont'd)

12. Remove the nuts securing the shift cable bracket (A).



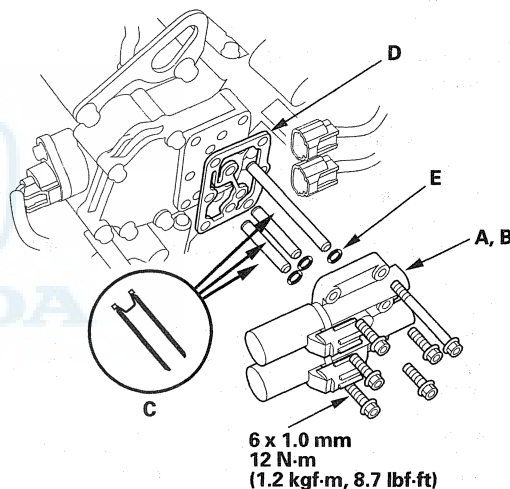
13. Remove the spring clip/washer (B) and control pin (C), then separate the shift cable end (D) from the control lever (E).
14. Check the bushing (F) in the shift cable end for a proper fit and wear. If the bushing is loose or worn, replace the shift cable (see page 14-253).
15. Remove the bolt securing the harness cover (A).



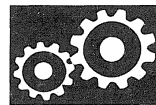
16. Remove the harness clamp (B) from the harness cover/clamp bracket (C), disconnect the 4th clutch transmission fluid pressure switch connector (D), then remove the harness cover from the bracket.

17. Disconnect the A/T clutch pressure control solenoid valve A connector (E), A/T clutch pressure control solenoid valve B connector (F), solenoid harness connector, transmission range switch connector, ATF temperature sensor connector, output shaft (countershaft) speed sensor connector, input shaft (mainshaft) speed sensor connector, and 3rd clutch transmission fluid pressure switch connector.

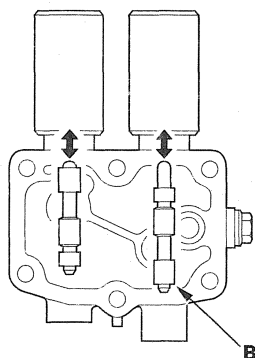
18. Remove A/T clutch pressure control solenoid valves A and B, ATF pipes (C), gasket (D), and O-rings (E).



19. Check the fluid passage of the solenoid valve for contamination.



20. Connect the negative battery terminal to A/T clutch pressure control solenoid valve B connector terminal No. 2, and connect the positive battery terminal to the connector terminal No. 1. Make sure A/T clutch pressure control solenoid valve B moves.



21. Disconnect one of the battery terminals and check valve movement at the fluid passage in the valve body mounting surface. If the valve binds or moves sluggishly, or if the solenoid valve does not operate, replace A/T clutch pressure control solenoid valves A and B.
22. Clean the mounting surfaces and fluid passages of the solenoid valve body and solenoid valve cover.
23. Install the new solenoid valve body gasket on the solenoid valve cover, and install the ATF pipes with the filter end in the transmission housing. Install new O-rings over the ATF pipes.
24. Install A/T clutch pressure control solenoid valves A and B.
25. Install the harness cover on the cover bracket, and secure it with the bolt.
26. Check the connectors for rust, dirt, or oil, clean or repair if necessary, then connect the connectors securely. Install the harness clamp on the bracket.

27. Apply molybdenum grease to the hole in the bushing in the cable end. Attach the shift cable end to the control lever, then insert the control pin into the control lever hole through the shift cable end, and secure the control pin with the spring clip/washer.

28. Secure the shift cable bracket with the nuts.

29. Install the battery base bracket and battery base.

30. Install the intake air duct and the intake manifold cover.

31. Install the battery tray, battery, and battery hold-down bracket, then connect the battery terminals.

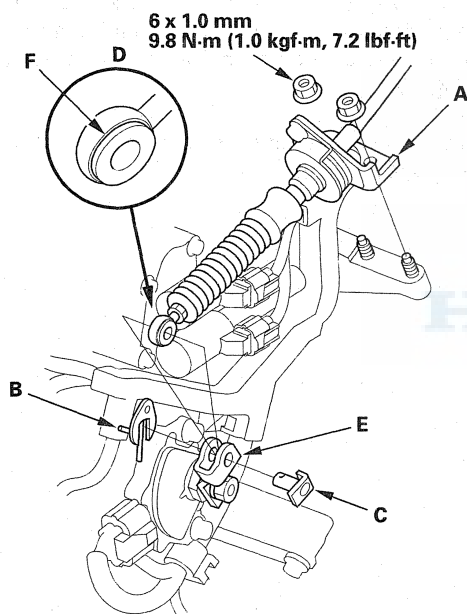
32. Enter the anti-theft codes for the audio system and the navigation system (if equipped), then enter the audio presets. Set the clock (on vehicles without navigation).

33. Do the power window control unit reset procedure (see page 22-255).

Automatic Transmission

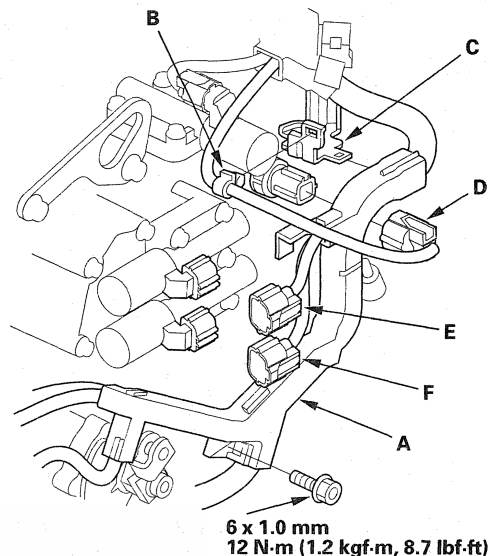
A/T Clutch Pressure Control Solenoid Valve A and B Replacement

1. Make sure you have anti-theft codes for the audio system and the navigation system (if equipped), then write down the audio presets.
2. Disconnect the negative terminal from the battery, then disconnect the positive terminal.
3. Remove the battery hold-down bracket, and remove the battery and battery tray.
4. Remove the intake manifold cover and the intake air duct.
5. Remove the battery base and battery base bracket.
6. Remove the nuts securing the shift cable bracket (A).

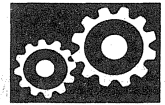


7. Remove the spring clip/washer (B) and control pin (C), then separate the shift cable end (D) from the control lever (E).
8. Check the bushing (F) in the shift cable end for a proper fit and wear. If the bushing is loose or worn, replace the shift cable (see page 14-253).

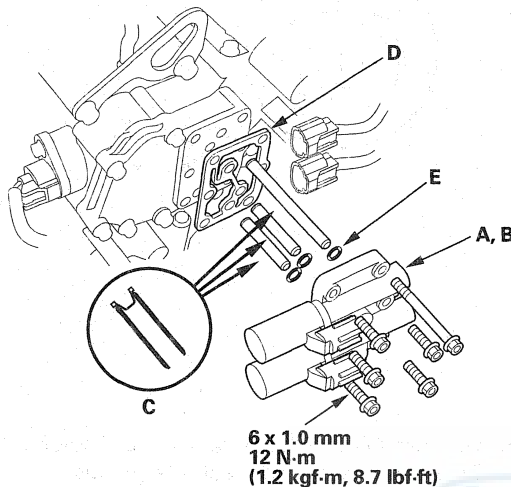
9. Remove the bolt securing the harness cover (A).



10. Remove the harness clamp (B) from the harness cover/clamp bracket (C), disconnect the 4th clutch transmission fluid pressure switch connector (D), then remove the harness cover from the bracket.
11. Disconnect the A/T clutch pressure control solenoid valve A connector (E), A/T clutch pressure control solenoid valve B connector (F), solenoid harness connector, transmission range switch connector, ATF temperature sensor connector, output shaft (countershaft) speed sensor connector, input shaft (mainshaft) speed sensor connector, and 3rd clutch transmission fluid pressure switch connector.



12. Remove A/T clutch pressure control solenoid valves A and B, ATF pipes (C), gasket (D), and O-rings (E). Note the lengths and locations of the ATF pipes.

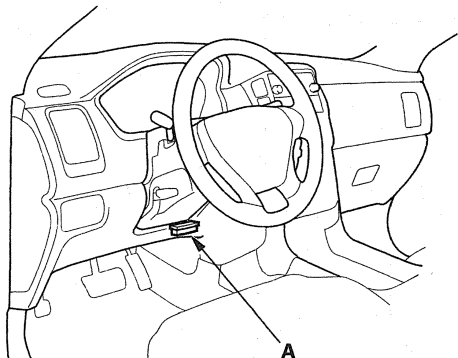


13. Check the fluid passage of the A/T clutch pressure control solenoid valve for dust and dirt, and clean the passage if necessary.
14. Install the new solenoid valve body gasket on the solenoid valve cover, and install the ATF pipes with the filter end in the transmission housing. Install new O-rings over the ATF pipes.
15. Install A/T clutch pressure control solenoid valves A and B.
16. Install the harness cover on the cover bracket, and secure it with the bolt.
17. Check the connectors for rust, dirt, or oil, clean or repair if necessary, then connect the connectors securely. Install the harness clamp on the bracket.
18. Apply molybdenum grease to the hole in the bushing in the cable end. Attach the shift cable end to the control lever, then insert the control pin into the control lever hole through the shift cable end, and secure the control pin with the spring clip/washer.
19. Secure the shift cable bracket with the nuts.
20. Install the battery base bracket and battery base.
21. Install the intake air duct and the intake manifold cover.
22. Install the battery tray, battery, and battery hold-down bracket, then connect the battery terminals.
23. Enter the anti-theft codes for the audio system and the navigation system (if equipped), then enter the audio presets. Set the clock (on vehicles without navigation).
24. Do the power window control unit reset procedure (see page 22-255).

Automatic Transmission

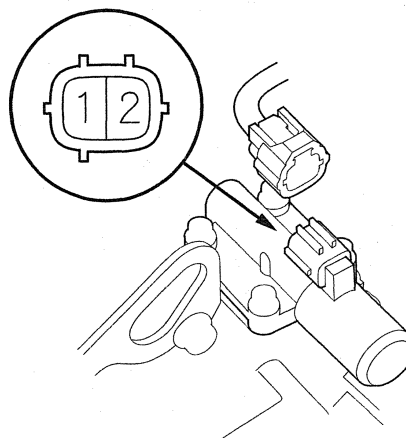
A/T Clutch Pressure Control Solenoid Valve C Test

1. Connect the HDS to the DLC (A).



2. Choose Clutch Pressure Control (Linear) Solenoid C in the Miscellaneous Test Menu on the HDS.
3. Test A/T clutch pressure control solenoid valve C with the HDS.
 - If the valve tests OK, the test is complete. Disconnect the HDS.
 - If the valve does not test OK, follow the instructions on the HDS.
 - If the valve does not test OK, and the HDS does not determine the cause, go to step 4.
4. Remove the intake manifold cover and the intake air duct.

5. Disconnect the A/T clutch pressure control solenoid valve C connector.



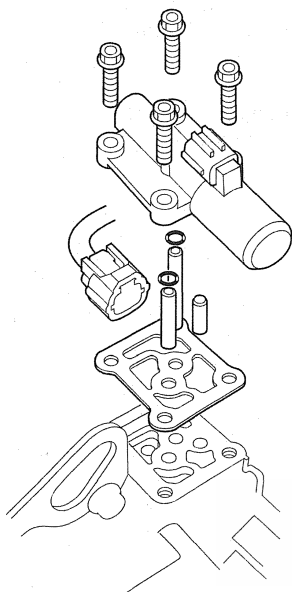
6. Measure A/T clutch pressure control solenoid valve C resistance at the connector terminals.

Standard: 3—10 Ω

- If the resistance is out of standard, replace the A/T clutch pressure control solenoid valve C (see page 14-207).
 - If the resistance is within the standard, go to step 7.
7. Connect the negative battery terminal to the solenoid valve C connector terminal No. 2, and connect the positive battery terminal to the connector terminal No. 1.
 - If a clicking sound is heard, the valve is OK. Reconnect the connector, and install all removed parts.
 - If no clicking sound is heard, go to step 8.

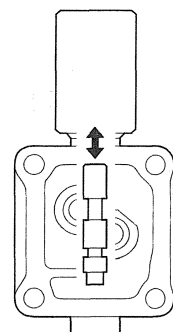


8. Remove A/T clutch pressure control solenoid valve C.



9. Remove the ATF joint pipes, O-rings, ATF pipe, and gasket.
10. Check the fluid passage of the solenoid valve for contamination.

11. Connect the negative battery terminal to A/T clutch pressure control solenoid valve C connector terminal No. 2, and connect the positive battery terminal to the connector terminal No. 1. Make sure A/T clutch pressure control solenoid valve C moves.



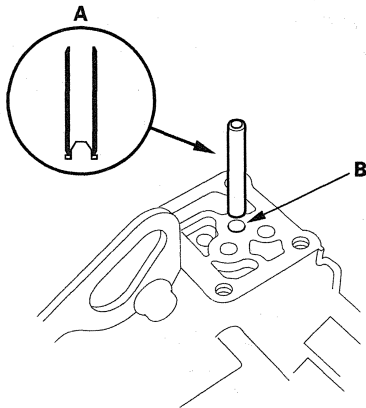
12. Disconnect one of the battery terminals and check the valve movement at the fluid passage in valve body mounting surface. If the valve binds or moves sluggishly, or if the solenoid valve does not operate, replace A/T clutch pressure control solenoid valve C.
13. Clean the mounting surfaces and fluid passages of the solenoid valve body and the transmission housing.

(cont'd)

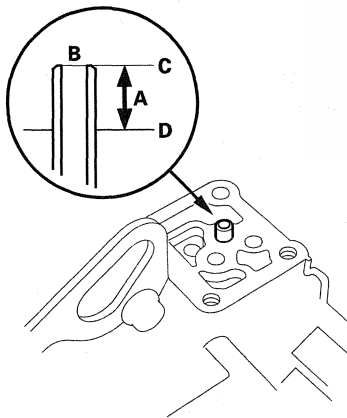
Automatic Transmission

A/T Clutch Pressure Control Solenoid Valve C Test (cont'd)

14. Install the 8 x 53 mm ATF joint pipe (A) with the filter end into its mounting hole (B).

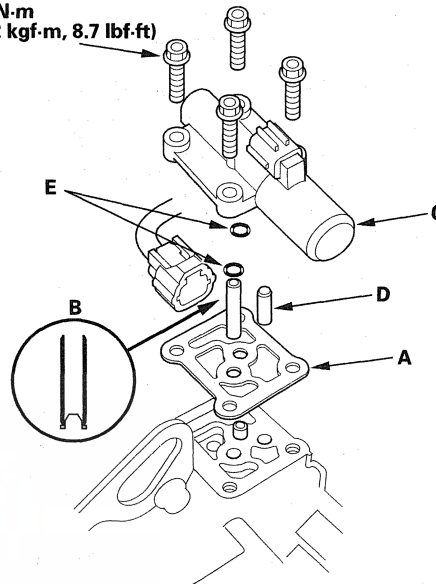


15. Check the height (A) of the 8 x 53 mm ATF joint pipe (B) between the top (C) of the pipe and the solenoid valve body mounting surface (D). The height is about 7 mm (0.3 in.) If the height is over 7 mm (0.3 in.), push the pipe until it bottoms in the accumulator body.



16. Install the new gasket (A) on the transmission housing, and install the 8 x 34.5 mm ATF joint pipe (B) with the filter end in the transmission housing and 8 x 25.2 mm ATF pipe (D).

6 x 1.0 mm
12 N·m
(1.2 kgf·m, 8.7 lbf·ft)

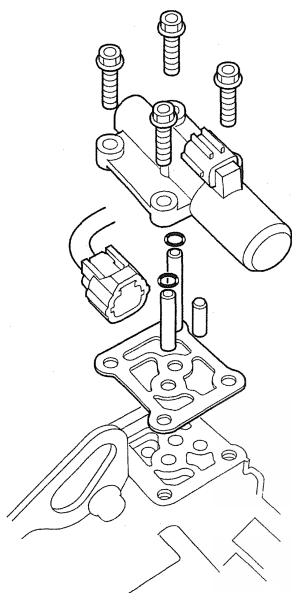


17. Install new O-rings (E) over the ATF joint pipes.
18. Install A/T clutch pressure control solenoid valve C.
19. Install the intake air duct and the intake manifold cover.



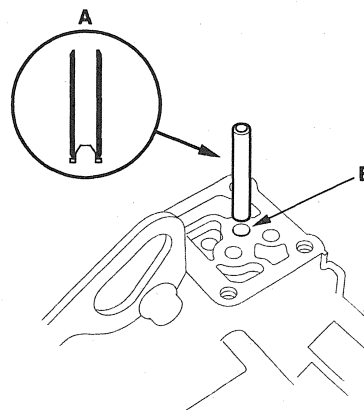
A/T Clutch Pressure Control Solenoid Valve C Replacement

1. Remove the intake manifold cover and the intake air duct.
2. Disconnect the A/T clutch pressure control solenoid valve C connector.

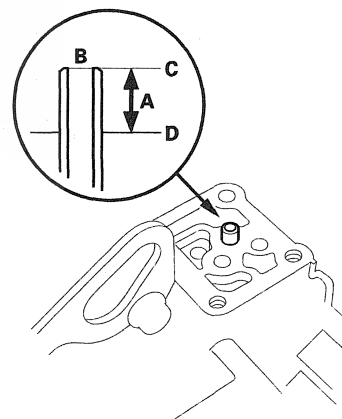


3. Remove A/T clutch pressure control solenoid valve C.
4. Remove the ATF joint pipes, O-rings, ATF pipe, and gasket.
5. Clean the mounting surfaces and fluid passages of the solenoid valve body and the transmission housing.

6. Install the 8 x 53 mm ATF joint pipe (A) with the filter end into its mounting hole (B).



7. Check the height (A) of the 8 x 53 mm ATF joint pipe (B) between the top (C) of the pipe and the solenoid valve body mounting surface (D). The height is about 7 mm (0.3 in.). If the height is over 7 mm (0.3 in.), push the pipe until it bottoms in the accumulator body.

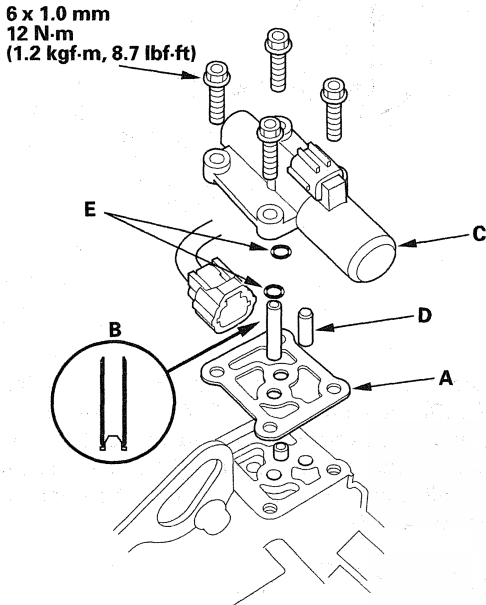


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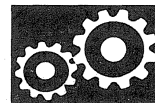
Automatic Transmission

A/T Clutch Pressure Control Solenoid Valve C Replacement (cont'd)

8. Install the new gasket (A) on the transmission housing, and install the 8 x 34.5 mm ATF joint pipe (B) with the filter end in the transmission housing and 8 x 25.2 mm ATF pipe (D).



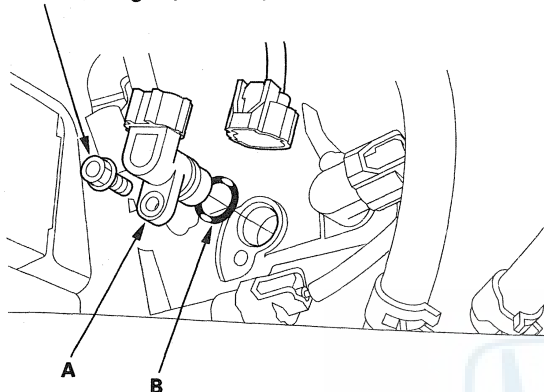
9. Install new O-rings (E) over the ATF joint pipes.
10. Install A/T clutch pressure control solenoid valve C.
11. Install the intake air duct and the intake manifold cover.



Input Shaft (Mainshaft) Speed Sensor Replacement

1. Remove the splash shield.
2. Disconnect the input shaft (mainshaft) speed sensor connector, and remove the input shaft (mainshaft) speed sensor (A).

6 x 1.0 mm
12 N·m (1.2 kgf-m, 8.7 lbf-ft)

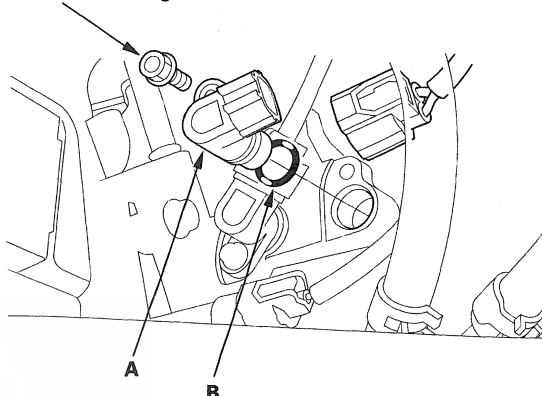


3. Install the new O-ring (B) on the new input shaft (mainshaft) speed sensor and apply clean ATF to the O-ring, then install the input shaft (mainshaft) speed sensor in the transmission housing.
4. Check the connector for rust, dirt, or oil, then connect the connector securely.
5. Install the splash shield.

Output Shaft (Countershaft) Speed Sensor Replacement

1. Remove the splash shield.
2. Disconnect the output shaft (countershaft) speed sensor connector, and remove the output shaft (countershaft) speed sensor (A).

6 x 1.0 mm
12 N·m (1.2 kgf-m, 8.7 lbf-ft)

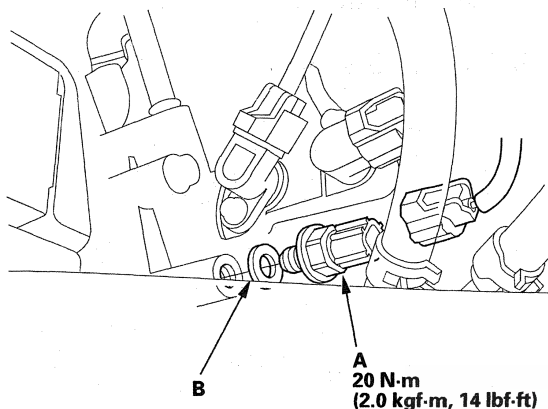


3. Install the new O-ring (B) on the new output shaft (countershaft) speed sensor and apply clean ATF to the O-ring, then install the output shaft (countershaft) speed sensor in the transmission housing.
4. Check the connector for rust, dirt, or oil, then connect the connector securely.
5. Install the splash shield.

Automatic Transmission

3rd Clutch Transmission Fluid Pressure Switch Replacement

1. Remove the splash shield.
2. Disconnect the 3rd clutch transmission fluid pressure switch connector, and remove the 3rd clutch transmission fluid pressure switch (A) and sealing washer (B).

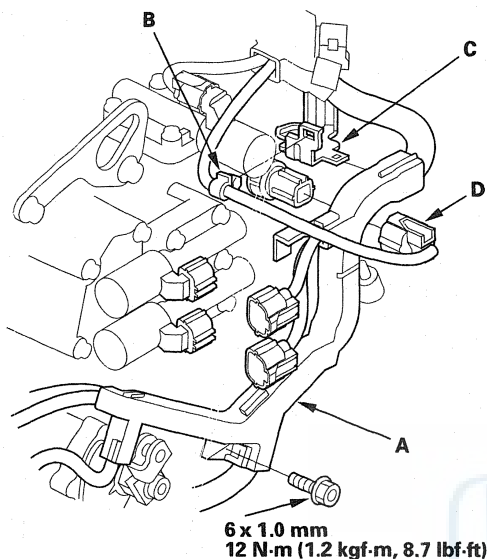


3. Install the new 3rd clutch transmission fluid pressure switch and a new sealing washer, and tighten the switch.
4. Make sure there is no water, oil, dust, or foreign particles inside the connector.
5. Connect the connector securely.
6. Install the splash shield.

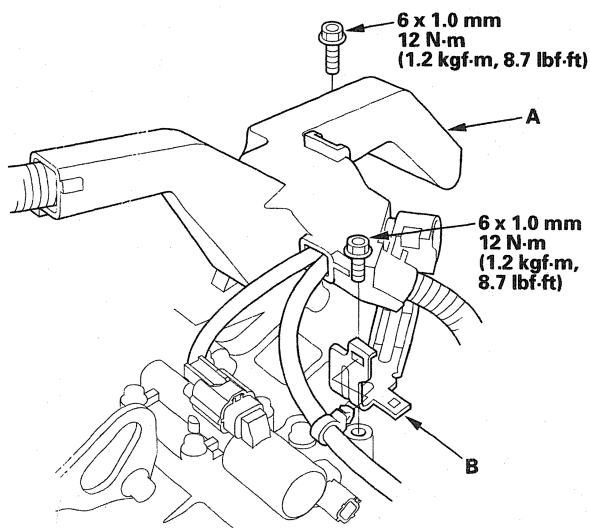


4th Clutch Transmission Fluid Pressure Switch Replacement

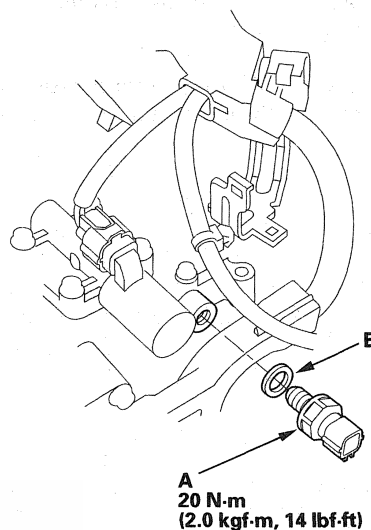
1. Remove the intake manifold cover and the intake air duct.
2. Remove the bolt securing the harness cover (A).



3. Remove the harness clamp (B) from the harness cover/clamp bracket (C), disconnect the 4th clutch transmission fluid pressure switch connector (D), then remove the harness cover from the bracket.
4. Remove the bolts securing the harness cover (A) and the harness cover/clamp bracket (B).



5. Remove the 4th clutch transmission fluid pressure switch (A) and sealing washer (B).

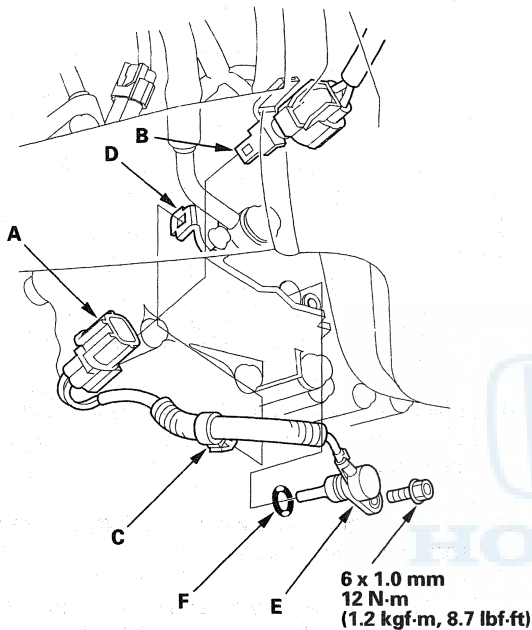


6. Install the new 4th clutch transmission fluid pressure switch and a new sealing washer, and tighten the switch.
7. Make sure there is no water, oil, dust, or foreign particles inside the connector.
8. Secure the harness cover and harness cover/clamp bracket with the bolts, and install the harness clamp on the bracket.
9. Install the harness cover on the cover bracket, and secure it with the bolt.
10. Connect the connector securely.
11. Install the intake air duct and the intake manifold cover.

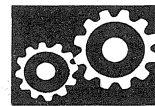
Automatic Transmission

ATF Temperature Sensor Replacement

1. Remove the splash shield.
2. Drain the automatic transmission fluid (ATF) (see step 3 on page 14-214).
3. Disconnect the ATF temperature sensor connector (A), then remove the connector from the connector bracket (B).



4. Remove the harness clamp (C) from its bracket (D).
5. Remove the ATF temperature sensor (E).
6. Install a new O-ring (F) on the new ATF temperature sensor, and install the ATF temperature sensor.
7. Check the connector for rust, dirt, or oil. Connect the connector securely, and install it on its bracket.
8. Install the harness clamp on its bracket.
9. Refill the transmission with the ATF (see step 5 on page 14-214).
10. Install the splash shield.



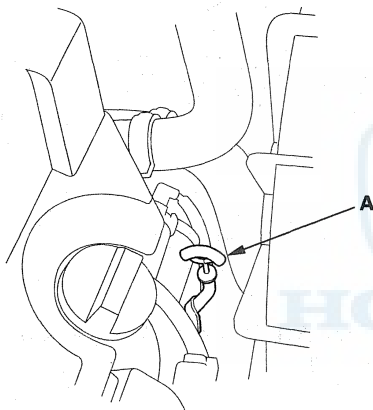
ATF Level Check

NOTE: Keep all foreign particles out of the transmission.

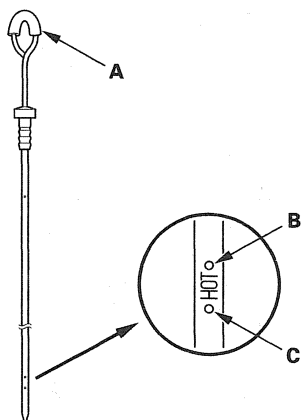
1. Park the vehicle on the level ground.
2. Warm up the engine to normal operating temperature (the radiator fan comes on), and turn the engine OFF. Do not allow the engine to warm up longer than the time it takes for the radiator fan to come on twice.

NOTE: Check the fluid level within 60—90 seconds after turning the engine off. Higher fluid level may be indicated if the radiator fan comes on twice or more.

3. Remove the dipstick (yellow loop) (A) from the dipstick guide tube, and wipe it with a clean cloth.



4. Insert the dipstick into the guide tube.
5. Remove the dipstick (A) and check the fluid level. It should be between the upper mark (B) and lower mark (C).



6. If the level is below the lower mark, check for fluid leaks at the transmission, hose and line joints, and cooler lines. If a problem is found, fix it before filling the transmission.

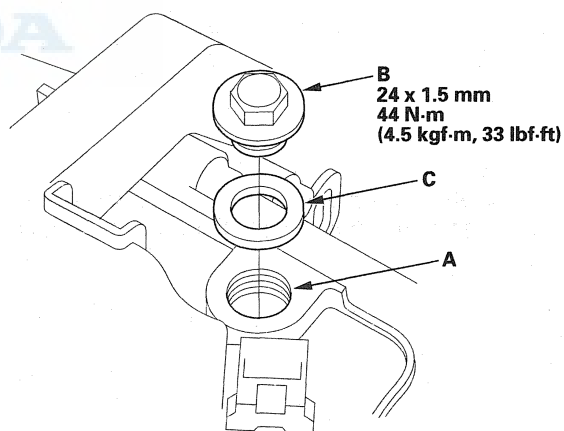
NOTE: If the vehicle is driven when the ATF level is below the lower mark:

- The transmission damage will result.
- Vehicle does not move in any gear.
- Vehicle accelerates poorly and flares when starting off in the D and R positions.
- The engine vibrates at idle.

7. If the level is above the upper mark, drain the ATF to proper level (see page 14-214).

NOTE: If the vehicle is driven when the ATF level is above the upper mark, vehicle moves in the N position, and shifting malfunction will occur.

8. If necessary fill the transmission with the ATF through the filler hole (A) to bring the fluid level midway between the upper mark and lower mark of the dipstick. Do not fill the fluid to excess of the upper mark. Always use Honda ATF-Z1 Automatic Transmission Fluid (ATF). Using a non-Honda ATF can affect shift quality.



9. Install the ATF filler bolt (B) and a new sealing washer (C).

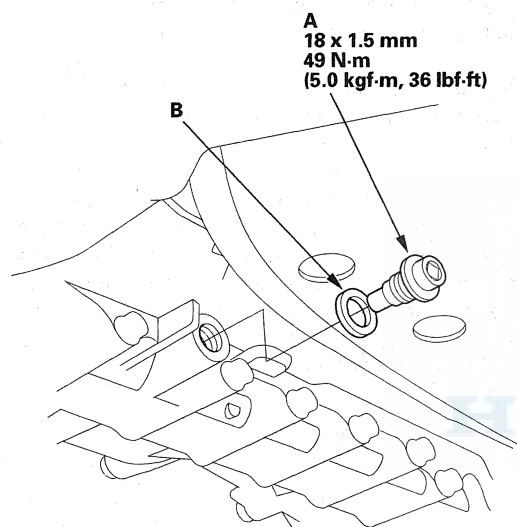
Automatic Transmission

ATF Replacement

NOTE: Keep all foreign particles out of the transmission.

1. Park the vehicle on level ground.
2. Warm up the engine to normal operating temperature (the radiator fan comes on), and turn the engine off.
3. Remove the ATF filler bolt and drain plug (A), and drain the automatic transmission fluid (ATF).

NOTE: If a cooler cleaning is done, refer to ATF Cooler Cleaning (see page 14-246).



4. Reinstall the drain plug with a new sealing washer (B). Tighten the drain plug to the specified torque.

5. Refill the transmission with the recommended fluid through the filler hole (A). Always use Honda ATF-Z1 Automatic Transmission Fluid (ATF). Using a non-Honda ATF can affect shift quality.

Automatic Transmission Fluid Capacity:

4WD

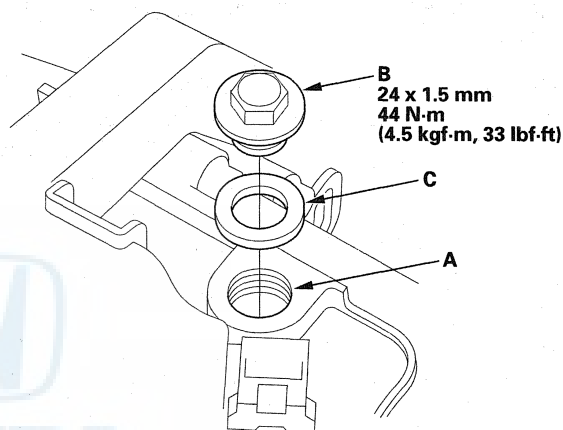
3.3 L (3.5 US qt) at change

7.9 L (8.3 US qt) at overhaul

2WD

3.8 L (4.0 US qt) at change

8.4 L (8.9 US qt) at overhaul

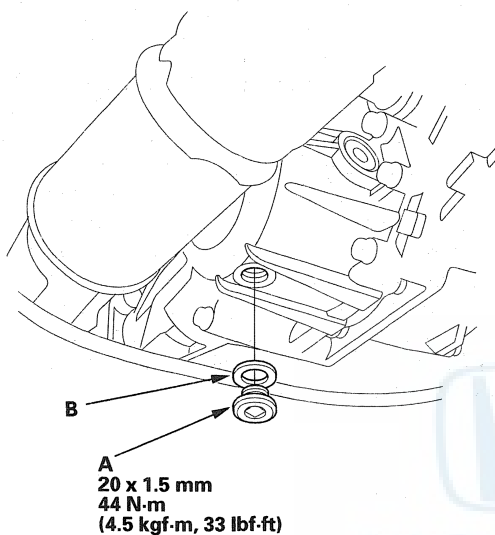


6. Install the ATF filler bolt (B) and a new sealing washer (C).
7. Check that the fluid level is between the upper mark and lower mark on the dipstick (see page 14-213).



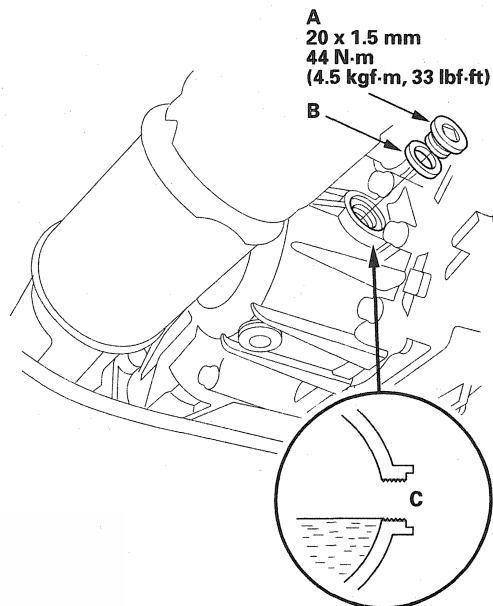
Transfer Assembly Fluid Replacement

1. Park the vehicle on level ground.
2. Warm up the engine to normal operating temperature (the radiator fan comes on), and turn the engine off.
3. Remove the drain plug (A), and drain the transfer fluid (hypoid gear oil).



4. Reinstall the drain plug with a new sealing washer (B). Tighten the drain plug to the specified torque.

5. Remove the filler plug (A) and sealing washer (B).



6. Refill the transfer assembly with the recommended fluid (hypoid gear oil) through the filler hole (C) until the fluid flows out. Use a SAE 90 or SAE 80W-90 viscosity hypoid gear oil, API classified GL4 or GL5 only.

Viscosity

SAE 90: Above 0 °F (−18 °C)
SAE 80W-90: Below 0 °F (−18 °C)

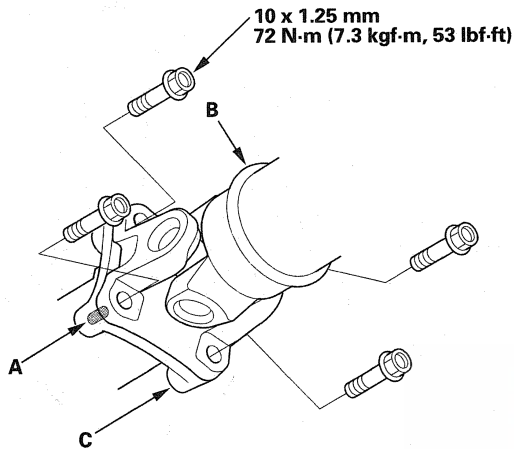
Transfer Fluid (Hypoid Gear Oil) Capacity:
0.43 L (0.45 US qt) at fluid change

7. Install the filler plug and a new sealing washer. Tighten the filler plug to the specified torque.

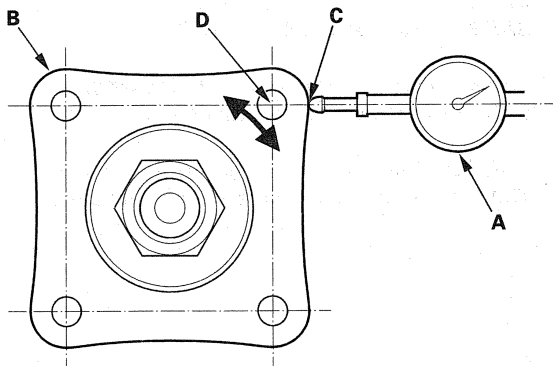
Automatic Transmission

Transfer Assembly Inspection

1. Raise the vehicle, and make sure it is supported securely.
2. Shift the transmission into the N position.
3. Make a reference mark (A) across the propeller shaft (B) and the transfer companion flange (C).



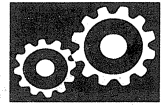
4. Separate the propeller shaft from the transfer companion flange.
5. Set a dial indicator (A) on the transfer companion flange (B); position dial indicator tip (C) on the direct extension of the bolt hole center (D).



6. Measure the transfer gear backlash.

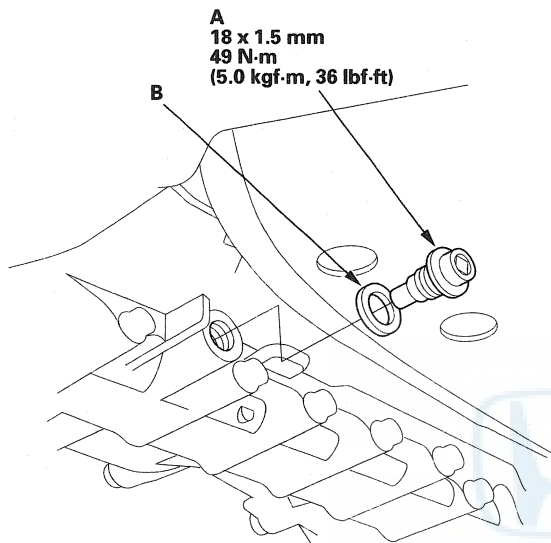
Standard: 0.06–0.17 mm (0.002–0.007 in.)

7. If the measurement is out of standard, remove the transfer assembly, and adjust the transfer gear backlash (see page 14-378).
8. Check for fluid leaks between the mating faces of the transfer assembly and transmission.
9. If there is a leak, remove the transfer assembly, remove the transfer cover, and replace the O-ring.
10. Check for fluid leaks between the transfer companion flange and transfer oil seal.
11. If there is a leak, remove the transfer assembly from the transmission, and replace the transfer oil seal and O-ring on the transfer output shaft (hypoid gear). If an oil seal and O-ring replacement is required, you will need to check and adjust the transfer gear tooth contact, transfer gear backlash, the tapered roller bearing starting torque, and the total starting torque (see page 14-378). Do not replace the oil seal with the transfer assembly on the transmission.

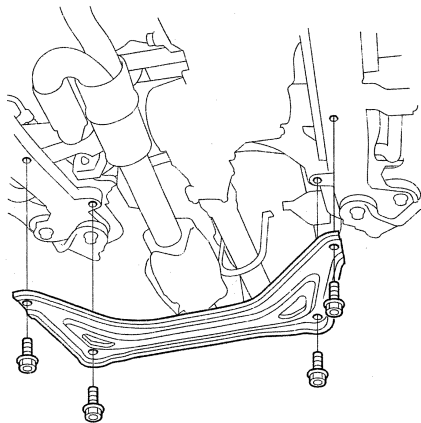


Transfer Assembly Removal

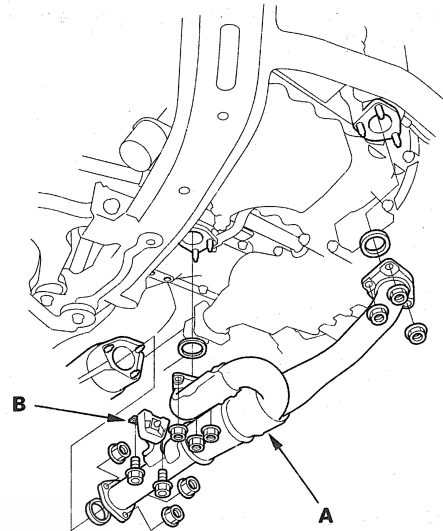
1. Raise the vehicle, and make sure it is supported securely.
2. Shift the transmission into the N position.
3. Remove the drain plug (A), and drain the automatic transmission fluid (ATF).



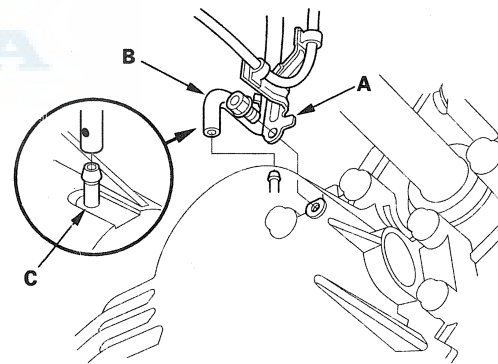
4. Reinstall the drain plug with a new sealing washer (B). Tighten the drain plug to the specified torque.
5. Remove the front subframe stiffener.



6. Remove exhaust pipe A and its mount (B).



7. Remove the bolt securing the transfer breather hose bracket (A), and disconnect the breather hose (B) from the breather pipe (C) on the transfer assembly.

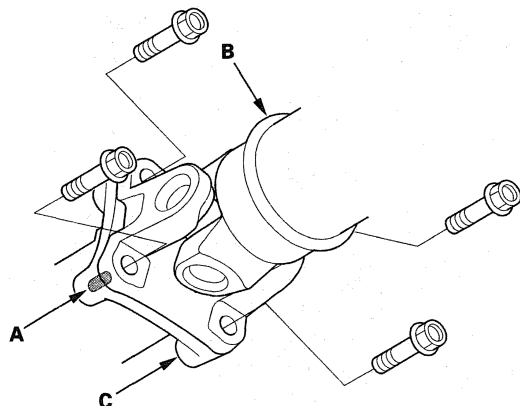


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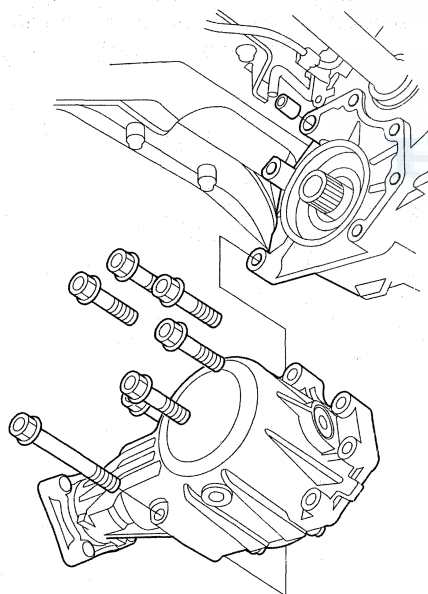
Automatic Transmission

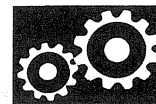
Transfer Assembly Removal (cont'd)

8. Make a reference mark (A) across the propeller shaft (B) and the transfer companion flange (C) separate the propeller shaft from the transfer companion flange.



9. Remove the transfer assembly from the transmission.

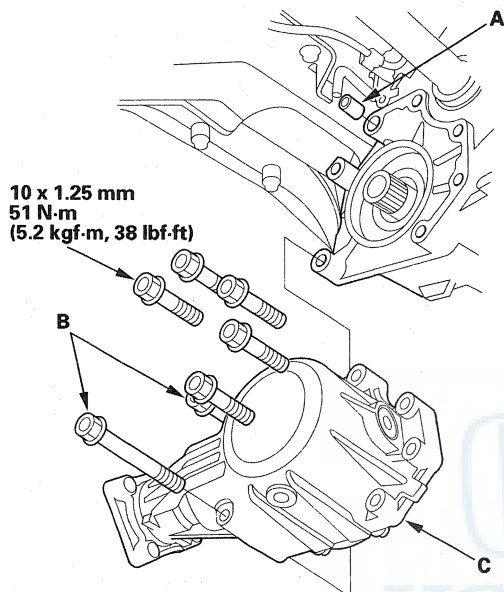




Transfer Assembly Installation

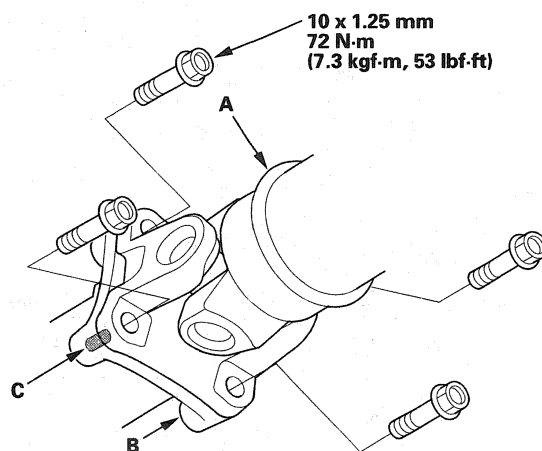
1. Clean the areas where the transfer assembly contacts the transmission with solvent, and dry with compressed air. Then apply transmission fluid to the contact area.

2. Install the dowel pin (A) in the transmission.

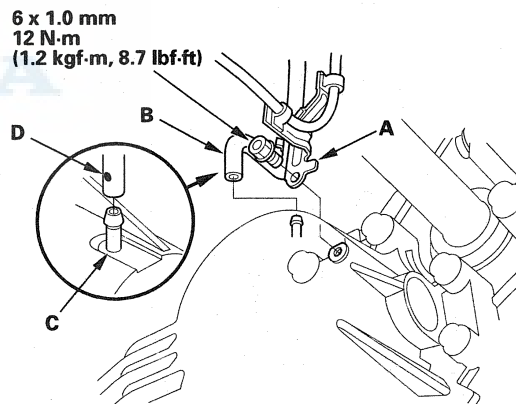


3. Insert the two 10 x 1.25 mm bolts (length: 105 mm) (B) in the rear upper of the transfer housing, then install the transfer assembly (C) on the transmission.

4. Install the propeller shaft (A) to the transfer companion flange (B) by aligning the reference mark (C).



5. Secure the transfer breather hose bracket (A) on the transfer assembly with the bolt, and install the breather hose (B) over the breather pipe (C) with the dot (D) facing out.

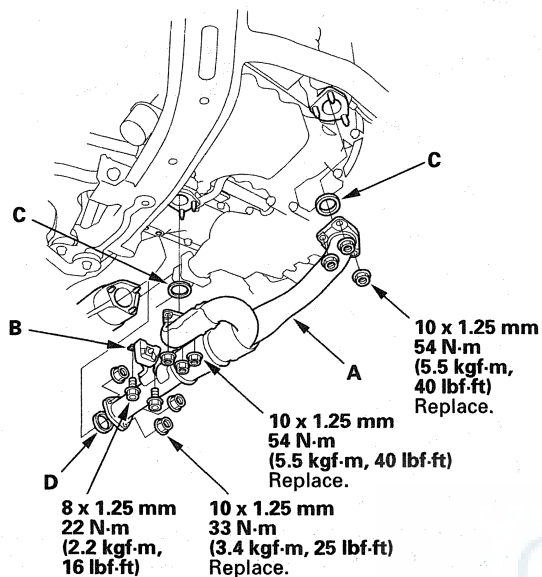


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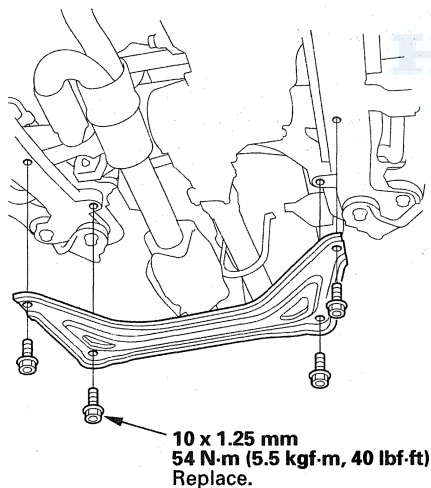
Automatic Transmission

Transfer Assembly Installation (cont'd)

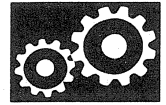
6. Install exhaust pipe A with the new self-locking nuts, its mount (B), and new gaskets (C) (D).



7. Install the front subframe stiffener with the new mounting bolts.

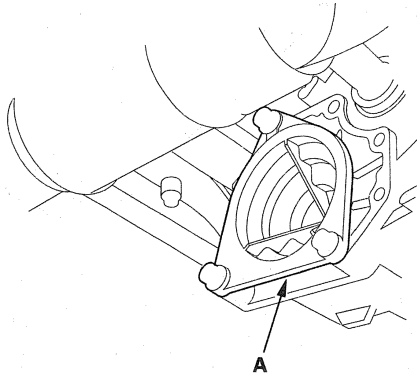


8. Refill the transfer assembly with transfer fluid (hypoid gear oil), if necessary (see page 14-215).
9. Refill the transmission with ATF (see step 5 on page 14-214).

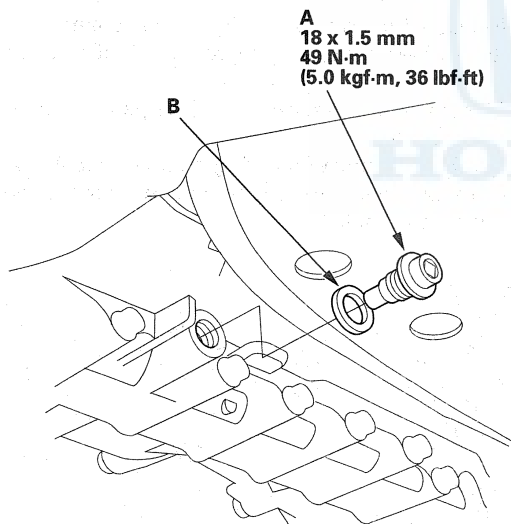


ATF Leakage Check at Torque Converter Housing Cap

1. Raise the vehicle, and make sure it is supported securely.
2. Check for fluid leaks at the torque converter housing cap (A).

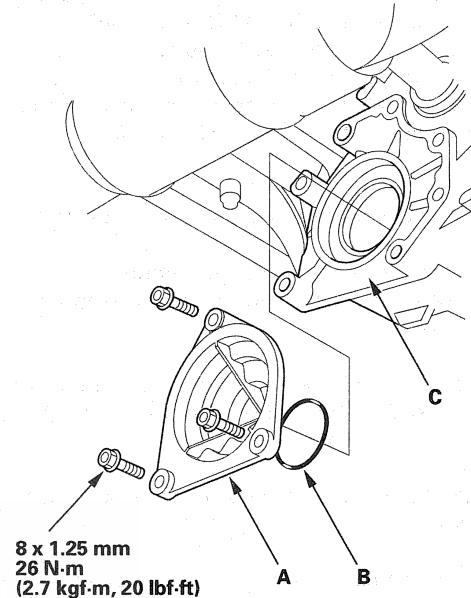


3. If there is a leak, remove the drain plug (A), and drain the automatic transmission fluid (ATF).



4. Reinstall the drain plug with a new sealing washer (B). Tighten the drain plug to the specified torque.

5. Remove the torque converter housing cap (A).



6. Remove the O-ring (B) from the cap, and replace it.
7. Install the new O-ring on the cap, and install the cap on the torque converter housing (C).
8. Refill the transmission with ATF (see step 5 on page 14-214).

Automatic Transmission

Transmission Removal

Special Tools Required

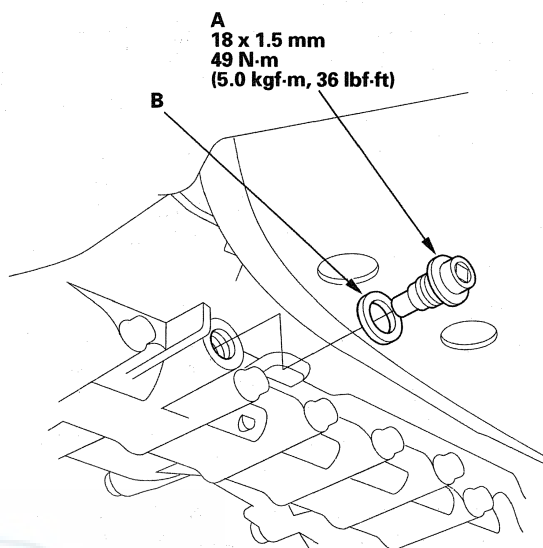
- Engine support hanger, A and Reds AAR-T-12566
- Engine hanger balance bar VSB02C000019
- Engine hanger adapter VSB02C000014
- Front subframe adapter VSB02BX0

These special tools are available through the Honda Tool and Equipment Program 1-888-424-6857.

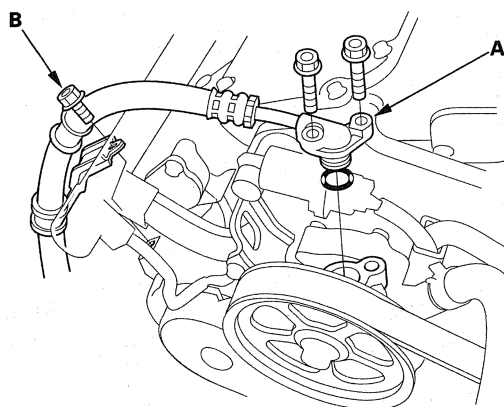
NOTE:

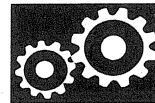
- Use fender covers to avoid damaging painted surfaces.
 - Special tool Reds engine support hanger AAR-T-12566 must be used with the side engine mount installed.
1. Make sure you have anti-theft codes for the audio system and the navigation system (if equipped), then write down the audio presets.
 2. Secure the hood in the wide open position with the support rod.
 3. Set the wheels in the straight ahead position, and lock the steering wheel.
 4. Drain the power steering system fluid from the reservoir (see page 17-13).
 5. Make sure the ignition switch is OFF. Disconnect the negative cable from the battery, then disconnect the positive cable from the battery.
 6. Remove the battery hold-down bracket, and remove the battery and battery tray.
 7. Remove the intake manifold cover and the intake air duct.
 8. Remove the battery base and battery base bracket.
 9. Remove the front bulkhead cover.
 10. Raise the vehicle, and make sure it is securely supported.
 11. Remove the splash shield.

12. Remove the drain plug (A), and drain the automatic transmission fluid (ATF).

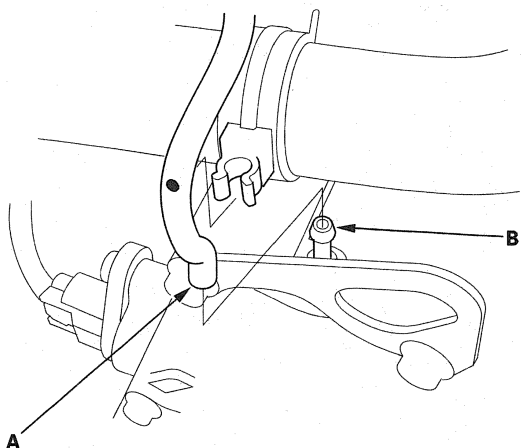


13. Reinstall the drain plug with a new sealing washer (B). Tighten the drain plug to the specified torque.
14. Disconnect the steering joint (see page 17-25).
15. Remove the power steering pump outlet line (A) from the power steering pump, and remove the hose clamp bolt (B).

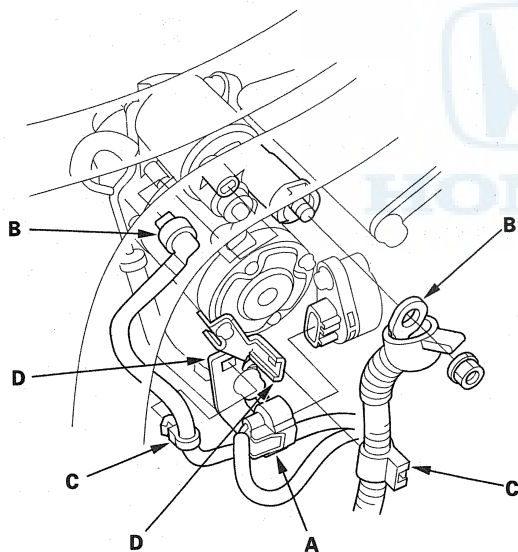




16. Remove the transmission breather tube (A) from the breather pipe (B) at the transmission housing.

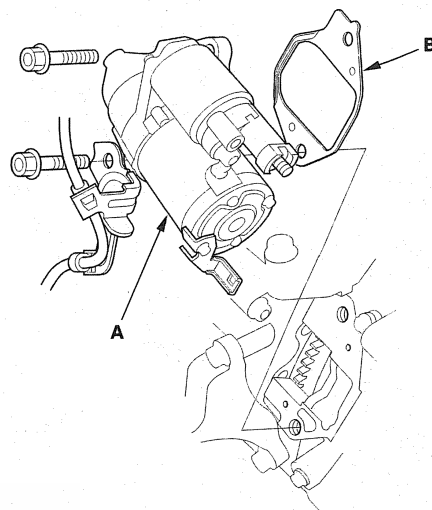


17. Disconnect the solenoid harness connector (A).

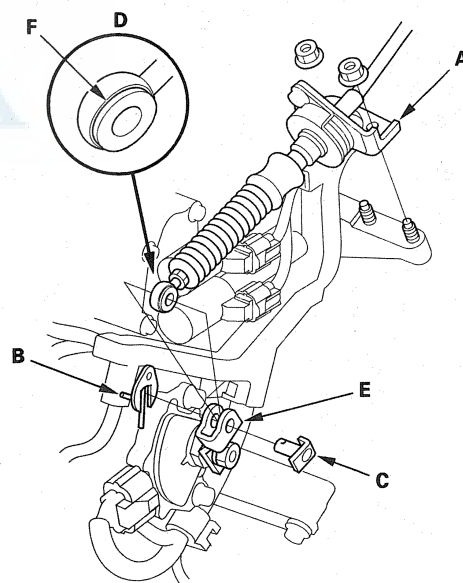


18. Disconnect the starter cables (B) from the starter, and remove the harness clamps (C) from the clamp brackets (D).

19. Remove the dipstick, then remove the starter (A) and gasket (B).



20. Remove the nuts securing the shift cable bracket (A).



21. Remove the spring clip/washer (B) and control pin (C), then separate the shift cable end (D) from the control lever (E).

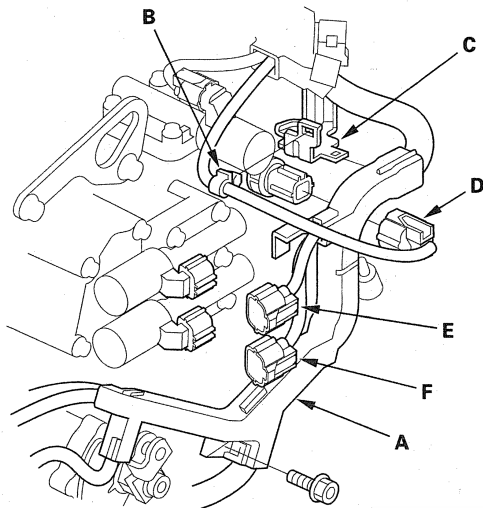
22. Check the bushing (F) in the shift cable end for a proper fit and wear. If the bushing is loose or worn, replace the shift cable (see page 14-253).

(cont'd)

Automatic Transmission

Transmission Removal (cont'd)

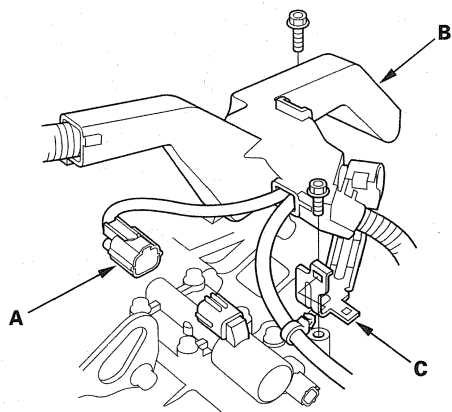
23. Remove the bolt securing the harness cover (A).



24. Remove the harness clamp (B) from the harness cover/clamp bracket (C), disconnect the 4th clutch transmission fluid pressure switch connector (D), then remove the harness cover from the bracket.

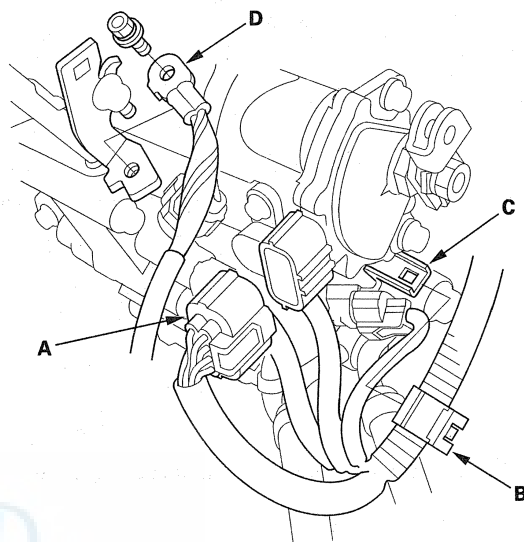
25. Disconnect the A/T clutch pressure control solenoid valve A connector (E) and A/T clutch pressure control solenoid valve B connector (F).

26. Disconnect the A/T clutch pressure control solenoid valve C connector (A).



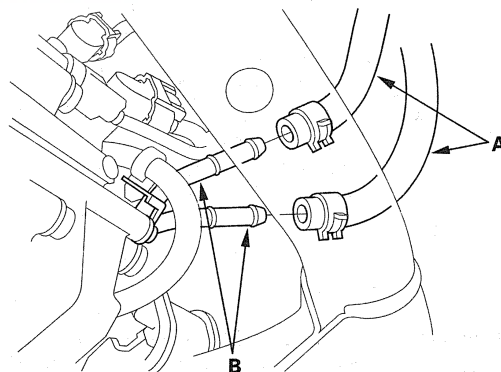
27. Remove the bolts securing the harness cover (B) and harness cover/clamp bracket (C).

28. Disconnect the transmission range switch connector (A), and remove the harness clamp (B) from the clamp bracket (C).

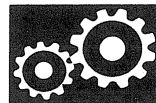


29. Remove the transmission ground cable (D).

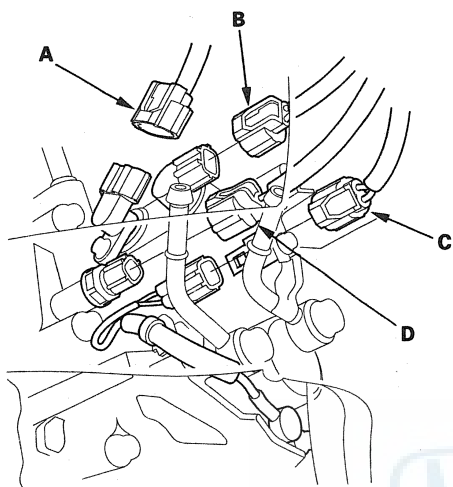
30. Remove the ATF cooler hoses (A) from the ATF cooler lines (B). Turn the ends of the cooler hoses up to prevent ATF from flowing out, then plug the cooler hoses and lines.



31. Check for any signs of leakage at the hose joints.



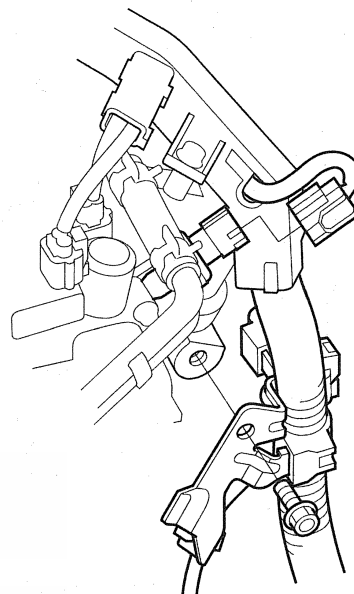
32. Disconnect the input shaft (mainshaft) speed sensor connector (A), output shaft (countershaft) speed sensor connector (B), ATF temperature sensor connector (C), and 3rd clutch transmission fluid pressure switch connector (D).



33. Remove the connector bracket from the engine front cylinder head; use the bracket bolt hole to attach engine hanger balancer bar front arm.



34. Remove the harness clamp bracket from the engine rear cylinder head; use the bracket bolt hole to attach engine hanger balancer bar rear arm.

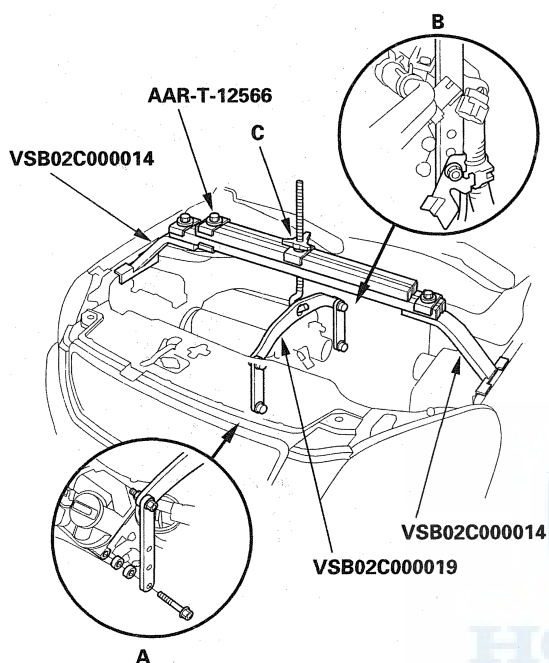


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Automatic Transmission

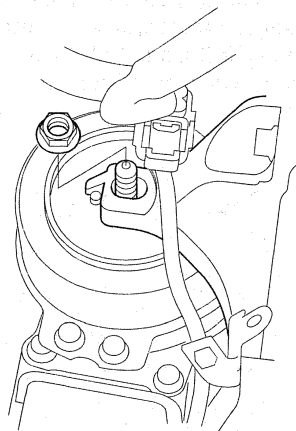
Transmission Removal (cont'd)

35. Install the engine hanger balance bar (VSB02C000019); attach the front arm (A) to the front cylinder head with a spacer and the 10 mm bolt, and attach the rear arm (B) to the rear cylinder head with the 8 mm bolt.

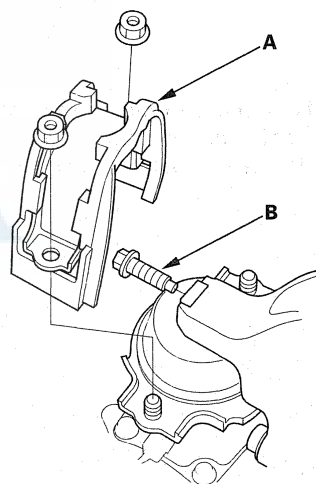


36. Install the engine hanger adapters (VSB02C000014) on the ends of the support beams of the engine support hanger (AAR-T-12566). Install the engine support hanger and adapters to the vehicle, and attach the hook to the slotted hole in the engine hanger balance bar. Tighten the wing nut (C) by hand, to lift and support the engine.

37. 4WD: Remove the front mount nut.

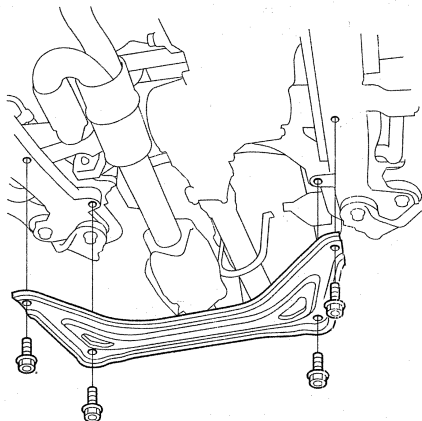


38. 2WD: Remove the front mount stop (A), and front mount bolt (B).

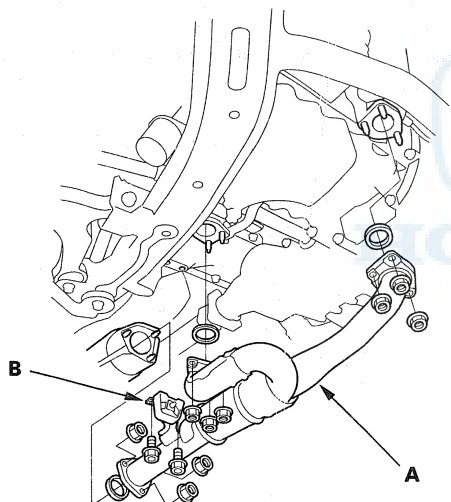




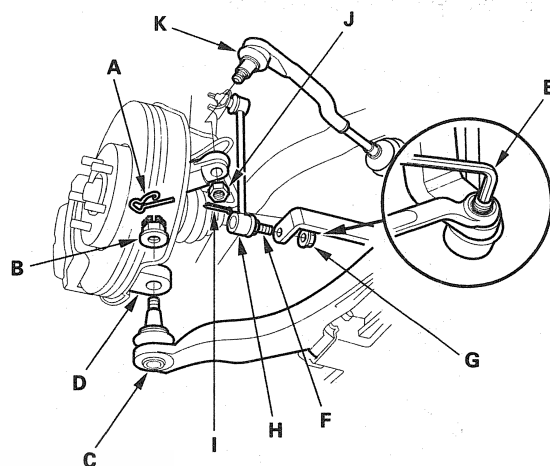
39. Remove the front subframe stiffener.



40. Remove exhaust pipe A and its mount (B).



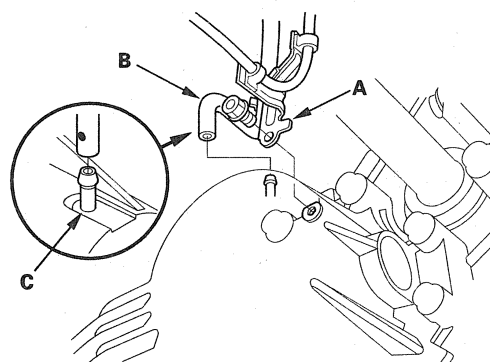
41. Remove the lock pins (A) and castle nuts (B), and separate the lower arms (C) from the knuckles (D) (see step 11 on page 18-14).



42. Insert a 6 mm Allen wrench (E) in the top of the ball joint pin (F), and remove the nuts (G), then separate the stabilizer link (H).

43. Remove the cotter pins (I) and nuts (J), and separate the tie-rod end ball joints (K) from the knuckles (see step 9 on page 18-14).

44. 4WD: Remove the bolt securing the transfer breather tube bracket (A), and disconnect the breather tube (B) from the breather pipe (C) on the transfer assembly.

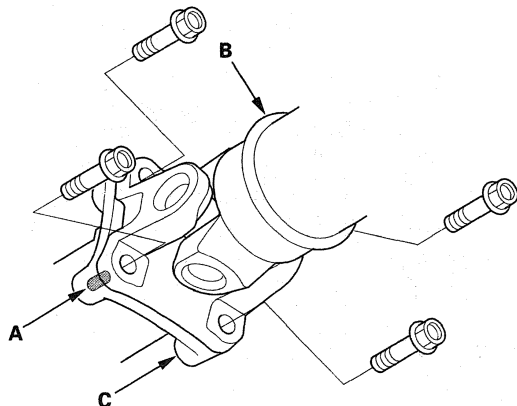


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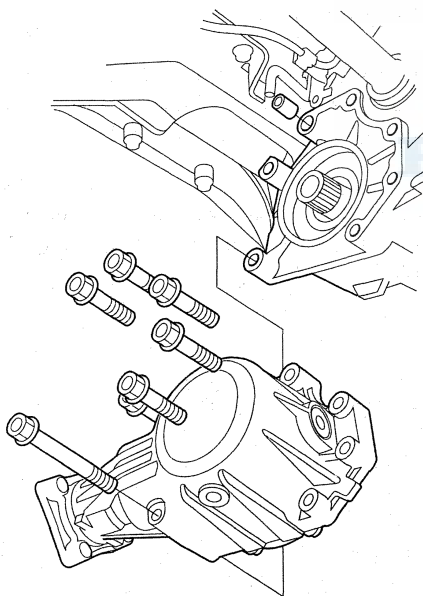
Automatic Transmission

Transmission Removal (cont'd)

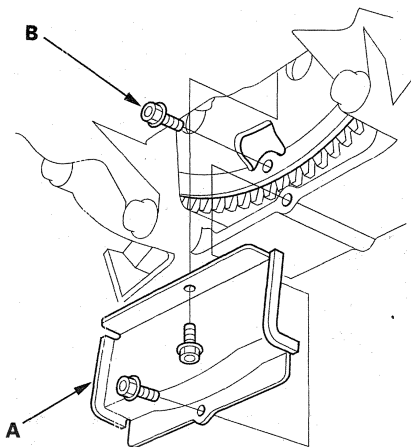
45. 4WD: Make a reference mark (A) across the propeller shaft (B) and the transfer companion flange (C), and separate the propeller shaft from the transfer companion flange.



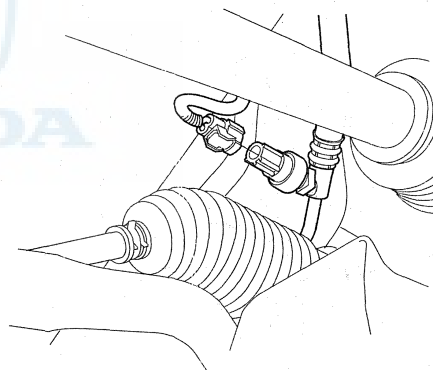
46. 4WD: Remove the transfer assembly from the transmission.

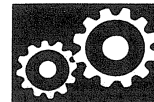


47. Remove the torque converter cover (A), and remove the drive plate bolts (B) (8) while rotating the crankshaft pulley.

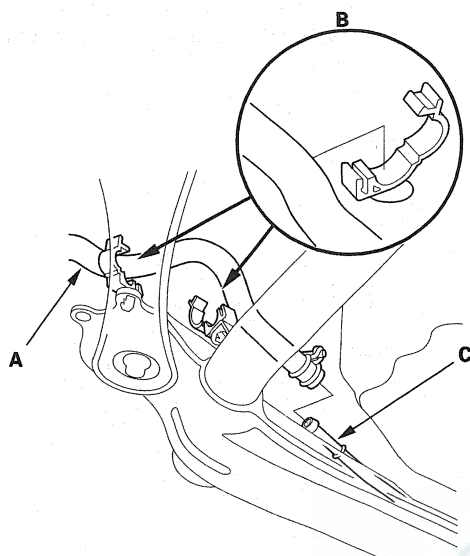


48. Disconnect the power steering pressure switch connector.



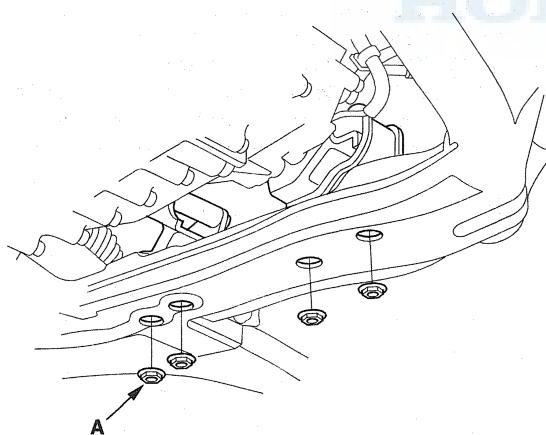


49. Remove the power steering fluid hose (A) from the hose clamp (B) at the right front of the subframe.

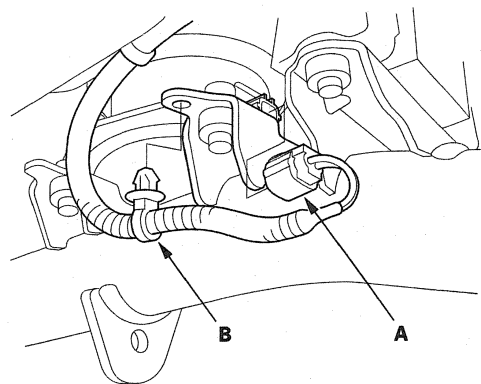


50. Loosen the hose clamp bolt, then disconnect the power steering fluid hose from the fluid line (C).

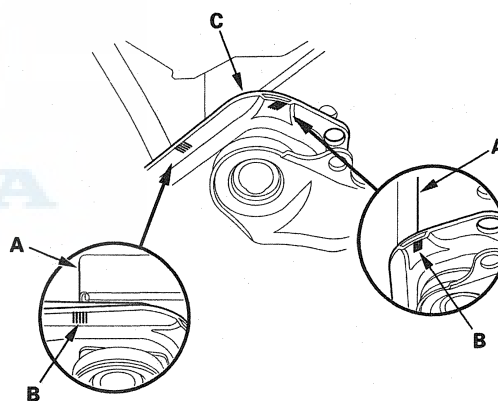
51. Remove the four transmission lower mount nuts (A).



52. 2WD: Disconnect engine mount control solenoid valve connector (A), and remove the harness clamp (B) from the front subframe.



53. Make reference marks (A) on the body across the marks (B) on the edge of the front subframe (C).

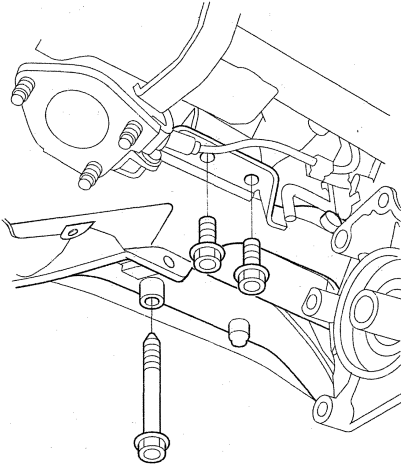


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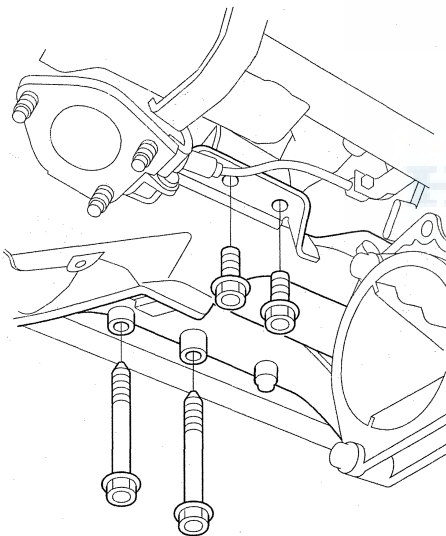
Automatic Transmission

Transmission Removal (cont'd)

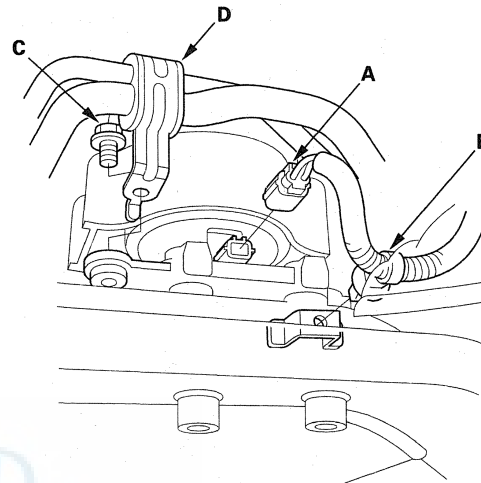
54. 4WD: Remove the three rear mount bracket bolts.



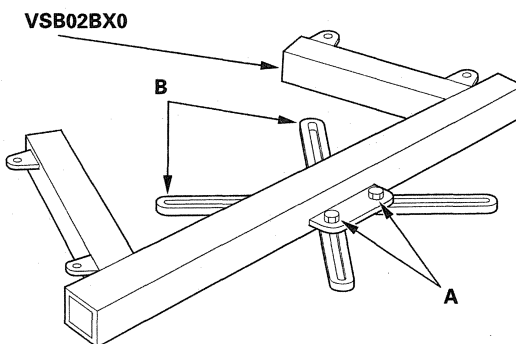
55. 2WD: Remove the four rear mount bracket bolts.



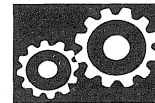
56. 2WD: Disconnect engine control mount solenoid valve connector (A), and remove the harness clamp (B). Remove the bolt (C) securing the power steering fluid line bracket (D) on the rear mount bracket.



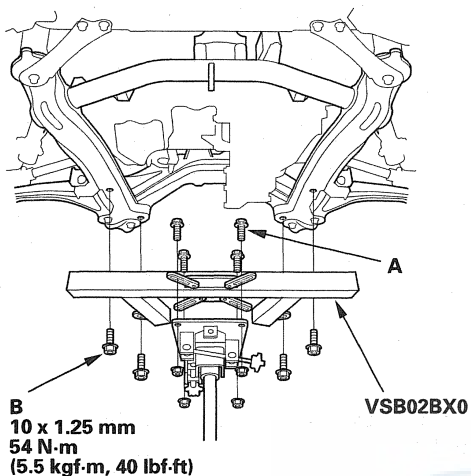
57. Loosen the four bolts (A) holding the adjustable arms (B) of the front subframe adapter (VSB02BX0) to its center plate.



NOTE: The adapter is designed to be used the Honda transmission jack (model number LSL-W93714) or powertrain lift (model number OTC-1585), both available through the Honda Tool and Equipment Program. It will also work with most commercially available transmission jack.

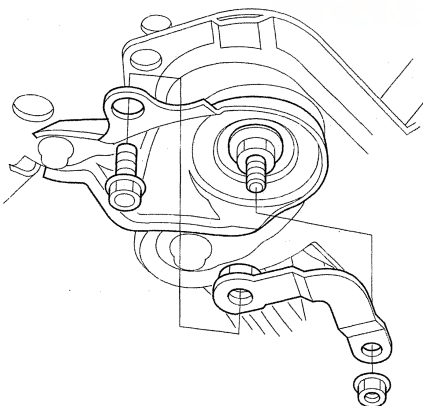


58. Line up the slots in the arms with the bolt holes on the corner of the jack base, then attach the adapter (VSB02BX0) to the jack base with the bolts (A) that came with the jack. Tighten the bolts securely.

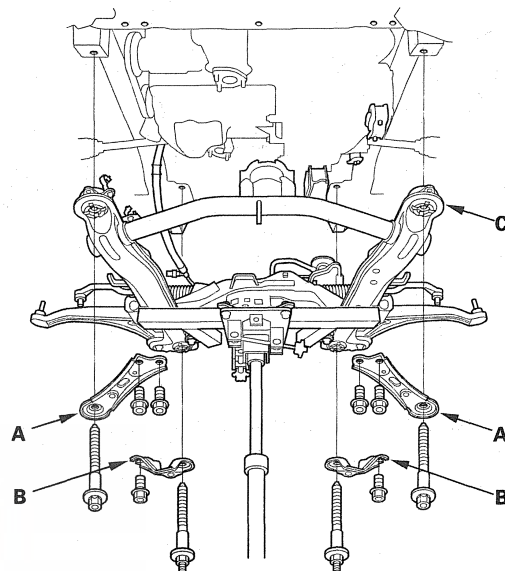


59. Raise the jack to the vehicle height, then attach the adapter to the front subframe using the subframe stiffener mounting bolts (B) and bolt holes.

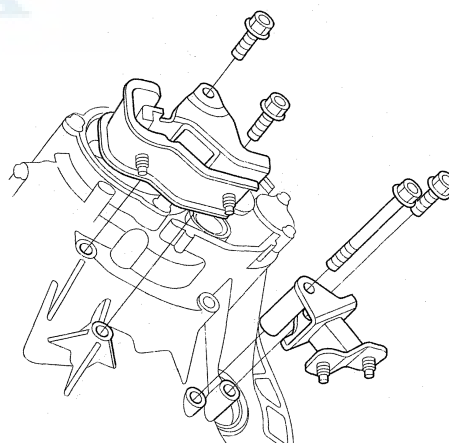
60. Remove both retainers securing the rear mounting bolt and nut of the front subframe.



61. Remove the six bolts securing the front stiffeners (A) and rear stiffeners (B), and four bolts securing the front subframe (C), and lower the front subframe.



62. Remove the transmission lower mounts.

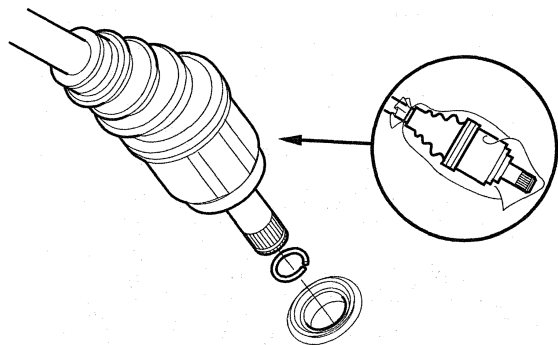


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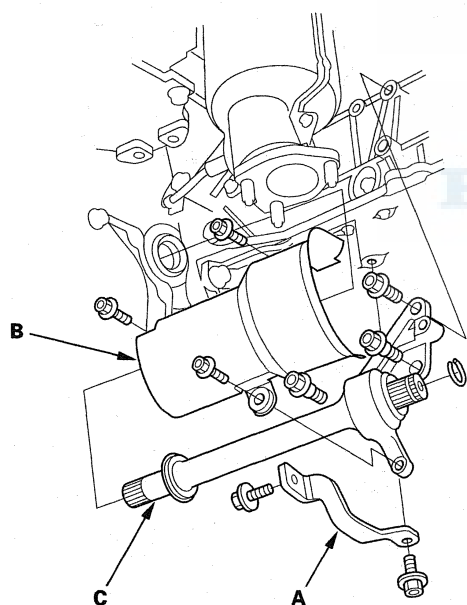
Automatic Transmission

Transmission Removal (cont'd)

63. Remove the driveshafts from the differential and the intermediate shaft. Coat all precision machined surfaces with clean engine oil, then put plastic bags over driveshaft ends.

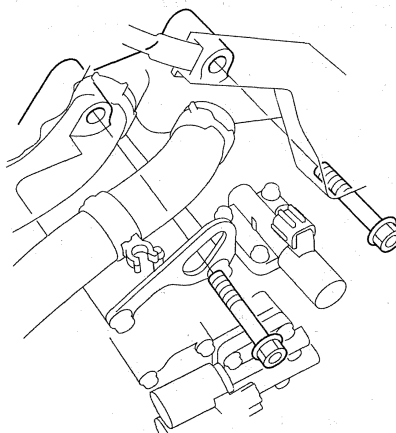


64. Remove the exhaust manifold bracket (A) and heat shield (B).

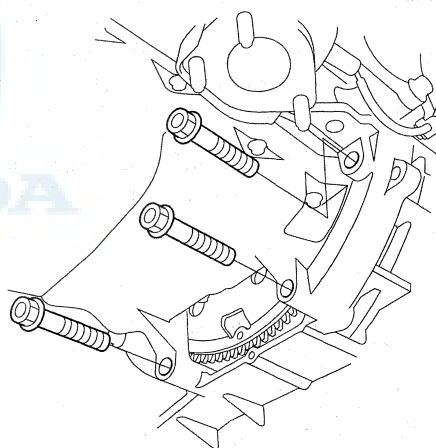


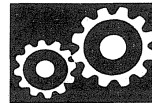
65. Remove the intermediate shaft (C). Coat all precision machined surfaces with clean engine oil, then put the plastic bags over intermediate shaft ends.

66. Remove the upper transmission housing mounting bolts.

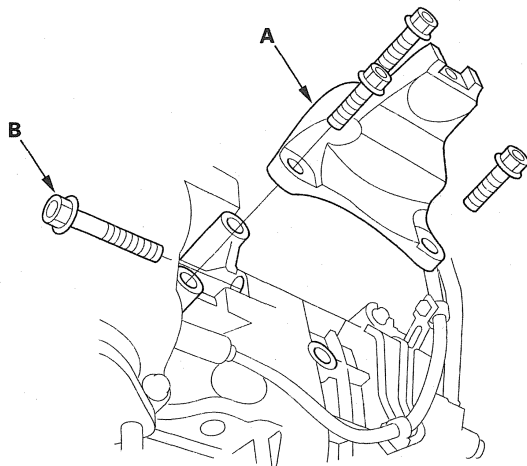


67. Remove the lower transmission housing mounting bolts.



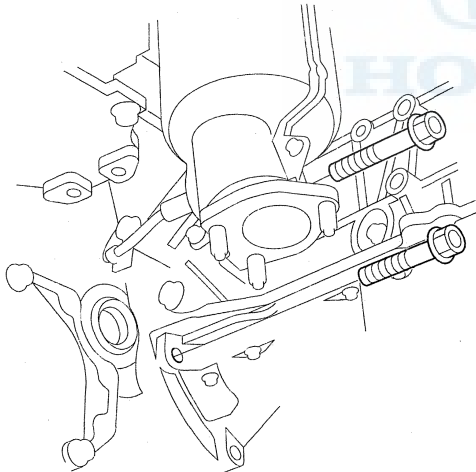


68. Remove the front mount bracket (A).



69. Remove the transmission housing mounting bolt (B) using a socket 22 mm in length.

70. Remove the rear transmission housing mounting bolts.

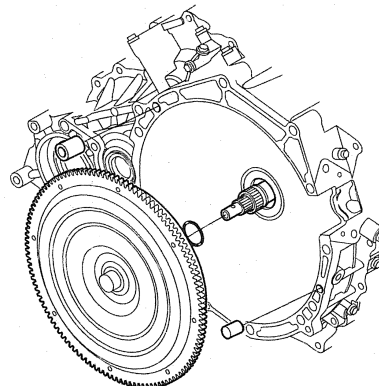


71. Place a jack under the transmission.

72. Lower the transmission by loosening the wing nut of the engine support hanger, and tilt the engine just enough for the transmission to clear its end from the side frame.

73. Slide the transmission away from the engine to remove it from the vehicle.

74. Remove the torque converter and dowel pins.

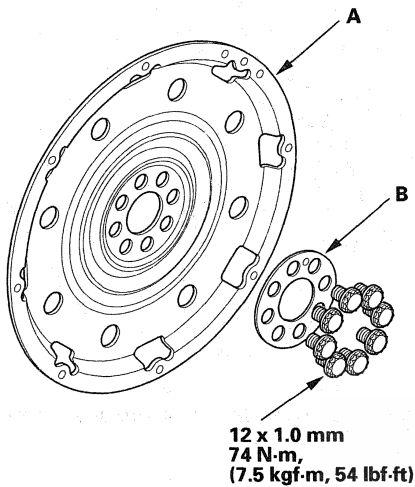


75. Inspect the drive plate, and replace if it's damaged.

Automatic Transmission

Drive Plate Removal and Installation

1. Remove the transmission assembly (see page 14-222).
2. Remove the drive plate (A) and washer (B) from the engine crankshaft.



3. Install the drive plate and washer on the engine crankshaft, and tighten the eight bolts in a crisscross pattern in two or more steps.
4. Install the transmission assembly (see page 14-235).



Transmission Installation

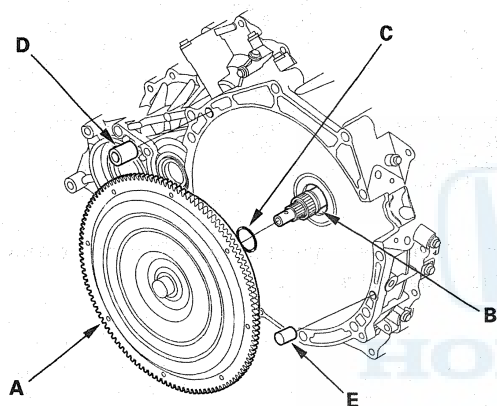
Special Tools Required

- Engine support hanger, A and Reds AAR-T-12566
- Engine hanger balance bar VSB02C000019
- Engine hanger adapter VSB02C000014
- Front subframe adapter VSB02BX0

These special tools are available through the Honda Tool and Equipment Program 1-888-424-6857.

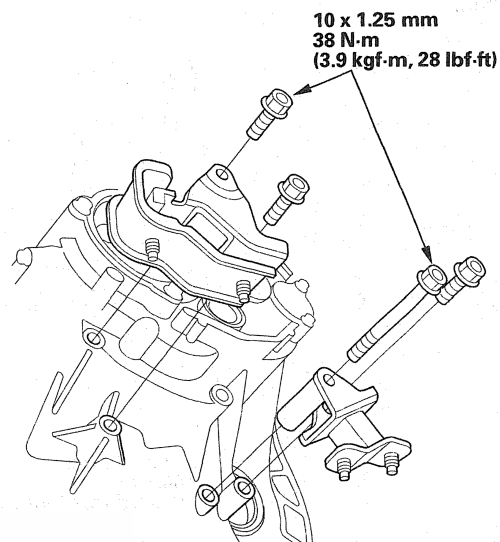
NOTE: Use fender covers to avoid damaging painted surface.

1. Cleaning the ATF cooler (see page 14-246).
2. Install the torque converter (A) on the mainshaft (B) with the new O-ring (C).

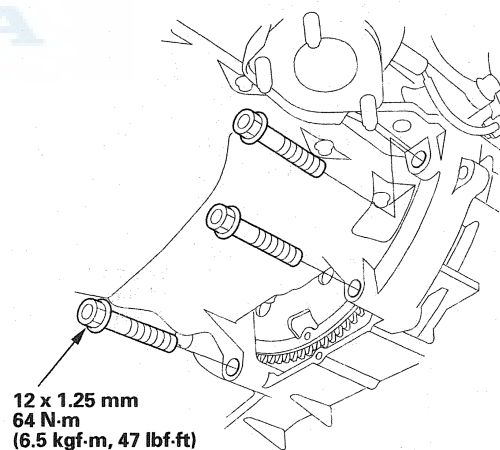


3. Install the 14 mm dowel pin (D) and 10 mm dowel pin (E) in the torque converter housing.

4. Install the transmission lower mounts.



5. Place the transmission on the jack, and raise it to engine level.
6. Attach the transmission to the engine, and install the lower transmission housing mounting bolts.

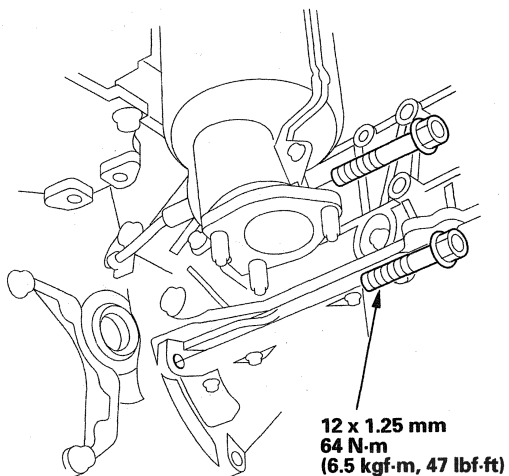


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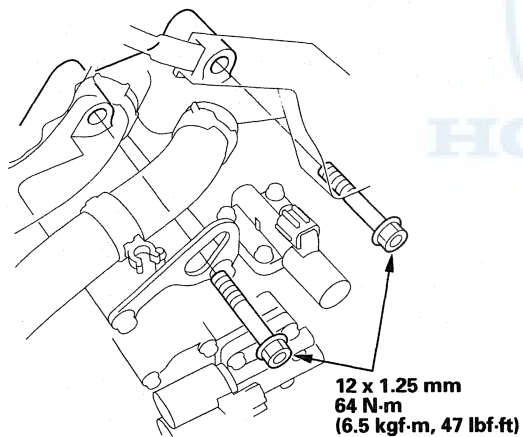
Automatic Transmission

Transmission Installation (cont'd)

7. Install the rear transmission housing mounting bolts.

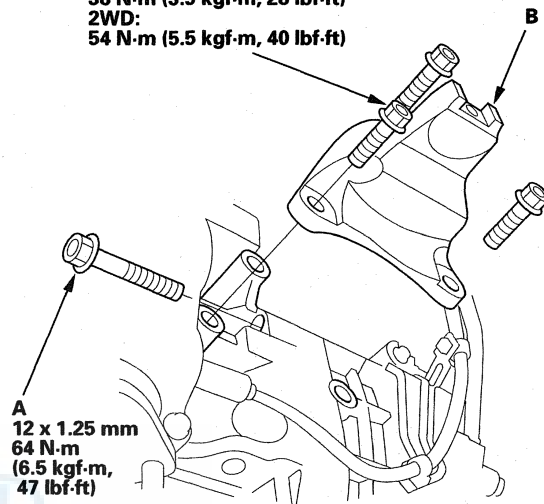


8. Install the upper transmission housing mounting bolts.

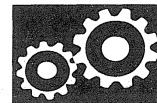


9. Install the transmission housing mounting bolt (A).

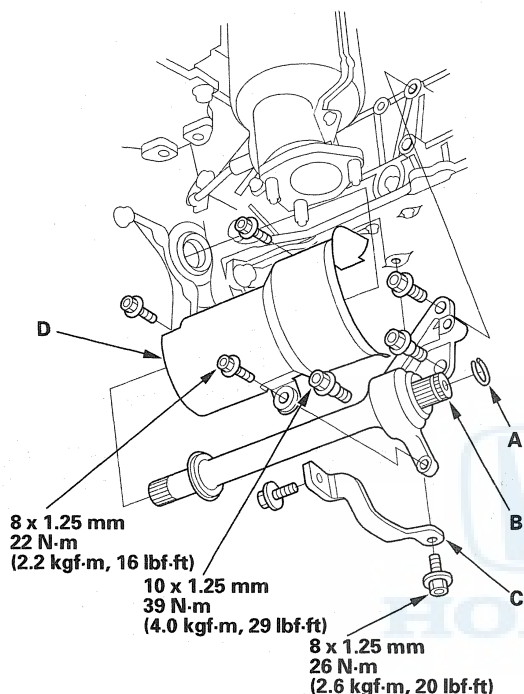
10 x 1.25 mm
Replace.
4WD:
38 N·m (3.9 kgf·m, 28 lbf·ft)
2WD:
54 N·m (5.5 kgf·m, 40 lbf·ft)



10. Install the front mount bracket (B) with the new mounting bolts.



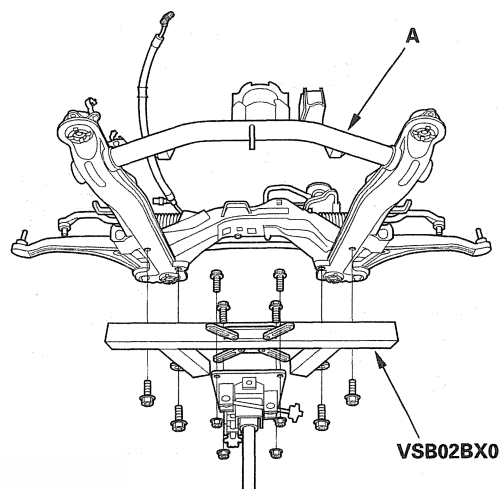
11. Install the new set ring (A) on the intermediate shaft (B), and install the intermediate shaft in the differential. While installing the intermediate shaft in the differential, be sure not to allow dust or other foreign particles to enter the transmission. Tighten the three mounting bolts to the specified torque.



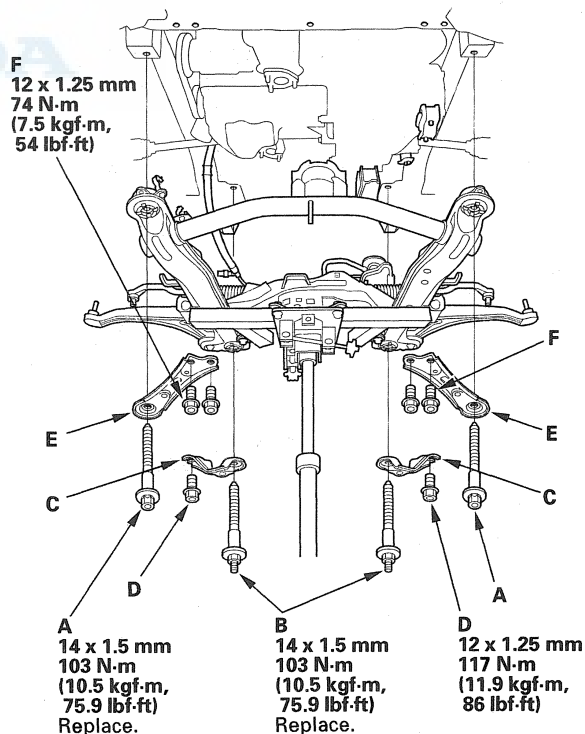
12. Install the exhaust manifold bracket (C) and heat shield (D).
13. Install the new set ring on the left driveshaft, then install the left driveshaft in the differential (see page 16-18). While installing the driveshaft in the differential, be sure not to allow dust or other foreign particles to enter the transmission. Install the right driveshaft over the intermediate shaft.

NOTE: Turn the right and left steering knuckle fully outward, and slide the driveshafts into the differential and over the intermediate shaft until you feel the set ring engages.

14. Support the front subframe (A) with the front subframe adapter (VSB02BX0) and a jack, and lift it up to the body.



15. Loosely install the new subframe mounting bolts: front (A), rear (B), rear stiffeners (C) and mounting bolts (D), and front stiffeners (E) and mounting bolts (F).

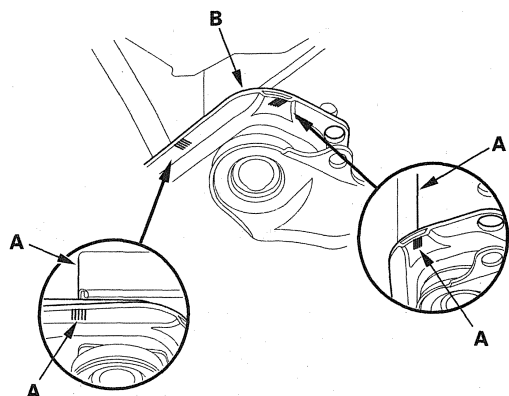


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Automatic Transmission

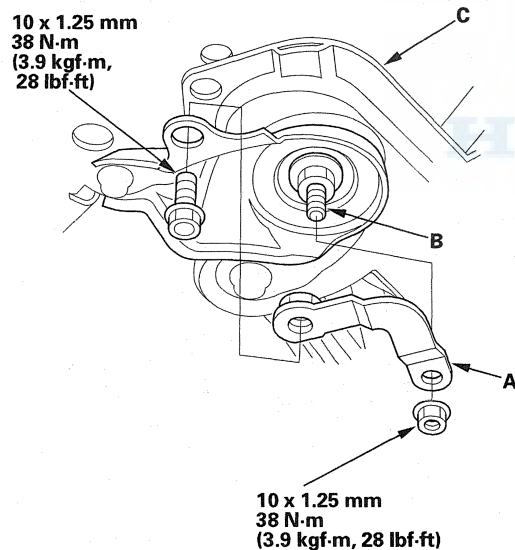
Transmission Installation (cont'd)

16. Align all reference marks (A) on the front subframe (B) with the body, then tighten the bolts on the front subframe to the specified torque.

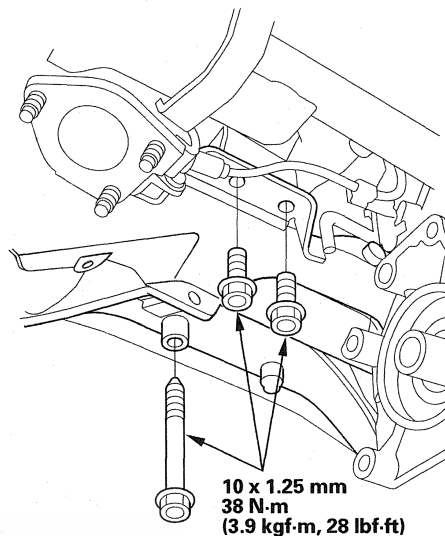


17. Remove the jack and front subframe adapter.

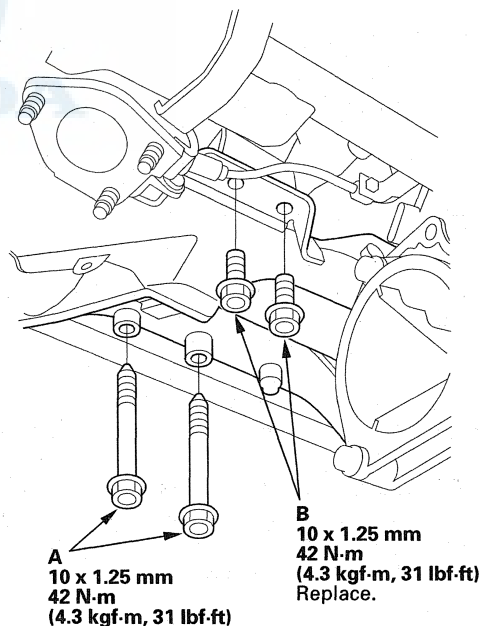
18. Install both bolt retainers (A) on both rear mounting bolts (B) of the front subframe (C).



19. 4WD: Install the three rear mount bracket bolts.

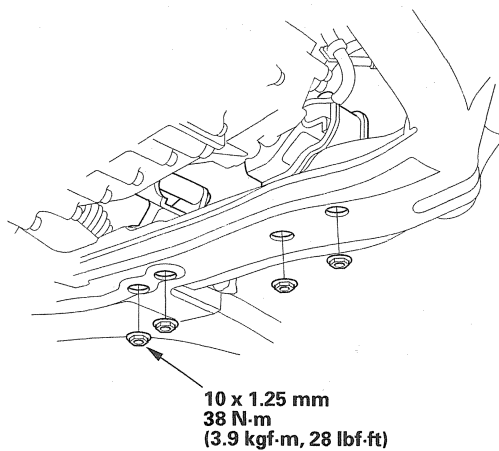


20. 2WD: Install the two mount bracket bolts (A) on the rear of the bracket, and install the new bolts (B) on the front.

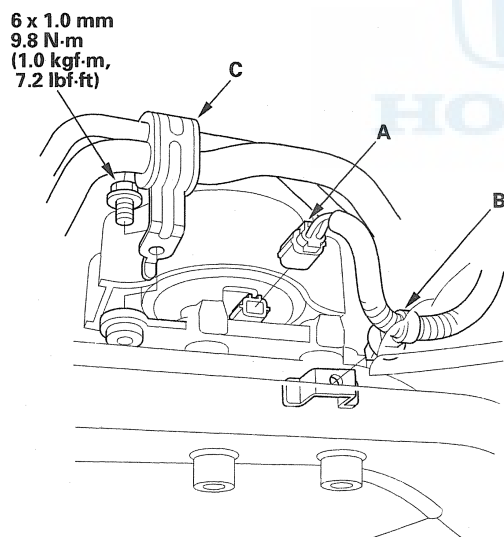




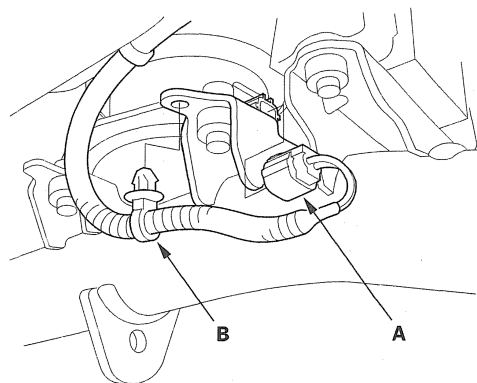
21. Install the transmission lower mount nuts.



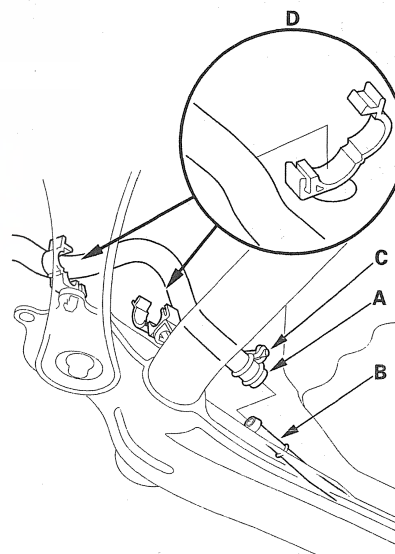
22. 2WD: Connect engine control mount solenoid valve connector (A) on the rear engine mount, and install the harness clamp (B) on its bracket. Secure the power steering fluid line bracket (C) with the bolt on the rear mount bracket.



23. 2WD: Connect engine mount control solenoid valve connector (A) on the front engine mount, and install the harness clamp (B) on the front subframe.



24. Connect the power steering fluid hose (A) to the line (B), and secure the hose with its hose clamp (C).



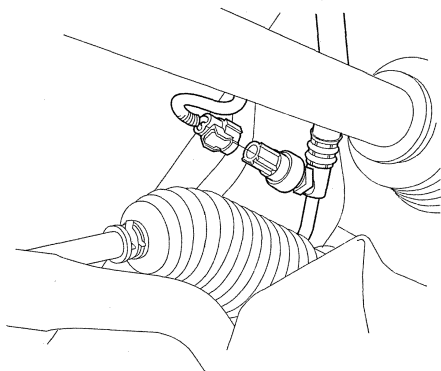
25. Secure the hose with the hose clamps (D).

(cont'd)

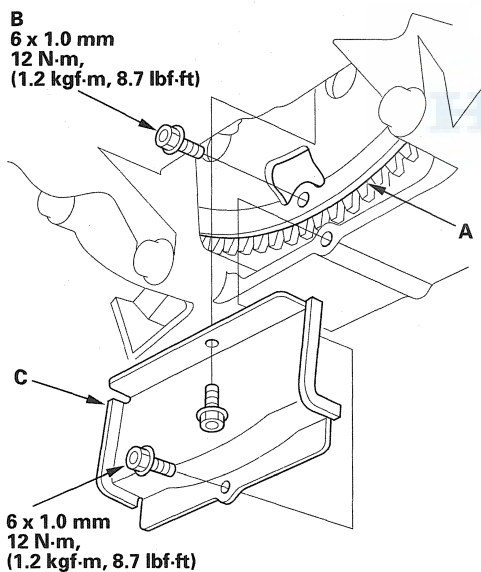
Automatic Transmission

Transmission Installation (cont'd)

26. Connect the power steering pressure switch connector.

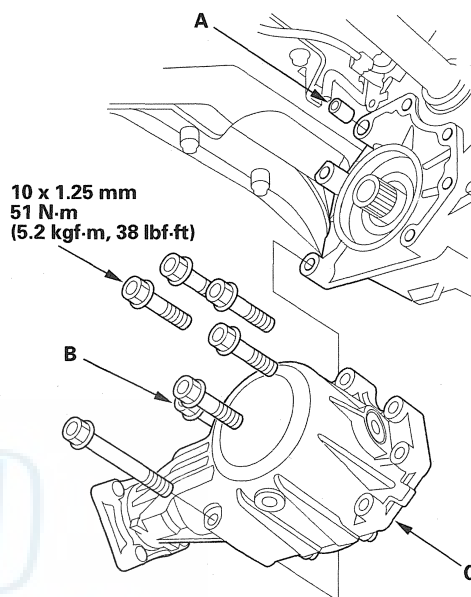


27. Attach the torque converter to the drive plate (A) with eight bolts (B). Rotate the crankshaft pulley as necessary to tighten the bolt to 1/2 of the specified torque, then to the final torque, in a crisscross pattern. After tightening the last bolt, check that the crankshaft rotates freely.

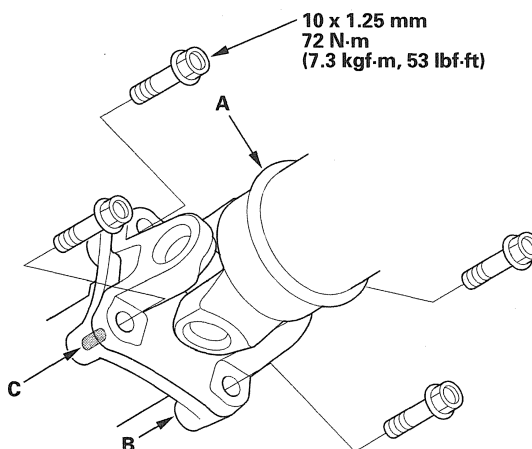


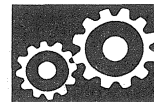
28. Install the torque converter cover (C).

29. 4WD: Install the dowel pin (A) in the transmission. Insert the one 10 x 1.25 mm bolt (length: 105 mm) (B) in the rear upper of the transfer housing, then install the transfer assembly (C) on the transmission.



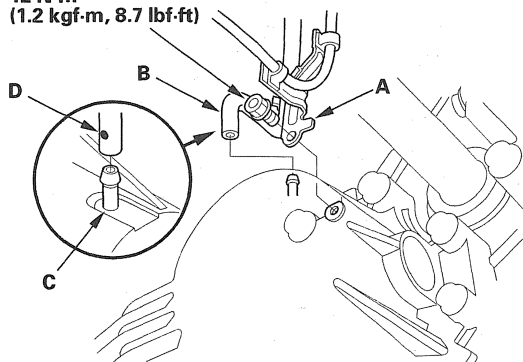
30. 4WD: Install the propeller shaft (A) to the transfer companion flange (B) by aligning the reference mark (C).



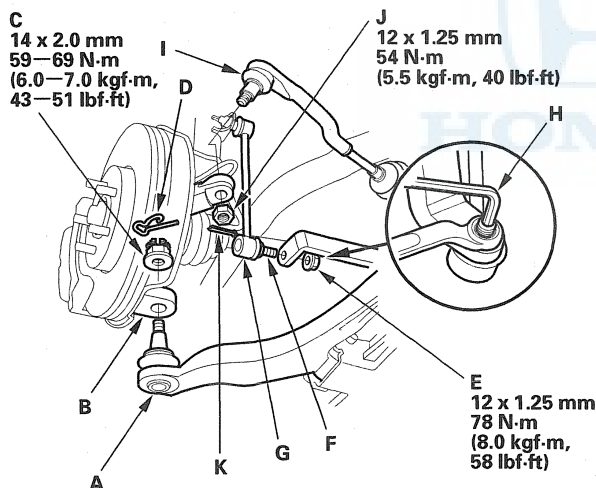


31. 4WD: Secure the transfer breather tube bracket (A) on the transfer assembly with the bolt, and install the breather tube (B) over the breather pipe (C) with the dot (D) on the tube facing out.

6 x 1.0 mm
12 N·m
(1.2 kgf·m, 8.7 lbf·ft)



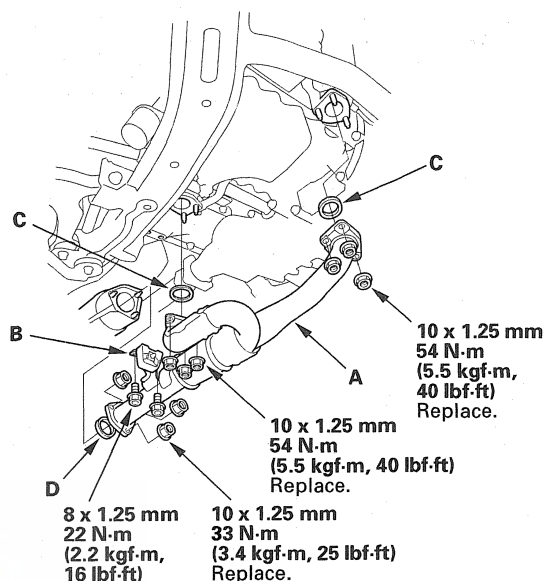
32. Install the ball joints on each lower arm (A) to each knuckle (B) with new castle nuts (C), and secure the castle nuts with the lock pins (D).



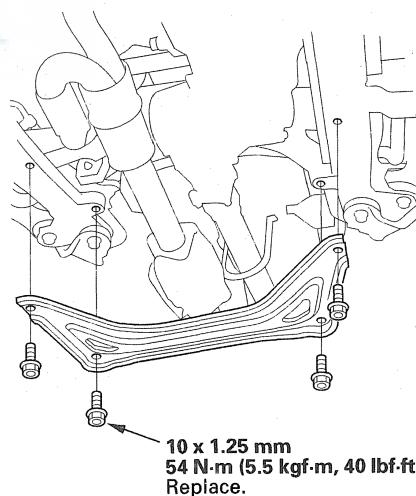
33. Install the nuts (E) to the ball joint pins (F) on each stabilizer link (G). Insert a 6 mm Allen wrench (H) in the top of the ball joint pins, and tighten the nuts to the specified torque.

34. Install the tie-rod end ball joints (I) to each knuckle with the nuts (J) and new cotter pins (K).

35. Install exhaust pipe A with the new self-locking nuts, its mount (B), and new gaskets (C) (D).



36. Install the front subframe stiffener with the new mounting bolts.



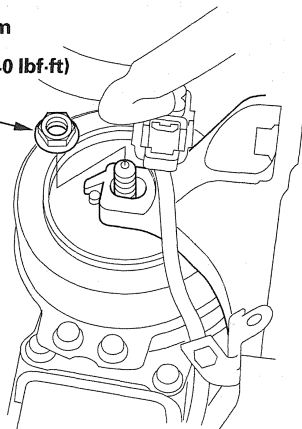
(cont'd)

Automatic Transmission

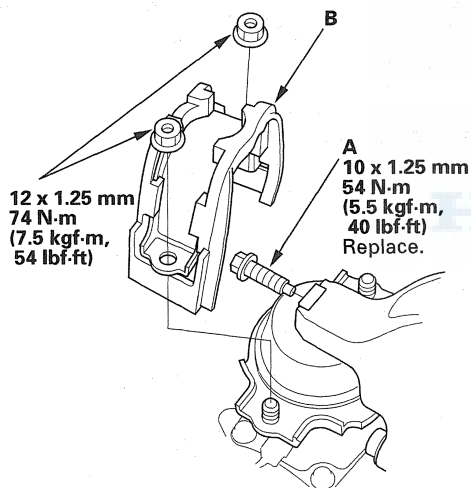
Transmission Installation (cont'd)

37. 4WD: Install a new front mount nut, and tighten it.

10 x 1.25 mm
54 N·m
(5.5 kgf·m, 40 lbf·ft)
Replace.

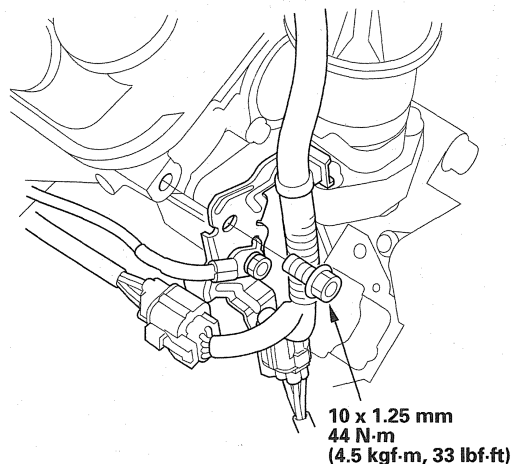


38. 2WD: Install a new front mount bolt (A), and install the front mount stop (B).

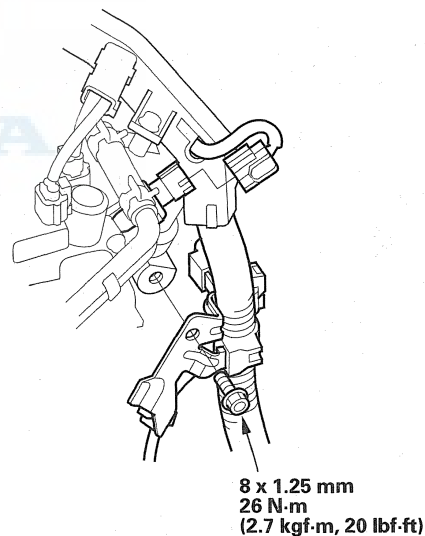


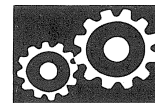
39. Remove the engine support hanger, engine hanger adapters, and engine hanger balancer bar.

40. Install the connector bracket on the engine front cylinder head.

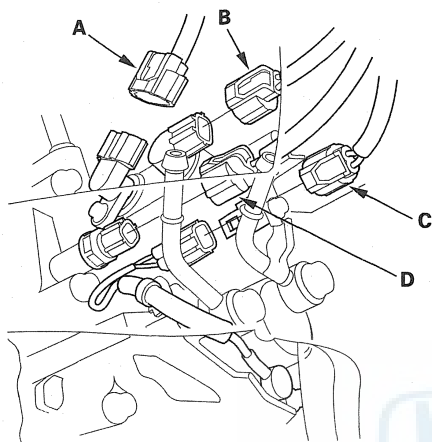


41. Install the harness clamp brackets on the engine rear cylinder head.

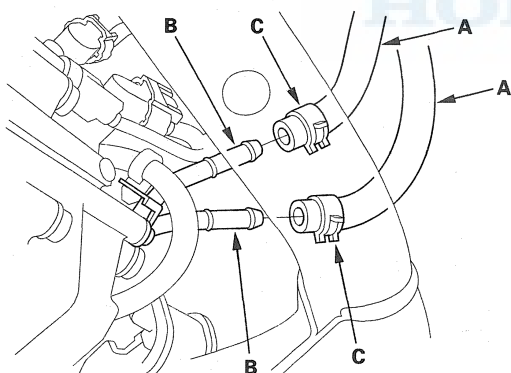




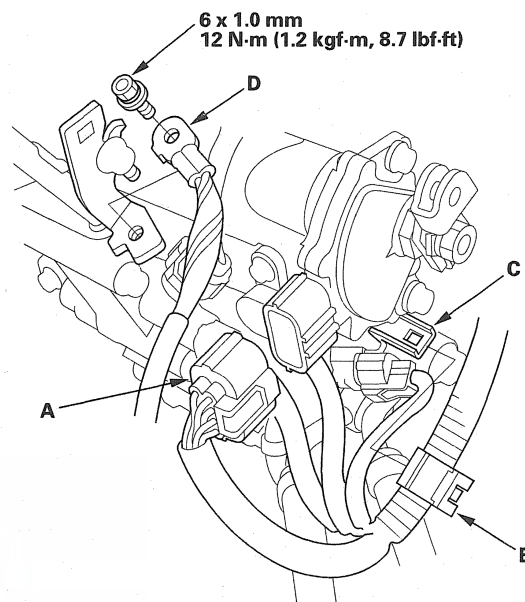
42. Connect the input shaft (mainshaft) speed sensor connector (A), output shaft (countershaft) speed sensor connector (B), ATF temperature sensor connector (C), and 3rd clutch transmission fluid pressure switch connector (D). Do not allow water, fluid, oil, dust, or other foreign particles to enter any of the connectors.



43. Connect the ATF cooler hoses (A) to the ATF cooler lines (B), and secure the hoses with the clips (C) (see page 14-248).

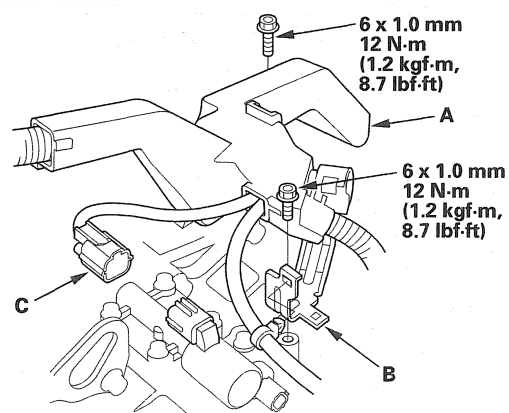


44. Connect the transmission range switch connector (A), and install the harness clamp (B) on the clamp bracket (C).



45. Install the transmission ground cable (D).

46. Secure the harness cover (A) and cover bracket (B) with the bolts.



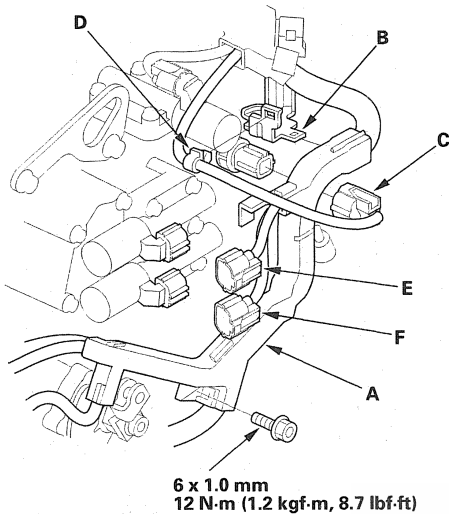
47. Connect the A/T clutch pressure control solenoid valve C connector (C).

(cont'd)

Automatic Transmission

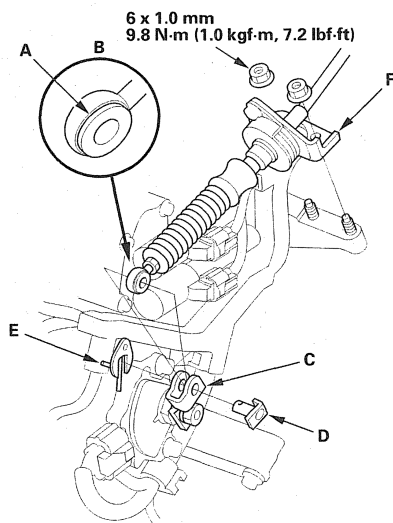
Transmission Installation (cont'd)

48. Install the harness cover (A) on the harness cover/clamp bracket (B), and secure it with the bolt.



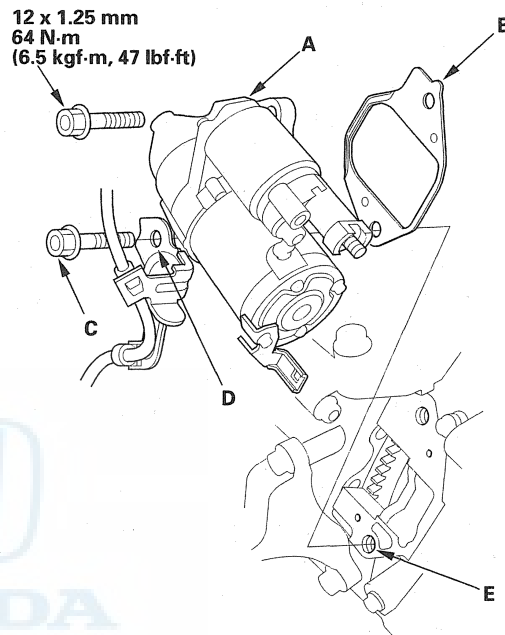
49. Connect the 4th clutch transmission fluid pressure switch connector (C), and install the harness clamp (D) on the bracket. Connect the A/T clutch pressure control solenoid valve A connector (E), and A/T clutch pressure control solenoid valve B connector (F).

50. Apply molybdenum grease to the hole in the bushing (A) in the cable end (B). Attach the shift cable end to the control lever (C), then insert the control pin (D) into the control lever hole through the shift cable end, and secure the control pin with the spring clip/washer (E).

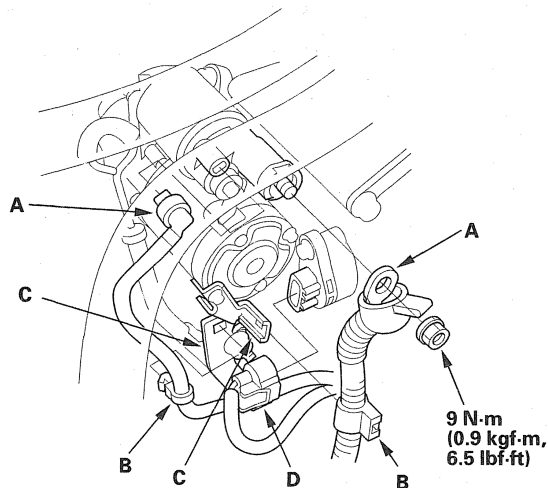


51. Secure the shift cable bracket (F) with the nuts.

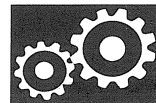
52. Install the starter (A) and new gasket (B) (see page 4-10). Install the mounting bolt (C) through the harness clamp bracket hole (D), and into the lower mounting bolt thread hole (E).



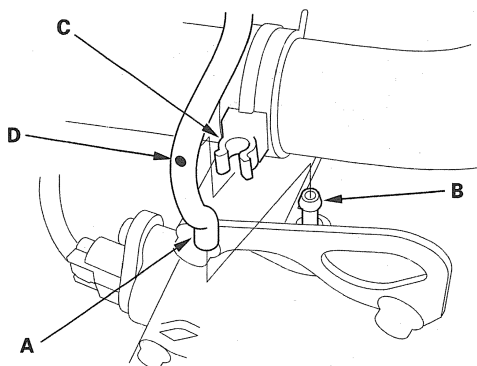
53. Install the starter cables (A), and install the harness clamps (B) on the clamp brackets (C).



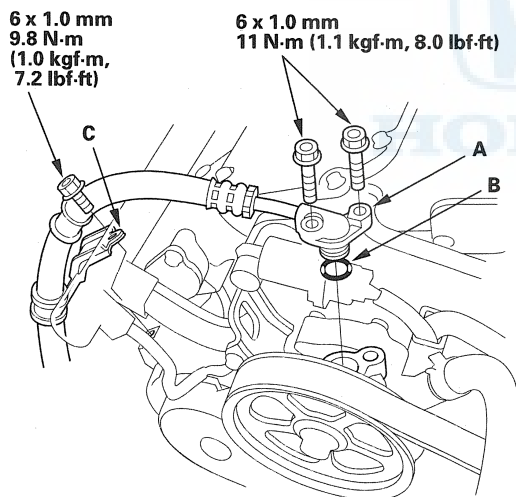
54. Connect the solenoid harness connector (D).



55. Install the transmission breather tube (A) over the breather pipe (B) at the transmission housing, and install the tube in the clamp (C) at the dot (D) on the tube with facing out.



56. Install the power steering pump outlet line (A) with the new O-ring (B) to the pump, and secure the hose clamp (C) with the bolt.



57. Connect the steering joint (see page 17-27).
58. Remove the steering wheel (see page 17-22).
59. Center the SRS cable reel and install the steering wheel (see page 17-24).

60. Refill the power steering fluid reservoir with fluid to the upper level line.
61. Refill the transmission with ATF (see step 5 on page 14-214).
62. Install the battery base bracket and battery base.
63. Install the intake air duct and the intake manifold cover.
64. Install the battery tray, battery, and battery hold-down bracket, then connect the battery terminals.
65. Install the front bulkhead cover.
66. Install the splash shield.
67. Set the parking brake, run the engine at fast idle, and turn the steering wheel from lock-to-lock several times to bleed air from the system. Recheck the fluid level, and refill if necessary.
68. Set the parking brake. Start the engine, and shift the transmission through all positions three times. Check the shift lever operation, A/T gear position indicator operation, and shift cable adjustment.
69. Start the engine in the P or N position, and warm it up to normal operating temperature (the radiator fan comes on).
70. Turn off the engine, and check the ATF level (see page 14-213).
71. Do the road test (see page 14-185).
72. Enter the anti-theft codes for the audio system and the navigation system (if equipped), then enter the audio presets. Set the clock (on vehicles without navigation).
73. Do the power window control unit reset procedure (see page 22-255).
74. Check and adjust the front wheel alignment (see page 18-5).

Automatic Transmission

ATF Cooler Cleaning

Special Tools Required

- ATF cooler cleaner GHTTTCF6H
 - Magnetic nonbypass spin-on filter GTHGNBP2
- These special tools are available through the Honda Tool and Equipment Program 1-888-424-6857.

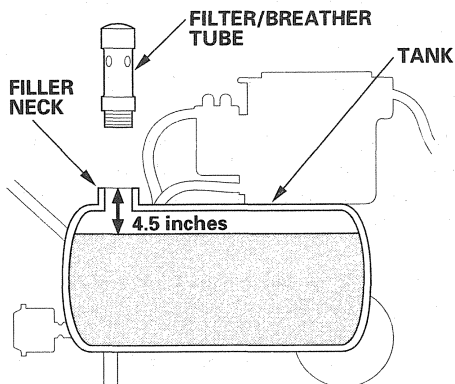
Before installing an overhauled or remanufactured automatic transmission, you must thoroughly clean the ATF cooler to prevent system contamination. Failure to do so could cause a repeat automatic transmission failure.

The cleaning procedure involves heated ATF-Z1 delivered under high pressure (100 psi). Check the security of all hoses and connections. Always wear safety glasses or a face shield, along with gloves and protective clothing. If you get ATF in your eyes or on your skin, rinse with water immediately.

WARNING

- Improper use of the ATF cooler cleaner can result in burns and other serious injuries.
- Always wear eye protection and protective clothing, and follow all instructions in this manual.

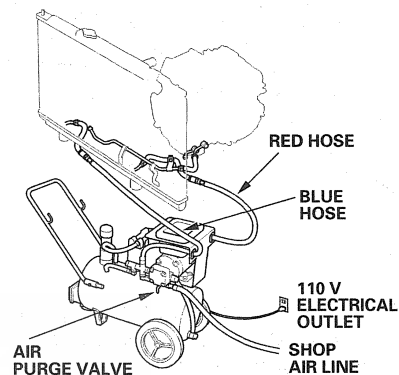
1. Check the fluid in the cooler cleaner tank. (The fluid level should be 4.5 inches from the top of the filler neck.) Adjust the level if needed; do not overfill. Use only Honda ATF-Z1; do not use any additives.



2. Plug the cooler cleaner into a 110 V grounded electrical outlet.

NOTICE

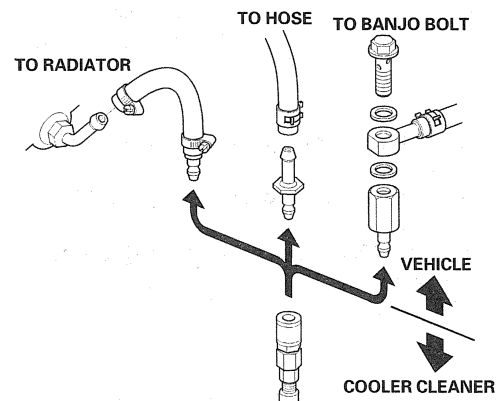
Make sure the outlet has no other appliances (light fixtures, drop lights, extension cords) plugged into it. Also, never plug the cooler cleaner into an extension cord or drop light; you could damage the unit.



3. Flip the HEAT toggle switch to ON; the green indicator above the toggle switch comes on. Wait 1 hour for the cooler cleaner to reach its operating temperature. (The cooler cleaner is ready to use when the temperature gauge reads 140 ° to 150 °F.)

NOTE: If the red indicator above the HEAT toggle switch comes on, the fluid level in the tank is too low for the tank heater to work (see step 1 of this procedure).

4. Select the appropriate pair of fittings, and attach them to the radiator, to the hoses, or to the banjo bolts for flow through the ATF cooler cleaner.





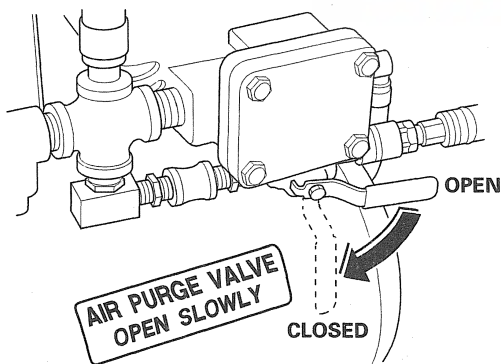
5. Connect the red hose to the cooler outlet line (the line that normally goes to the external filter on the transmission).
6. Connect the blue hose to the cooler inlet line.
7. Connect a shop air hose (regulated to 100 to 125 psi) to the air purge valve.

NOTICE

The quick-connect fitting has a one-way check valve to keep ATF from entering your shop's air system. Do not remove or replace the fitting. Attach the coupler provided with the cooler cleaner to your shop air line if your coupler is not compatible.

8. Flip the MOTOR toggle switch to ON; the green indicator above the toggle switch comes on. Let the pump run for 5 minutes. While the pump is running, open and close the air purge valve periodically to cause agitation and improve the cleaning process. Always open the valve slowly. At the end of the 5-minutes cleaning period, leave the air purge valve open.

NOTE: While the pump is running with the air purge valve open, it is normal to see vapor coming from the filler/breather tube vents.



9. With the air purge valve open, flip the MOTOR toggle switch to OFF; the green indicator goes off. Leave the air purge valve open for at least 15 seconds to purge the lines and hoses of residual ATF, then close the valve.
10. Disconnect the red and blue hoses from the ATF cooler. Now connect the red hose to the cooler inlet line.

11. Now connect the blue hose to the cooler outlet line.

12. Flip the MOTOR toggle switch to ON, and let the pump run for 5 minutes. While the pump is running, open and close the air purge valve periodically. Always open the valve slowly. At the end of the 5-minutes cleaning period, leave the air purge valve open.

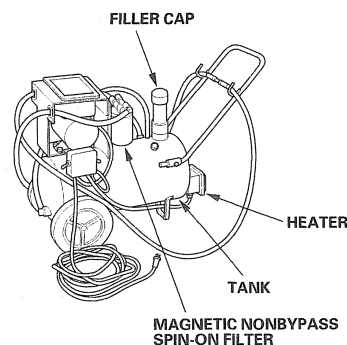
NOTE: While the pump is running with the air purge valve open, it is normal to see vapor coming from the filler/breather tube vents.

13. With the air purge valve open, flip the MOTOR toggle switch to OFF. Leave the air purge valve open for at least 15 seconds to purge the lines and hoses of residual ATF, then close the valve.
14. Disconnect the red and blue hoses from the ATF cooler lines.
15. Connect the red and blue hoses to each other.
16. Disconnect the shop air from the air purge valve. Disconnect and stow the coupler if used.
17. Disconnect and stow the fittings from the ATF cooler inlet and outlet lines.
18. Unplug the cooler cleaner from the 110 V outlet.

Tool Maintenance

Follow these instructions to keep the ATF cooler cleaner working properly:

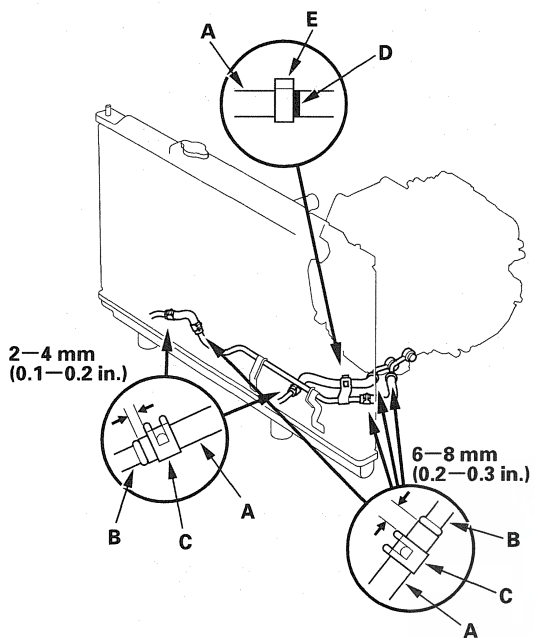
- Replace the two magnetic nonbypass spin-on filters once a year or when you notice a restriction in the ATF flow.
- Check the level and condition of the fluid in the tank before each use.
- Replace the ATF in the tank when it looks dark or dirty.



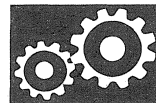
Automatic Transmission

ATF Cooler Hose Replacement

1. Connect the cooler hoses (A) to the ATF cooler lines (B) and ATF cooler, and secure them with the clips (C).



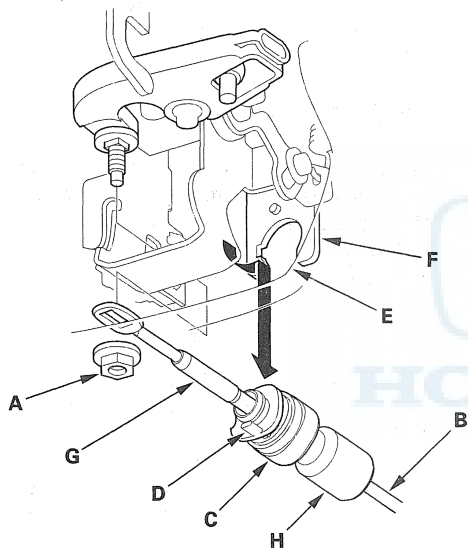
2. Clamp the ATF cooler hose with the yellow mark (D) on the clamp (E).



Shift Lever Removal

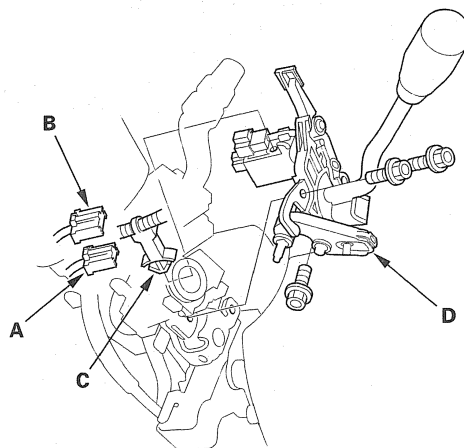
SRS components are located in this area. Review the SRS component locations (see page 23-17) and the precautions and procedures (see page 23-19) in the SRS before doing repairs or service.

1. Remove the steering column covers (see step 6 on page 17-26).
2. Remove the instrument panel (see page 20-90).
3. Shift the transmission into the N position.
4. Remove the nut (A) securing the shift cable end, then separate the shift cable (B) from the shift lever.



5. Rotate the socket holder (C) on the shift cable a quarter turn; the tab (D) on the socket holder will be in the opening (E) of the socket holder bracket (F). Then slide the holder to remove the shift cable from the socket holder bracket. Do not remove the shift cable by pulling the shift cable guide (G) and damper (H).

6. Disconnect the shift lock solenoid connector (A) and park pin switch connector (B).



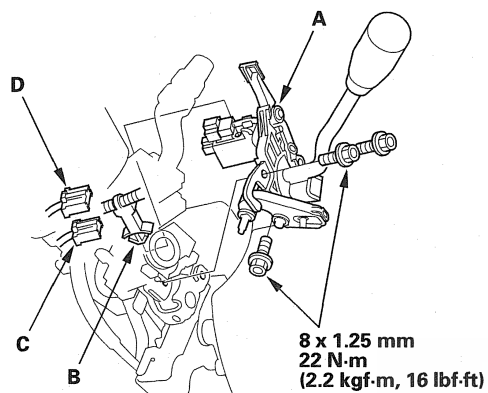
7. Remove the three bolts securing the shift lever assembly, remove the harness clamp (C), then remove the shift lever assembly (D).

Automatic Transmission

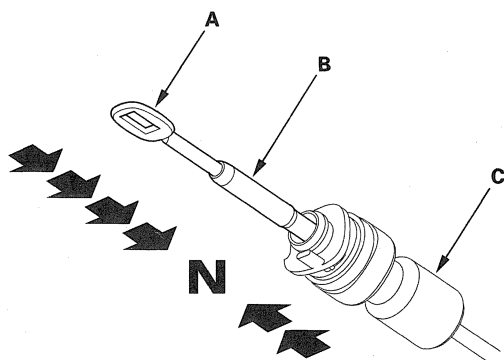
Shift Lever Installation

SRS components are located in this area. Review the SRS component locations (see page 23-17) and the precautions and procedures (see page 23-19) in the SRS before doing repairs or service.

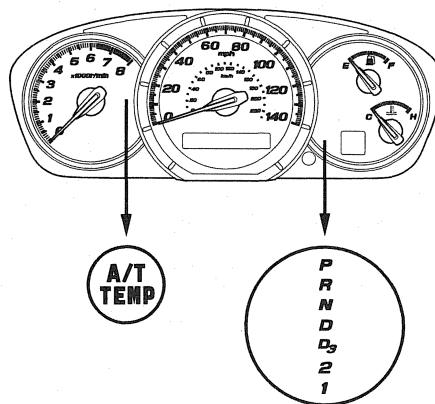
1. Install the shift lever assembly (A) on the steering column, and install the harness clamp (B).



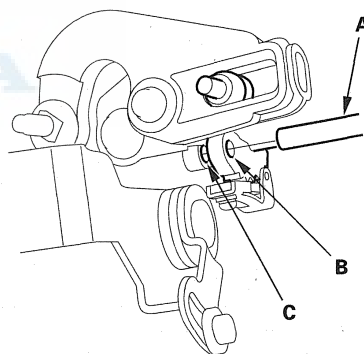
2. Connect the shift lock solenoid connector (C) and park pin switch connector (D).
3. Push the shift cable (A) until it stops, then release it. Pull the shift cable back two steps so that the shift position is in N. Do not hold the shift cable guide (B) and damper (C) to adjust the shift position.

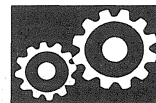


4. Turn the ignition switch ON (II), and check that the N position indicator comes on.

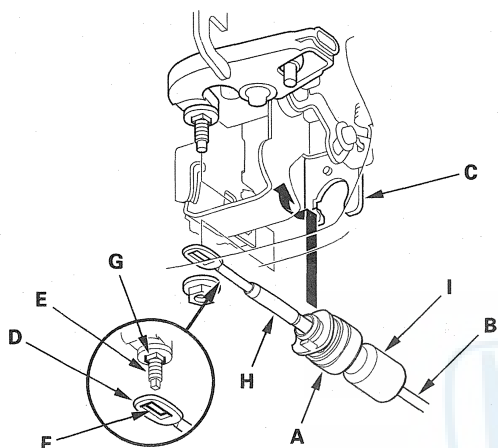


5. Turn the ignition switch OFF.
6. Place the shift lever in the N position, then insert a 6.0 mm (0.24 in.) pin (A) through the positioning hole (B) on the detent plate, and into the positioning hole (C) on the control bracket. The shift lever is secured in the N position.



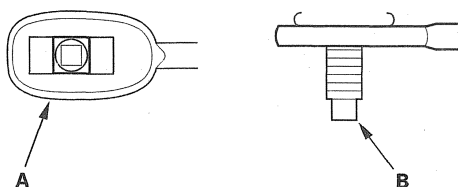


7. Align the socket holder (A) on the shift cable (B) with the slot in the socket holder bracket (C), then slide the holder into the bracket. Install the shift cable end (D) over the mounting stud (E) by aligning its square hole (F) with the square fitting (G) at the bottom of the stud. Rotate the holder a quarter turn to secure the shift cable. Do not install the shift cable by holding the shift cable guide (H) and damper (I).

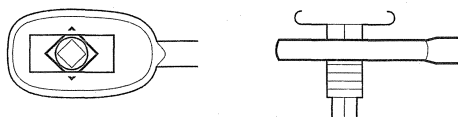


8. Check that the shift cable end (A) is properly installed on the mounting stud (B).

Properly Installed:



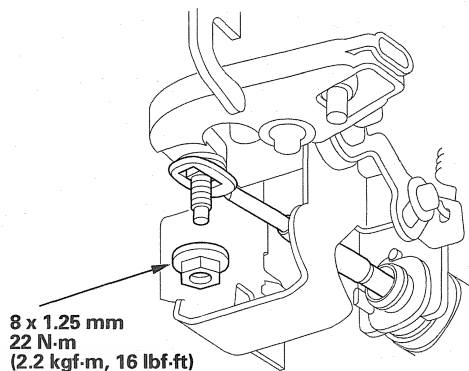
Improperly Installed:



Cable end rides on the bottom of the mounting stud.

9. If improperly installed, remove the shift cable from the socket holder bracket, and reinstall the shift cable. Do not install the shift cable end on the mounting stud while the shift cable is on the socket holder bracket.

10. Install and tighten the nut.



11. Remove the 6.0 mm (0.24 in.) pin that was installed to hold the shift lever.

12. Turn the ignition switch ON (II). Move the shift lever to each position, and check that the A/T gear position indicator follows the transmission range switch.

13. Install the instrument panel (see page 20-90).

14. Install the steering column covers (see page 17-27).

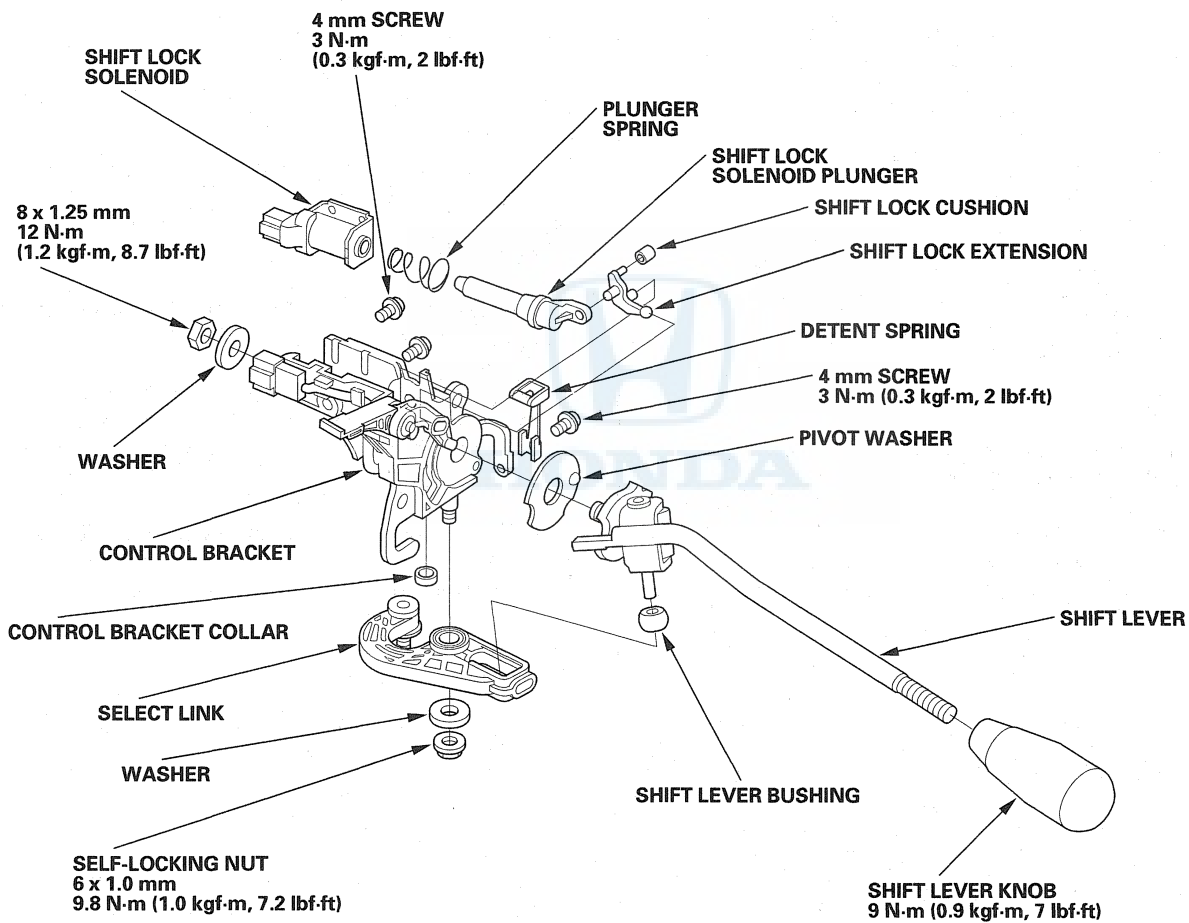
Automatic Transmission

Shift Lever Disassembly/Reassembly

1. Apply grease (Molykote 103 or an equivalent) to these parts:

- Sliding surfaces on the detent plate.
- Sliding area on shift lever and control bracket.
- Select link and shift lever contacting area.
- Select link and control bracket contacting area.
- One side washer opposite of the self-locking nut.
- Pivot washer.
- Shift lever bushing.

2. Apply silicone grease (P/N 08798-9013) to movable parts of the shift lock mechanism.

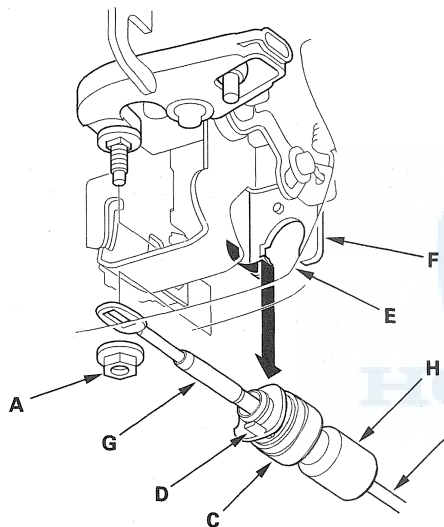




Shift Cable Replacement

SRS components are located in this area. Review the SRS component locations (see page 23-17) and the precautions and procedures (see page 23-19) in the SRS before doing repairs or service.

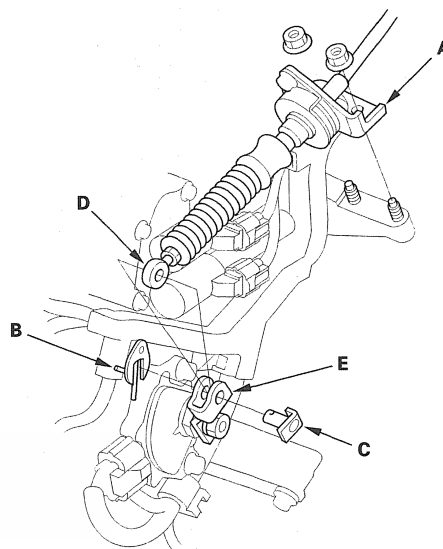
1. Remove the steering column covers (see step 6 on page 17-26).
2. Remove the instrument panel (see page 20-90).
3. Shift the transmission into the N position.
4. Remove the nut (A) securing the shift cable end, then separate the shift cable (B) from the shift lever.



5. Rotate the socket holder (C) on the shift cable a quarter turn; the tab (D) on the socket holder will be in the opening (E) of the socket holder bracket (F). Then slide the holder to remove the shift cable from the socket holder bracket. Do not remove the shift cable by pulling the shift cable guide (G) and damper (H).
6. Make sure you have anti-theft codes for the audio system and the navigation system (if equipped), then write down the audio presets.
7. Disconnect the negative cable from the battery, then disconnect the positive cable.
8. Remove the battery hold-down bracket, and remove the battery and battery tray.
9. Remove the intake manifold cover and the intake air duct.

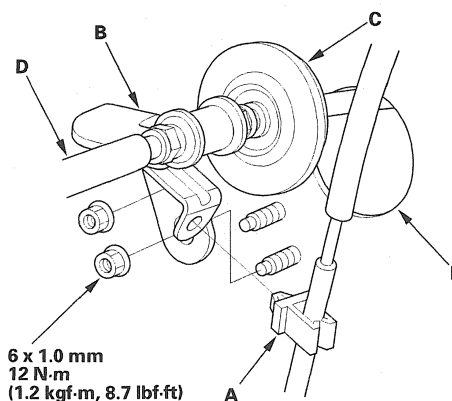
10. Remove the battery base and battery base bracket.

11. Remove the nuts securing the shift cable bracket (A).



12. Remove the spring clip/washer (B) and control pin (C), then separate the shift cable end (D) from the control lever (E).

13. Remove the cable clamp (A) from the shift cable bracket (B), and remove the nuts securing the shift cable bracket.



14. Remove the shift cable grommet (C), and pull out the shift cable (D).

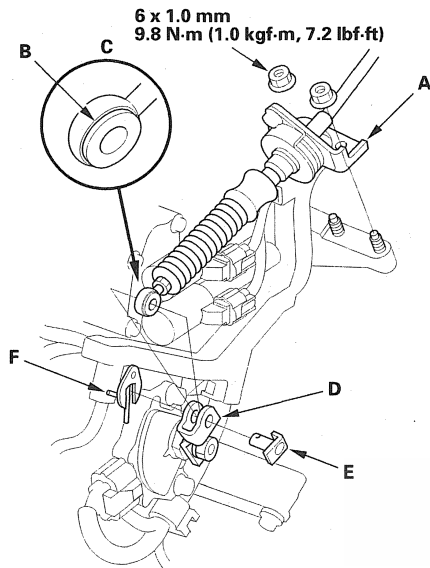
15. Insert the new shift cable through the grommet hole (E), and install the grommet in its hole. Do not bend the shift cable excessively.

(cont'd)

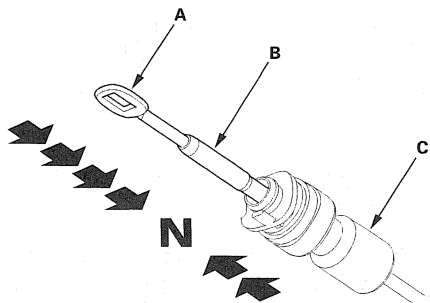
Automatic Transmission

Shift Cable Replacement (cont'd)

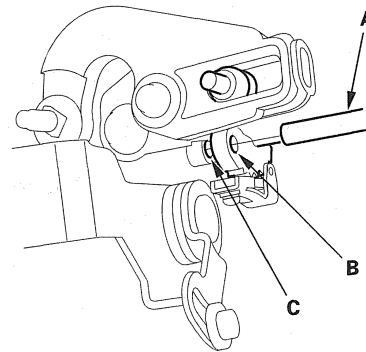
16. Secure the shift cable bracket (A) with the mounting nuts, and install the cable clamp in its bracket.



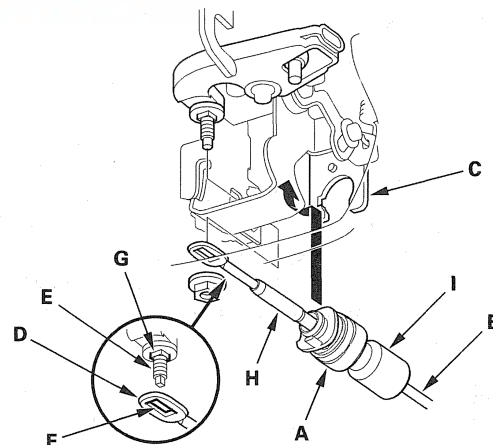
17. Apply molybdenum grease to the hole in the bushing (B) in the cable end (C). Attach the shift cable end to the control lever (D), then insert the control pin (E) into the hole in the control lever and through the cable end. Secure the control pin with the spring clip/washer (F).
18. Secure the shift cable bracket with the nuts on the transmission housing.
19. Check that the transmission is in the N position at the control lever on the transmission range switch.
20. Push the shift cable (A) until it stops, then release it. Pull the shift cable back two steps so that the shift position is in N. Do not hold the shift cable guide (B) and damper (C) to adjust the shift position.

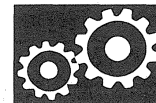


21. Place the shift lever in the N position, then insert a 6.0 mm (0.24 in.) pin (A) through the positioning hole (B) on the detent plate, and into the positioning hole (C) on the control bracket. The shift lever is secured in the N position.



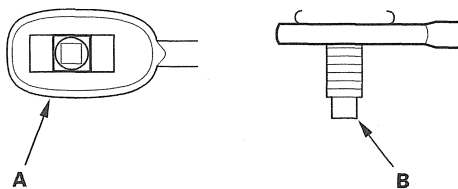
22. Align the socket holder (A) on the shift cable (B) with the slot in the socket holder bracket (C), then slide the holder into the bracket. Install the shift cable end (D) over the mounting stud (E) by aligning its square hole (F) with the square fitting (G) at the bottom of the stud. Rotate the holder a quarter turn to secure the shift cable. Do not install the shift cable by twisting the shift cable guide (H) and damper (I).



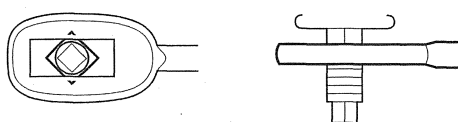


23. Check that the shift cable end (A) is properly installed on the mounting stud (B).

Properly Installed:

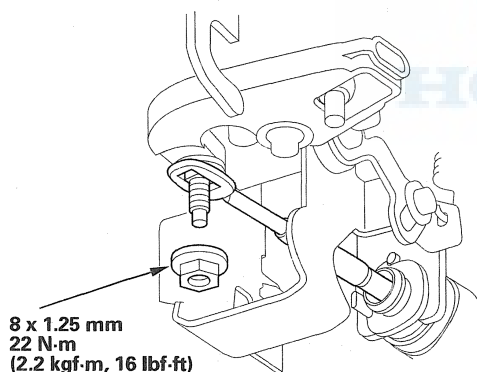


Improperly Installed:



Cable end rides on the bottom of the mounting stud.

24. If improperly installed, remove the shift cable from the socket holder bracket, and reinstall the shift cable. Do not install the shift cable end on the mounting stud while the shift cable is on the socket holder bracket.



25. Install and tighten the nut.
26. Remove the 6.0 mm (0.24 in.) pin that was installed to hold the shift lever.

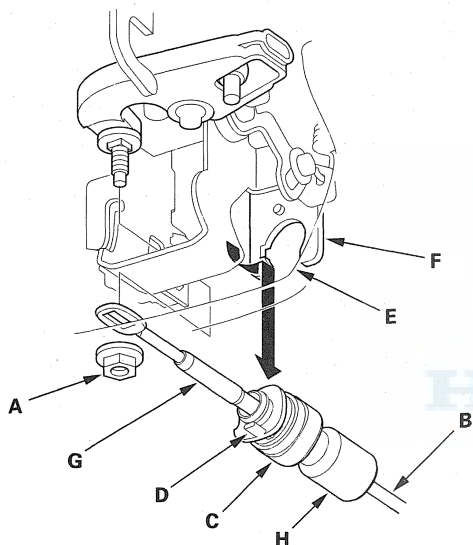
27. Install the battery base bracket and battery base.
28. Install the intake air duct and the intake manifold cover.
29. Install the battery tray, battery, and battery hold-down bracket, then connect the battery terminals.
30. Move the shift lever to each position, and check that the A/T gear position indicator follows the transmission range switch.
31. 4WD: Raise the vehicle, make sure it is securely supported, and allow all four wheels to rotate freely. 2WD: Raise the front of the vehicle, make sure it is securely supported, and allow the front wheels to rotate freely.
32. Start the engine, and check the shift lever operation in all positions.
33. Install the instrument panel (see page 20-90).
34. Install the steering column covers (see page 17-27).
35. Enter the anti-theft codes for the audio system and the navigation system (if equipped), then enter the audio presets. Set the clock (on vehicles without navigation).
36. Do the power window control unit reset procedure (see page 22-255).

Automatic Transmission

Shift Cable Adjustment

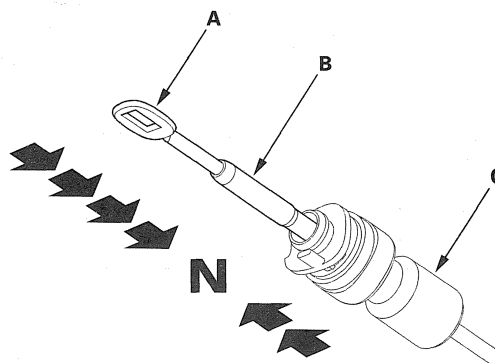
SRS components are located in this area. Review the SRS component locations (see page 23-17) and the precautions and procedures (see page 23-19) in the SRS before doing repairs or service.

1. Remove the steering column covers (see step 6 on page 17-26).
2. Remove the instrument panel (see page 20-90).
3. Shift the transmission into the N position.
4. Remove the nut (A) securing the shift cable end, then separate the shift cable (B) from the shift lever.

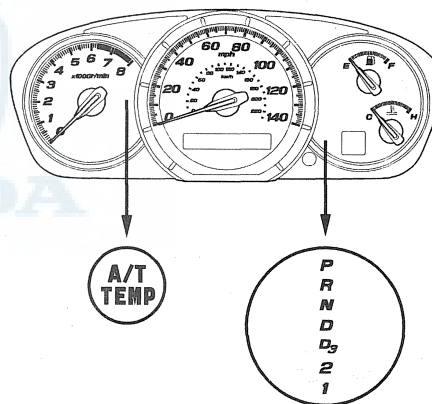


5. Rotate the socket holder (C) on the shift cable a quarter turn; the tab (D) on the socket holder will be in the opening (E) of the socket holder bracket (F). Then slide the holder to remove the shift cable from the socket holder bracket. Do not remove the shift cable by twisting the shift cable guide (G) and damper (H).

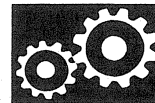
6. Push the shift cable (A) until it stops, then release it. Pull the shift cable back two steps so that the shift position is in N. Do not hold the shift cable guide (B) and damper (C) to adjust the shift position.



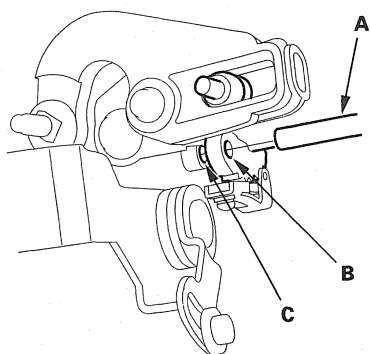
7. Turn the ignition switch ON (II), and check that the R position indicator comes on.



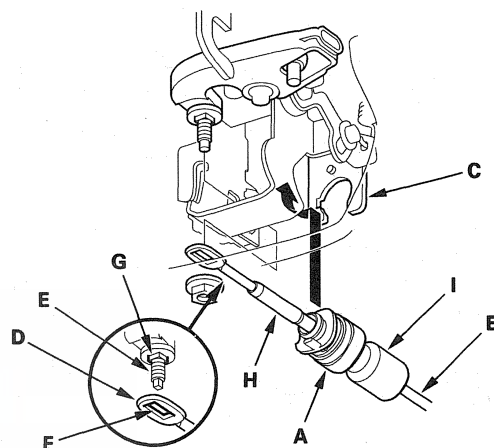
8. Turn the ignition switch OFF.



9. Place the shift lever in the N position, then insert a 6.0 mm (0.24 in.) pin (A) through the positioning hole (B) on the detent plate, and into the positioning hole (C) on the control bracket. The shift lever is secured in the N position.

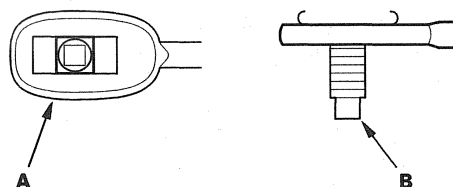


10. Align the socket holder (A) on the shift cable (B) with the slot in the socket holder bracket (C), then slide the holder into the bracket. Install the shift cable end (D) over the mounting stud (E) by aligning its square hole (F) with the square fitting (G) at the bottom of the stud. Rotate the holder a quarter turn to secure the shift cable. Do not install the shift cable by twisting the shift cable guide (H) and damper (I).

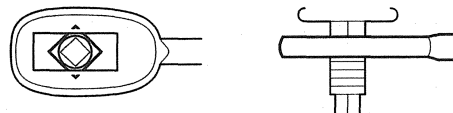


11. Check that the shift cable end (A) is properly installed on the mounting stud (B).

Properly Installed:



Improperly Installed:



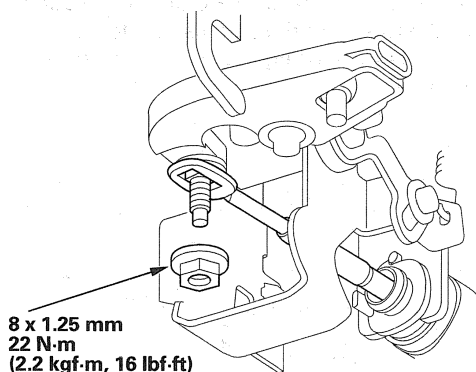
Cable end rides on the bottom of the mounting stud.

(cont'd)

Automatic Transmission

Shift Cable Adjustment (cont'd)

12. If improperly installed, remove the shift cable from the socket holder bracket, and reinstall the shift cable. Do not install the shift cable end on the mounting stud while the shift cable is on the socket holder bracket.



13. Install and tighten the nut.
14. Remove the 6.0 mm (0.24 in.) pin that was installed to hold the shift lever.
15. Move the shift lever to each position, and check that the A/T gear position indicator follows the transmission range switch.
16. 4WD: Raise the vehicle, make sure it is securely supported, and allow all four wheels to rotate freely. 2WD: Raise the front of the vehicle, make sure it is securely supported, and allow the front wheels to rotate freely.
17. Start the engine, and check the shift lever operation in all positions.
18. Install the instrument panel (see page 20-90).
19. Install the steering column covers (see page 17-27).

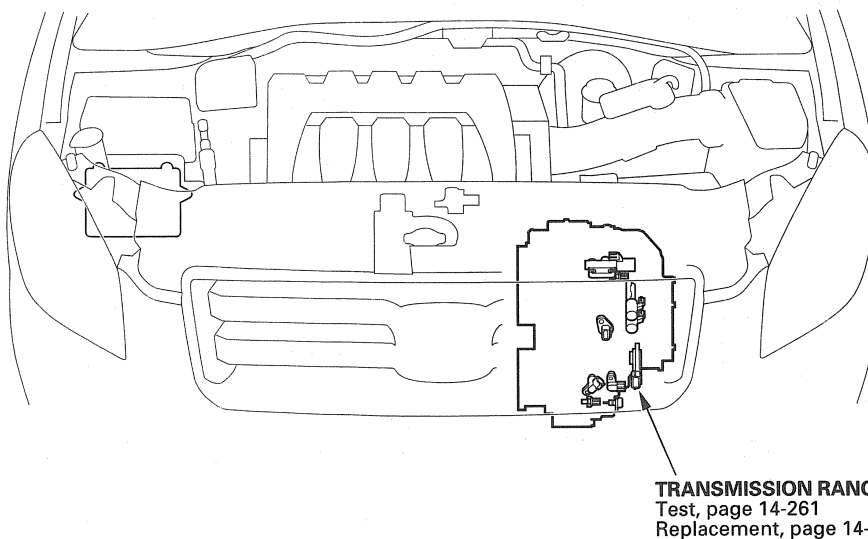
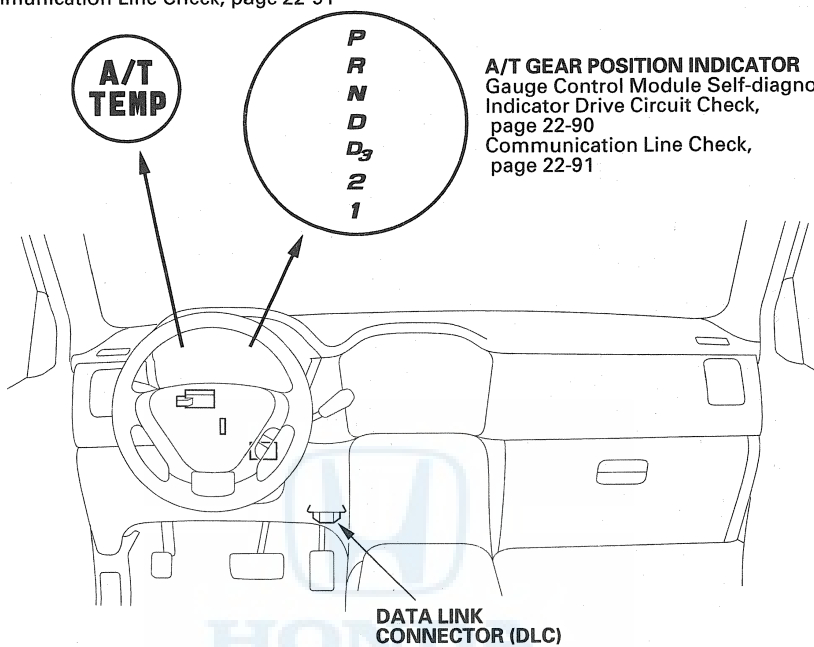
A/T Gear Position Indicator



Component Location Index

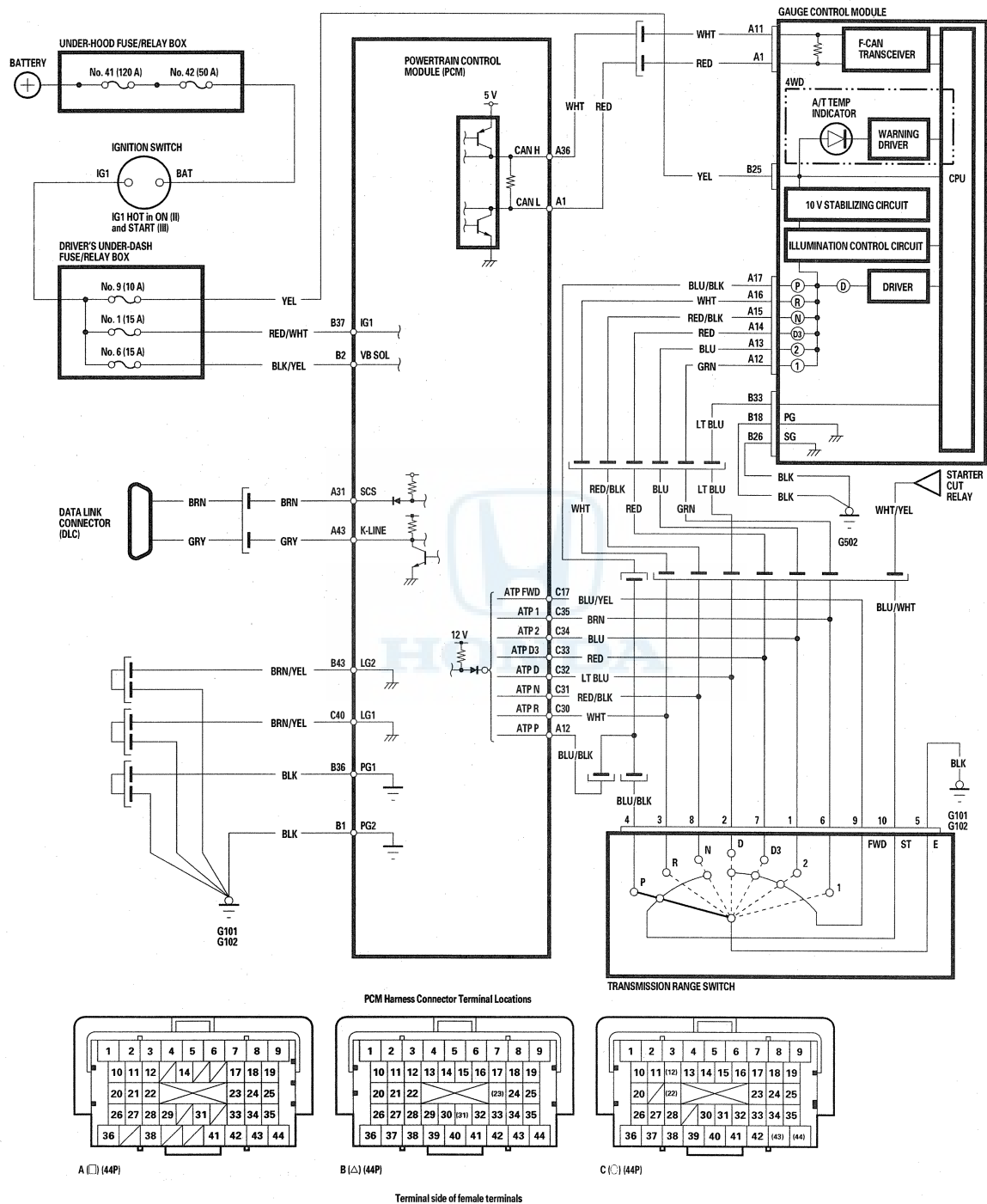
A/T TEMP INDICATOR (4WD)
Gauge Control Module Self-diagnostic Function
Indicator Drive Circuit Check, page 22-90
Communication Line Check, page 22-91

A/T GEAR POSITION INDICATOR
Gauge Control Module Self-diagnostic Function
Indicator Drive Circuit Check,
page 22-90
Communication Line Check,
page 22-91



A/T Gear Position Indicator

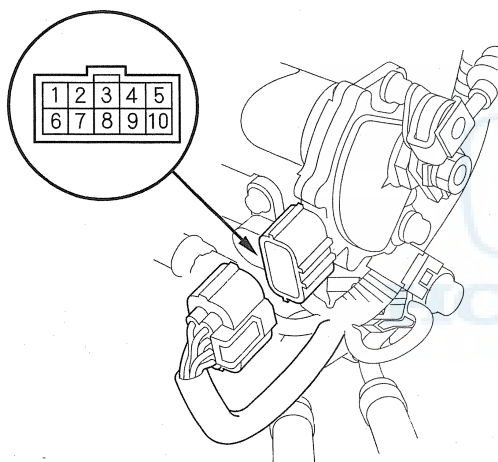
Circuit Diagram





Transmission Range Switch Test

1. Make sure you have anti-theft codes for the audio system and the navigation system (if equipped), then write down the audio presets.
2. Disconnect the negative terminal from the battery, then disconnect the positive terminal.
3. Remove the battery hold-down bracket, and remove the battery and battery tray.
4. Remove the intake manifold cover and the intake air duct.
5. Remove the battery base.
6. Disconnect the transmission range switch connector.



7. Check for continuity between terminals at the transmission range switch connector. There should be continuity between the terminals in the following table for each transmission range switch position.

Transmission Range Switch Connector

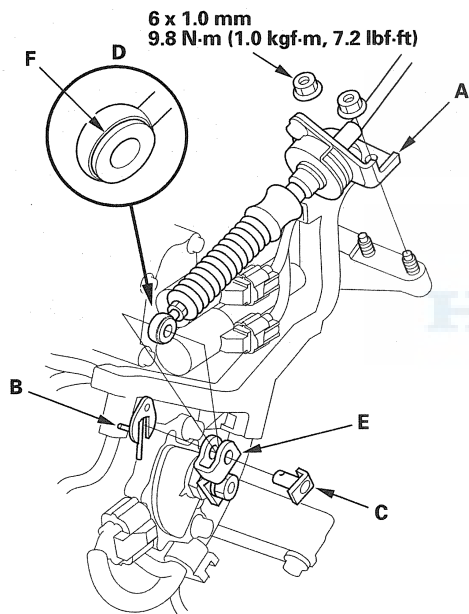
Position	Connector Terminal/Signal									
	1	2	3	4	5	6	7	8	9	10
	2	D	R	P	GND	1	D3	N	ATP FWD	ATP NP
P										
R										
N										
D										
D3										
2										
1										

8. Transmission range switch test is finished if the test results are OK.
If there is no continuity between any terminals, check that the transmission range switch installation. If the transmission range switch installation is OK, replace the transmission range switch (see page 14-262).

A/T Gear Position Indicator

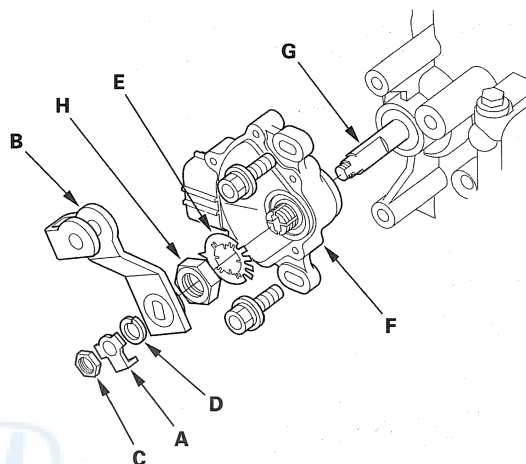
Transmission Range Switch Replacement

1. Make sure you have anti-theft codes for the audio system and the navigation system (if equipped), then write down the audio presets.
2. Disconnect the negative terminal from the battery, then disconnect the positive terminal.
3. Remove the battery hold-down bracket, and remove the battery and battery tray.
4. Remove the intake manifold cover and the intake air duct.
5. Remove the battery base and battery base bracket.
6. Remove the nuts securing the shift cable bracket (A).

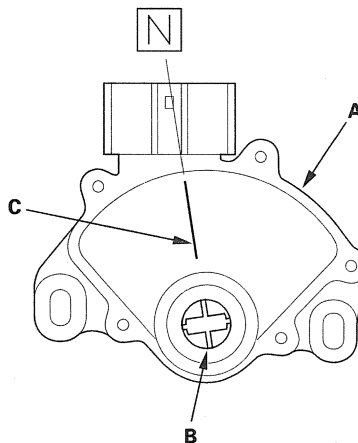


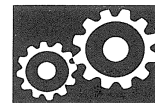
7. Remove the spring clip/washer (B) and control pin (C), then separate the shift cable end (D) from the control lever (E).
8. Check the bushing (F) in the shift cable end for a proper fit and wear. If the bushing is loose or worn, replace the shift cable (see page 14-253).

9. Disconnect the transmission range switch connector.
10. Pry the lock tab of the lock washer (A) on the control lever (B), and remove the nut (C), lock washer, spring washer (D) and control lever.

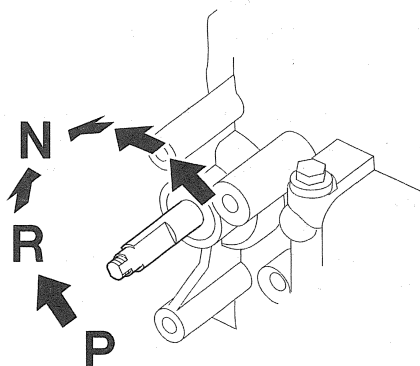


11. Pry the lock tabs of the lock washer (E) on the transmission range switch (F), hold the control shaft (G) with a 6.0 mm wrench, and loosen the locknut (H).
12. Remove the locknut and lock washer, then remove the transmission range switch (two bolts).
13. Set the new transmission range switch (A) to the N position. The transmission range switch clicks in the N position, and the control shaft hole (B) aligns with the N position line (C).

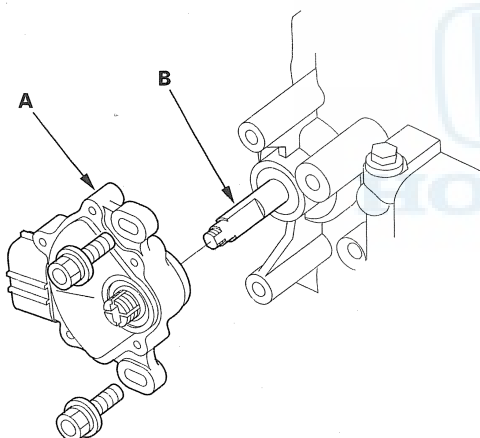




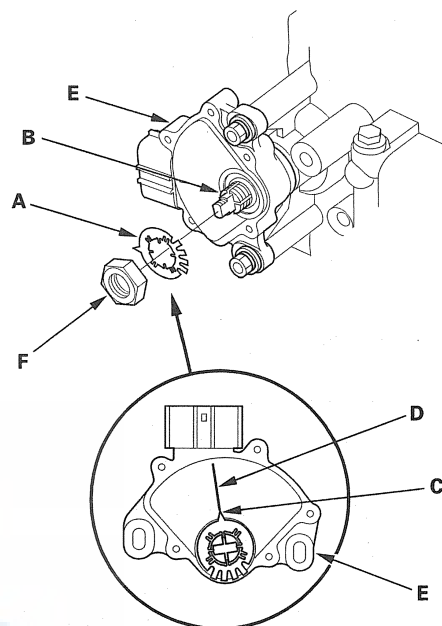
14. Move the control shaft from the P position to the N position by turning the control shaft with a 6.0 mm wrench.



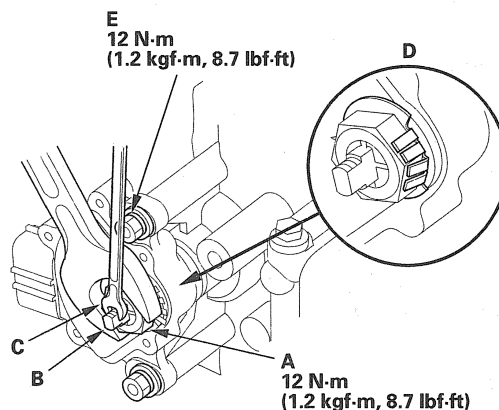
15. Install the transmission range switch (A) gently over the control shaft (B), and install the bolts loosely.



16. Install the new lock washer (A) over the control shaft (B) while aligning the projection (C) of the lock washer with the N positioning line (D) on the transmission range switch (E), and install the locknut (F).



17. Push the locknut against the transmission housing to seat the transmission range switch into the control shaft, and tighten the locknut (A) to 12 N·m (1.2 kgf·m, 8.7 lbf·ft) while holding the control shaft (B) with a 6.0 mm wrench (C), then bend the lock tabs (D) of the lock washer against the locknut.



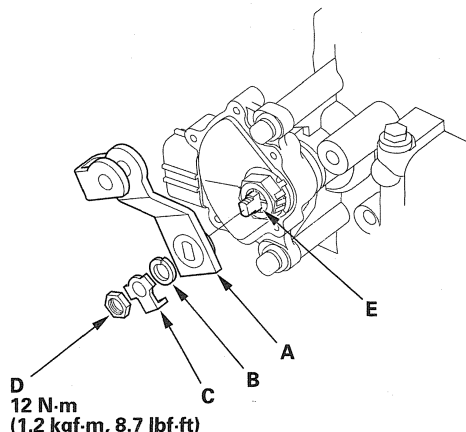
18. Tighten the bolts (E) to 12 N·m (1.2 kgf·m, 8.7 lbf·ft) securing the transmission range switch.

(cont'd)

A/T Gear Position Indicator

Transmission Range Switch Replacement (cont'd)

19. Install the control lever (A), spring washer (B), lock washer (C), and locknut (D) on the control shaft (E).

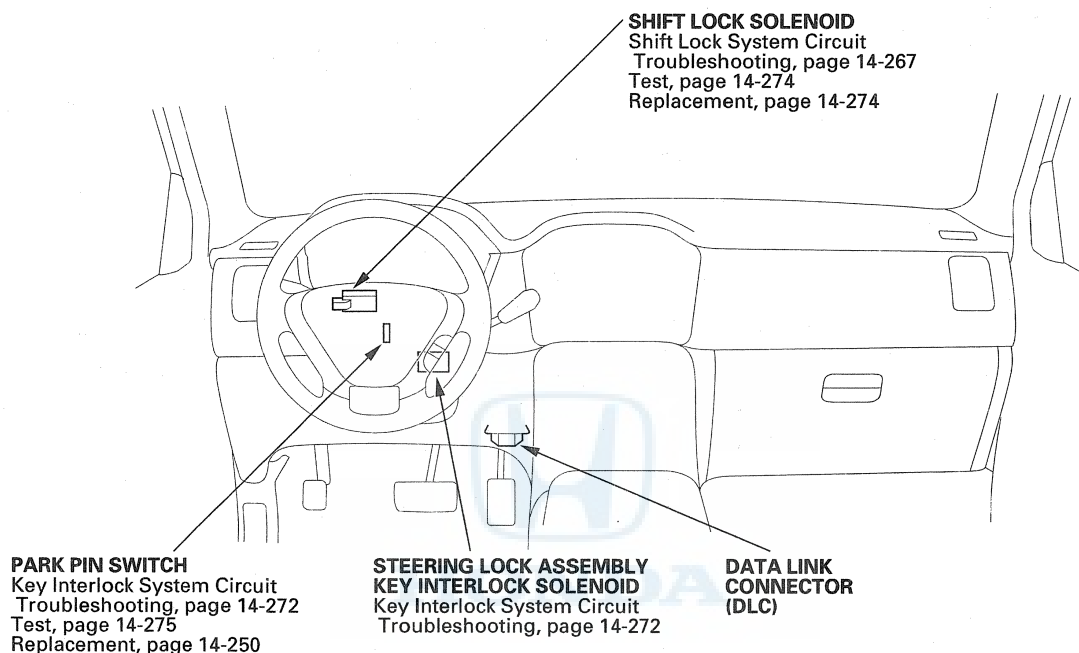


20. Tighten the locknut to the specified torque, then bend the lock tab of the lock washer against the locknut.
21. Check the connectors for rust, dirt, or oil, clean, then connect the connector securely.
22. Apply molybdenum grease to the hole in the bushing in the shift cable end. Attach the shift cable end to the control lever, then insert the control pin into the control lever hole through the shift cable end, and secure the control pin with the spring clip/washer.
23. Secure the shift cable bracket with the nuts.
24. Install the battery base bracket and battery base.
25. Install the intake air duct and the intake manifold cover.
26. Install the battery tray, battery, and battery hold-down bracket, then connect the battery terminals.
27. Turn the ignition switch ON (II). Move the shift lever through all positions, and check the transmission range switch synchronization with the A/T gear position indicator.
28. Check that the engine will start in the P and N positions, and will not start in any other shift lever position.
29. Check that the back-up lights come on when the shift lever is in the R position.
30. Allow all four wheels (4WD) or front wheels (2WD) to rotate freely, then start the engine, and check the shift lever operation.
31. Enter the anti-theft codes for the audio system and the navigation system (if equipped), then enter the audio presets. Set the clock (on vehicles without navigation).
32. Do the power window control unit reset procedure (see page 22-255).

A/T Interlock System

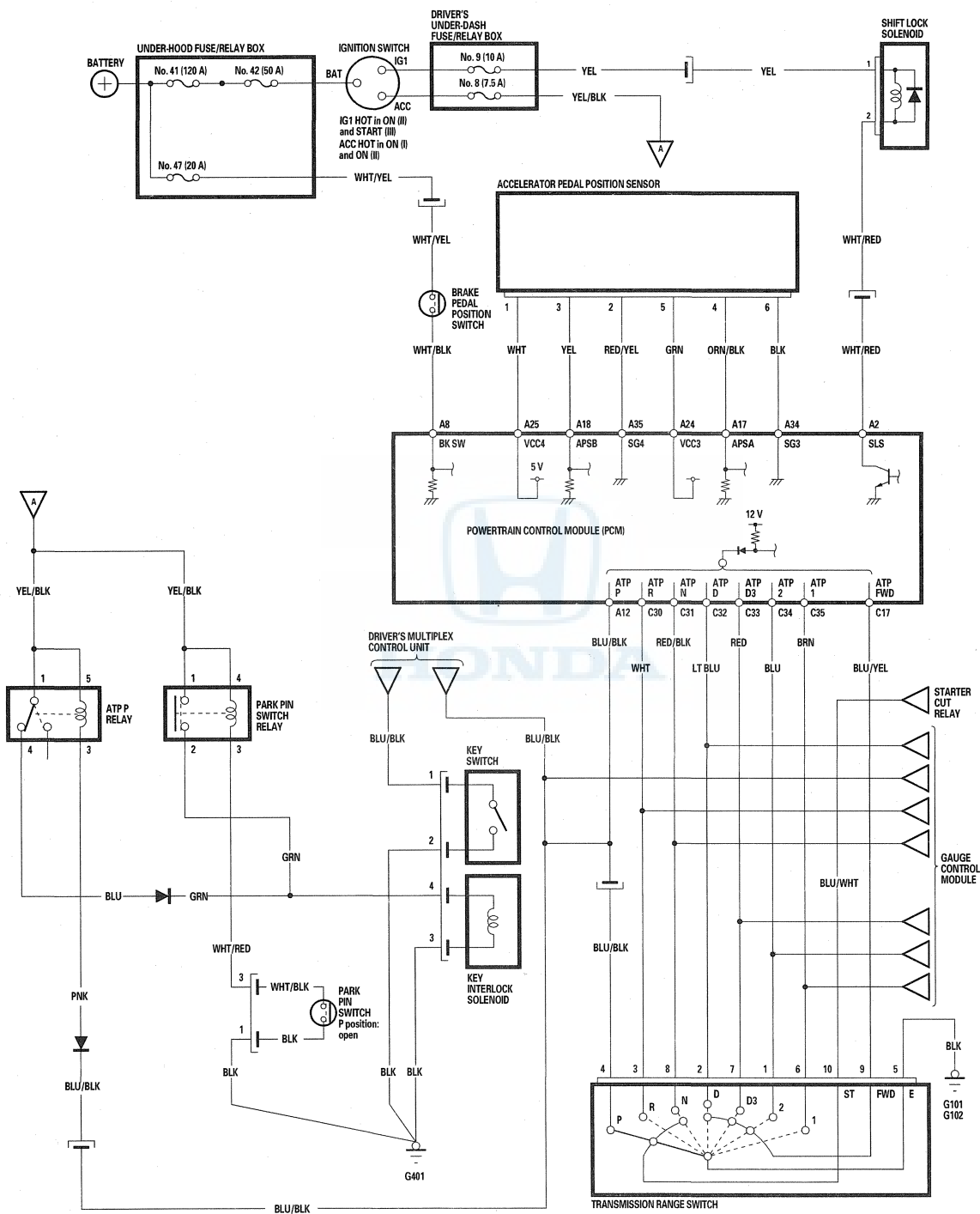


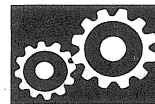
Component Location Index



A/T Interlock System

Circuit Diagram





Shift Lock System Circuit Troubleshooting

1. Connect the HDS to the DLC.
2. Choose Shift Lock Solenoid Test in Miscellaneous Test Menu, and check that the shift lock solenoid operates with the HDS.

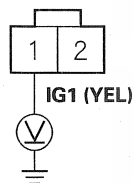
Does the shift lock solenoid work properly?

YES—Go to step 13.

NO—Go to step 3.

3. Remove the shift lever assembly (see page 14-249).
4. Turn the ignition switch ON (II).
5. Measure the voltage between shift lock solenoid connector terminal No. 1 and body ground.

SHIFT LOCK SOLENOID CONNECTOR



Wire side of female terminals

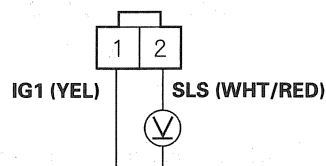
Is there battery voltage?

YES—Go to step 6.

NO—Check for a blown No. 9 (10 A) fuse in the driver's under-dash fuse/relay box. If the fuse is OK, repair open or short in the wire between shift lock solenoid connector terminal No. 1 and the driver's under-dash fuse/relay box. ■

6. Shift into the P position by pushing the shift cable until it stops, and press the brake pedal. Do not press the accelerator.
7. Measure the voltage between shift lock solenoid connector terminals No. 1 and No. 2 while pressing the brake pedal.

SHIFT LOCK SOLENOID CONNECTOR



Wire side of female terminals

Is there battery voltage?

YES—Go to step 8.

NO—Go to step 9.

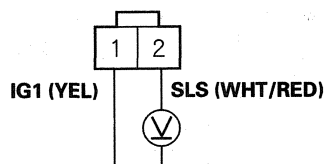
(cont'd)

A/T Interlock System

Shift Lock System Circuit Troubleshooting (cont'd)

8. Release the brake pedal, and measure the voltage between shift lock solenoid connector terminals No. 1 and No. 2. The shift position must be in the P position.

SHIFT LOCK SOLENOID CONNECTOR



Wire side of female terminals

Is there battery voltage?

YES—Repair a short to ground in the wire between PCM connector terminal A2 and the shift lock solenoid. ■

NO—Check the shift lock mechanism. If the mechanism is OK, replace the shift lock solenoid (see page 14-274). ■

9. Turn the ignition switch OFF.

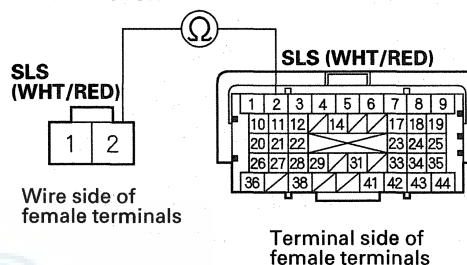
10. Jump the SCS line with the HDS.

11. Disconnect PCM connector A (44P).

12. Check for continuity between PCM connector terminal A2 and shift lock solenoid terminal No. 2.

SHIFT LOCK SOLENOID CONNECTOR

PCM CONNECTOR A (44P)



Is there continuity?

YES—Substitute a known-good PCM (see page 14-9) and recheck. ■

NO—Repair open in the wire between PCM connector terminal A2 and the shift lock solenoid connector. ■



13. Press the brake pedal.

Are the brake lights ON?

YES—Go to step 14.

NO—Repair faulty brake light circuit. ■

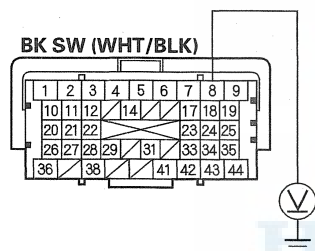
14. Turn the ignition switch OFF.

15. Jump the SCS line with the HDS.

16. Disconnect PCM connector A (44P).

17. Measure the voltage between PCM connector terminal A8 and body ground while pressing the brake pedal and when the brake pedal is released.

PCM CONNECTOR A (44P)



Terminal side of female terminals

Is there battery voltage while the brake pedal is pressed, and no voltage when the pedal is released?

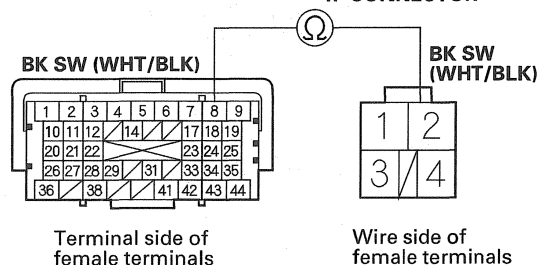
YES—Go to step 19.

NO—Go to step 18.

18. Check for continuity between PCM connector terminal A8 and brake pedal position switch 4P connector terminal No. 2.

PCM CONNECTOR A (44P)

BRAKE PEDAL POSITION SWITCH 4P CONNECTOR



Is there continuity?

YES—Substitute a known-good PCM (see page 14-9) and recheck. ■

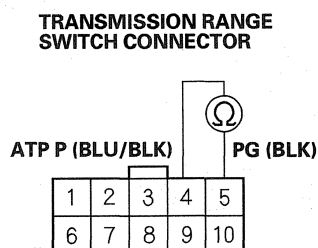
NO—Repair open in the wire between PCM connector terminal A8 and the brake pedal position switch. ■

(cont'd)

A/T Interlock System

Shift Lock System Circuit Troubleshooting (cont'd)

19. Disconnect the transmission range switch connector.
20. Check for continuity between transmission range switch connector terminals No. 4 and No. 5.



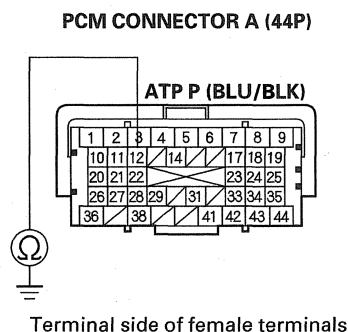
Wire side of female terminals

Is there continuity?

YES—Go to step 21.

NO—Go to step 24.

21. Check for continuity between PCM connector terminal A12 and body ground.



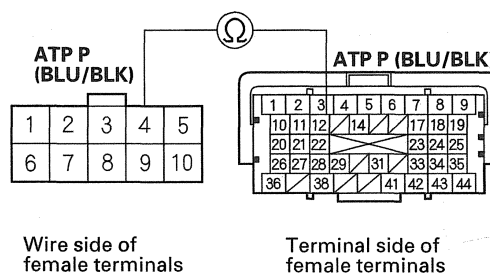
Is there continuity?

YES—Repair short in the wire between PCM connector terminal A12 and the transmission range switch connector. ■

NO—Go to step 22.

22. Check for continuity between PCM connector terminal A12 and transmission range switch connector terminal No. 4.

TRANSMISSION RANGE SWITCH CONNECTOR PCM CONNECTOR A (44P)



Is there continuity?

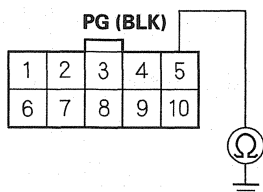
YES—Go to step 23.

NO—Repair open in the wire between PCM connector terminal A12 and the transmission range switch connector. ■



23. Check for continuity between transmission range switch connector terminal No. 5 and body ground.

**TRANSMISSION RANGE
SWITCH CONNECTOR**



Wire side of female terminals

Is there continuity?

YES—Substitute a known-good PCM (see page 14-9) and recheck. ■

NO—Repair open in the wire between transmission range switch connector terminal No. 5 and ground (G101), or repair poor ground (G101). ■

24. Test the transmission range switch (see page 14-261). ■

Is the switch OK?

YES—Go to step 25.

NO—Replace the transmission range switch (see page 14-262). ■

25. Connect the HDS to the DLC.

26. Check the APP SENSOR in the data list with the HDS. Do not press the accelerator.

Is the accelerator pedal position sensor opening 11 % and above, or the sensor voltage 0.90 V and above?

YES—Check the APP sensor (see page 11-274). ■

NO—Substitute a known-good PCM (see page 14-9) and recheck. ■



A/T Interlock System

Key Interlock System Circuit Troubleshooting

SRS components are located in this area. Review the SRS component locations (see page 23-17) and the precautions and procedures (see page 23-19) before doing repair or service.

1. Turn the ignition switch to ACC (I). The shift lever must be in the P position.
2. Disconnect the steering lock assembly connector.
3. Check if the ignition switch can be turned to the LOCK (0) position.

Can the ignition switch be turned the LOCK (0) position?

YES—Go to step 4.

NO—Replace the ignition key cylinder/steering lock assembly (see page 17-29). ■

4. Remove the ATP P relay and park pin switch relay, and test the relays (see page 22-82).

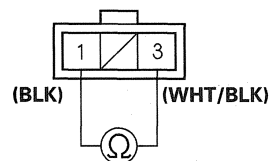
Are the relays OK?

YES—Go to step 5.

NO—Replace the faulty relay. ■

5. Remove the shift lever assembly.
6. Shift the shift lever to P position.
7. At park pin switch side, check for continuity between park pin switch connector terminals No. 1 and No. 3. Do not pull the shift lever.

PARK PIN SWITCH CONNECTOR



Terminal side of male terminals

Is there continuity?

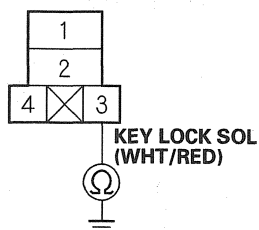
YES—Faulty the park pin switch, replace the shift lever assembly (see page 14-249). The park pin switch is not available from the shift lever assembly. ■

NO—Go to step 8.



8. Check for continuity between park pin switch relay 4P socket terminal No. 3 and body ground.

**PARK PIN SWITCH
RELAY 4P SOCKET**



Terminal side of female terminals

Is there continuity?

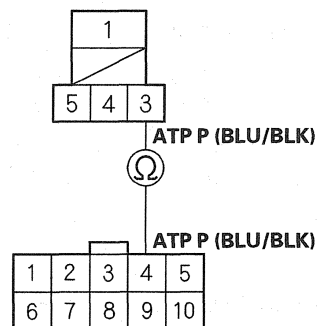
YES—Repair short to body ground in the wire between the park pin switch relay and the park pin switch. ■

NO—Go to step 9.

9. Disconnect the transmission range switch connector.

10. Check for continuity between ATP P relay 4P socket terminal No. 3 and transmission range switch connector terminal No. 4.

ATP P RELAY 4P SOCKET
Terminal side of female terminals



TRANSMISSION RANGE SWITCH CONNECTOR
Wire side of female terminals

Is there continuity?

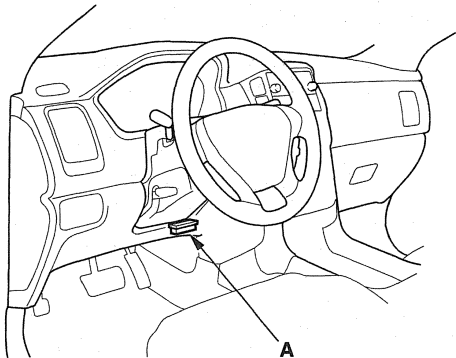
YES—Test the transmission range switch (see page 14-261). If the transmission range switch is OK, check for poor connections or loose terminals between the ATP P relay and the transmission range switch. ■

NO—Repair open in the wire between the ATP P relay and the transmission range switch. ■

A/T Interlock System

Shift Lock Solenoid Test

1. Connect the HDS to the DLC (A).

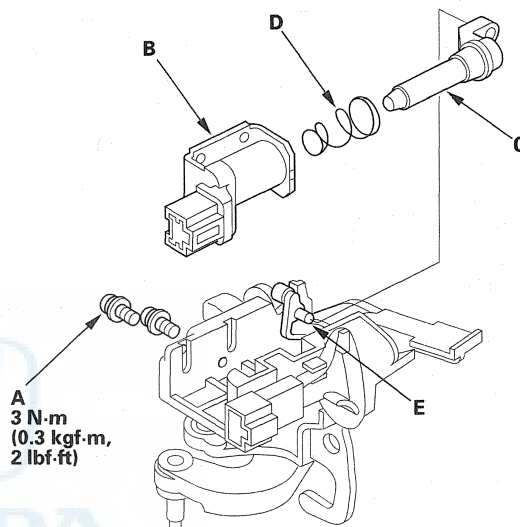


2. Choose Shift Lock Solenoid Test in Miscellaneous Test Menu, and check that the shift lock solenoid operates with the HDS.
3. Check that the shift lever can be moved out of the P position when Shift Lock Solenoid: ON. Move the shift lever back in the P position, and make sure it locks with Shift Lock Solenoid: OFF.
4. Check that the shift lock releases when the shift lock release is pushed, and check that it locks when the shift lock release is released.
5. If the shift lock solenoid does not work properly, perform shift lock system troubleshooting (see page 14-267).

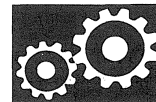
Shift Lock Solenoid Replacement

SRS components are located in this area. Review the SRS component locations (see page 23-17) and the precautions and procedures (see page 23-19) in the SRS before doing repairs or service.

1. Remove the shift lever assembly (see page 14-249).
2. Remove the screws (A) securing the shift lock solenoid (B), then remove the shift lock solenoid.



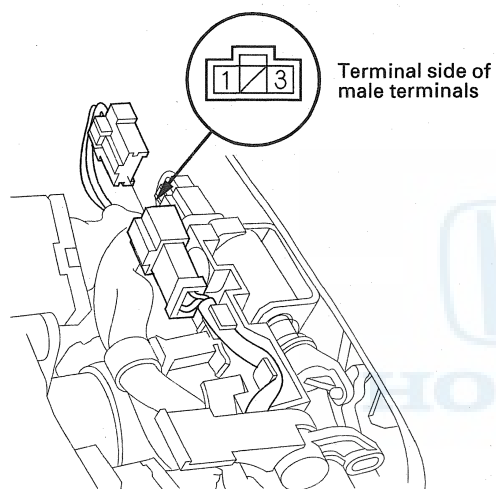
3. Remove the shift lock solenoid plunger (C) and plunger spring (D) from the shift lock solenoid, and replace the shift lock solenoid.
4. Install the shift lock solenoid plunger and plunger spring in the new shift lock solenoid.
5. Apply silicone grease to the tip (E) of the shift lock extension, and install the shift lock solenoid by aligning the joint of the shift lock solenoid plunger with the tip of the shift lock extension.
6. Secure the shift lock solenoid with the screws.
7. Install the shift lever assembly (see page 14-250).



Park Pin Switch Test

SRS components are located in this area. Review the SRS component locations (see page 23-17) and the precautions and procedures (see page 23-19) in the SRS before doing repairs or service.

1. Remove the steering column covers (see step 6 on page 17-26).
2. Disconnect the park pin switch connector.
3. Shift the shift lever into the P position, and check for continuity between park pin switch connector terminals No. 1 and No. 3. There should be no continuity.



4. Shift out of the P position, and check for continuity between connector terminals No. 1 and No. 3. There should be continuity.
5. If the park pin switch fails the test, replace the shift lever assembly (see page 14-250). The park pin switch is not available separately from the shift lever assembly.

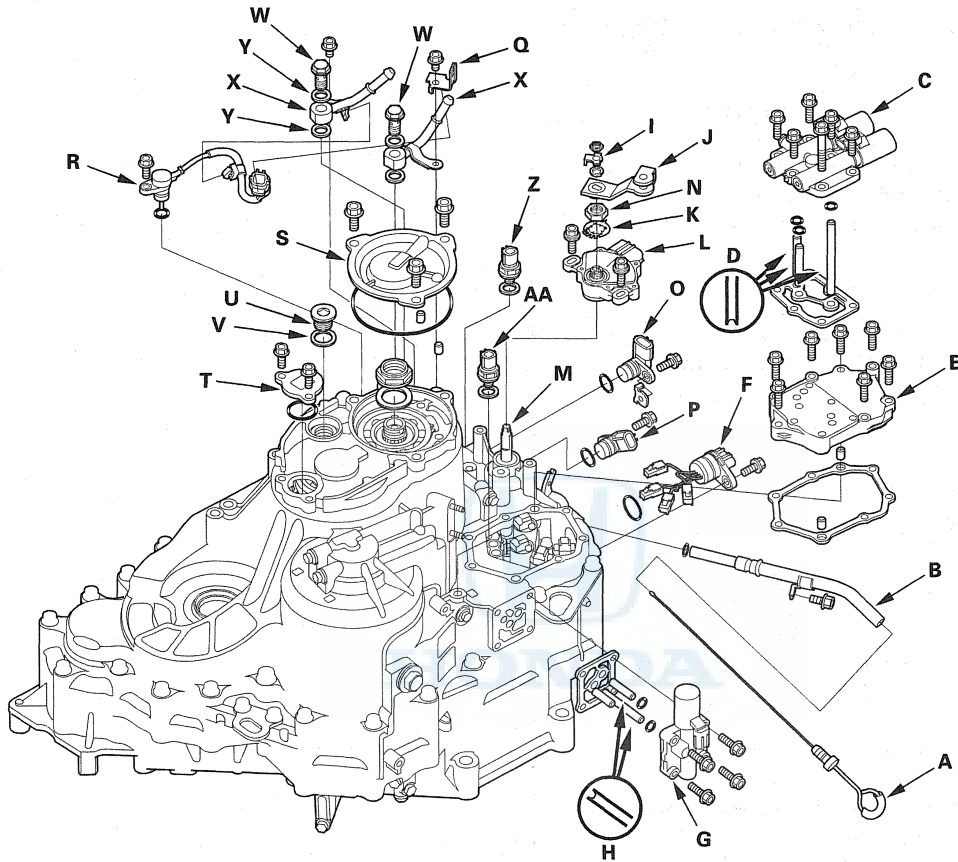
Automatic Transmission

Transmission Disassembly

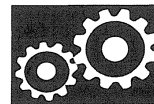
Special Tools Required

Mainshaft holder 07GAB-PF50101 or 07GAB-PF50100

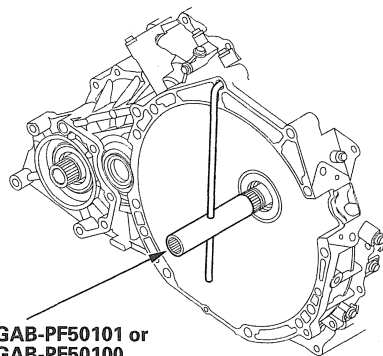
1. Remove the ATF dipstick (A) and the dipstick tube (B).



2. Remove A/T clutch pressure control solenoid valves A and B (C) (six bolts), ATF feed pipes (D) (three), O-rings (three), and gasket.
3. Remove the solenoid valve cover (E) (seven bolts), dowel pins (two), and gasket.
4. Disconnect the solenoid valve connectors, then remove the solenoid harness connector (F).
5. Remove A/T clutch pressure control solenoid valve C (G) (four bolts), ATF feed pipes (H) (three), O-rings (two), and gasket.

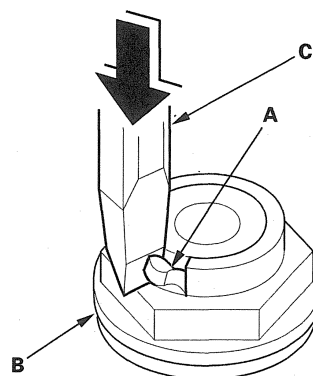


6. Pry the lock tab of the lock washer (I) on the control lever (J), and remove the nut, lock washer, spring washer and control lever.
7. Pry the lock tabs of the lock washer (K) on the transmission range switch (L), hold the control shaft (M) with a 6.0 mm wrench, and loosen the locknut (N).
8. Remove the locknut and lock washer, then remove the transmission range switch (two bolts).
9. Remove the output shaft (countershaft) speed sensor (O) and input shaft (mainshaft) speed sensor (P).
10. Remove the ATF temperature sensor connector from the connector bracket (Q) and harness clamp from clamp bracket, then remove the ATF temperature sensor (R).
11. Remove the end cover (S) (three bolts), snap ring cap (T) (two bolts), sealing plug (U), and washer (V).
12. Remove the line bolts (W), ATF cooler lines (X), and sealing washers (Y).
13. Remove the 3rd clutch transmission fluid pressure switch (Z) and sealing washer.
14. Remove the 4th clutch transmission fluid pressure switch (AA) and sealing washer.
15. Slip the mainshaft holder onto the mainshaft.

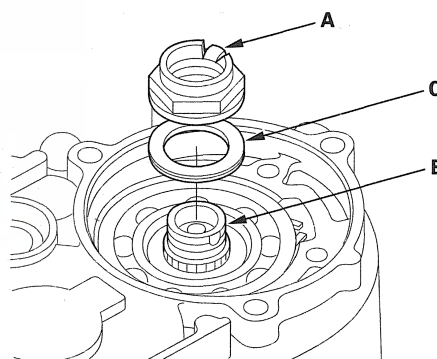


16. Cut the lock tab (A) of the mainshaft locknut (B) using a chisel (C).

NOTE: Keep all of the chiseled particles out of the transmission.



17. Remove the locknut (A) from the mainshaft (B).



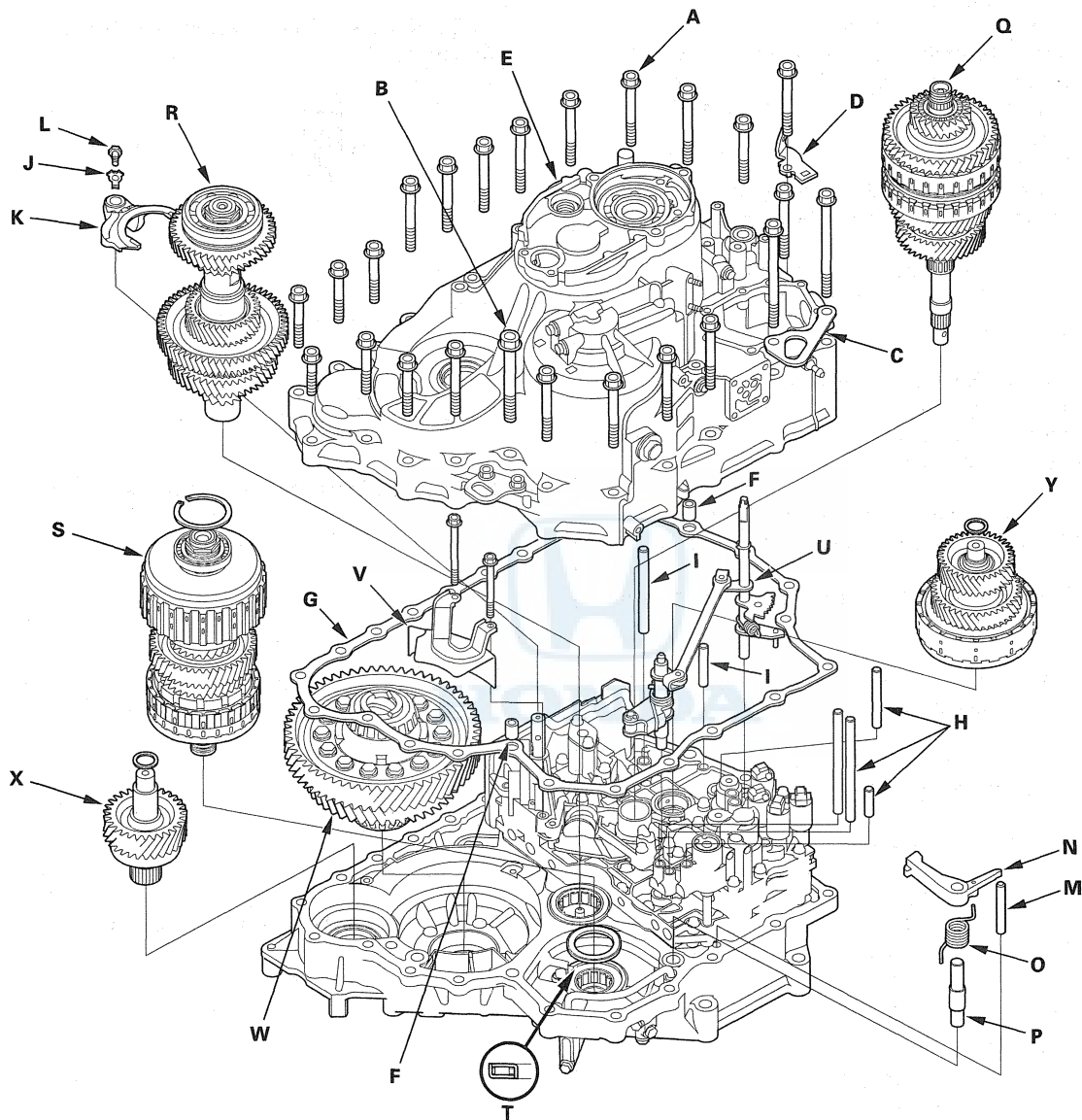
18. Pry the lock washer (C), and remove it.

(cont'd)

Automatic Transmission

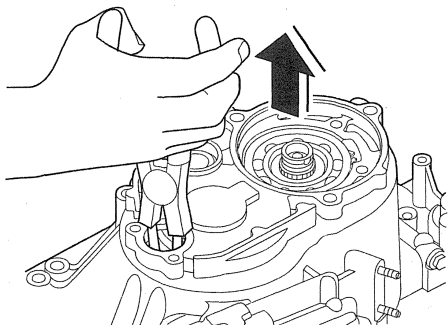
Transmission Disassembly (cont'd)

19. Remove the transmission housing mounting bolts (10 x 1.25 mm) (A) (23 bolts), 12 x 1.25 mm bolt (B), transmission hanger (C), and ground terminal bracket (D).

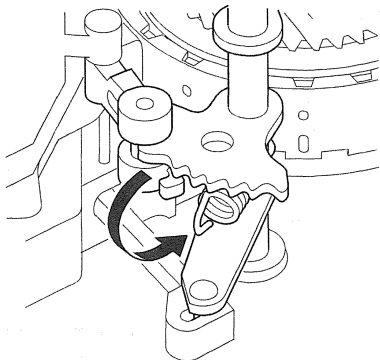




20. While expanding the snap ring of the countershaft bearing using the snap ring pliers, lift the transmission housing (E).

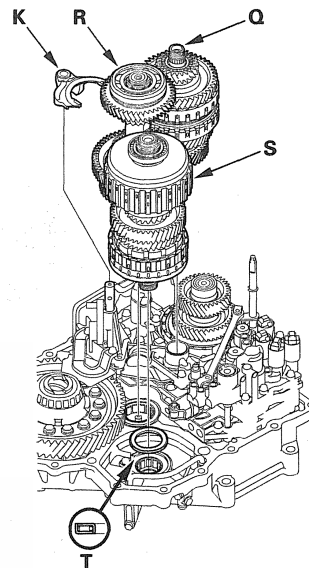


21. Release the pliers, and remove the transmission housing, two dowel pins (F), and gasket (G).
22. Remove the ATF feed pipes (H) (four) from the accumulator body.
23. Remove the ATF feed pipes (I) (two) from the torque converter housing.
24. Remove the mainshaft holder from the mainshaft.
25. Pry the lock tab of the lock washer (J) on the shift fork (K), then remove the bolt (L) and washer.
26. Unhook the detent spring from the detent arm.



27. Remove the park pawl stop (M), park pawl (N), pawl spring (O), and pawl shaft (P).

28. Remove the mainshaft (Q), countershaft (R), shift fork, and secondary shaft (S) together, and remove the needle bearing (T) from the torque converter housing.



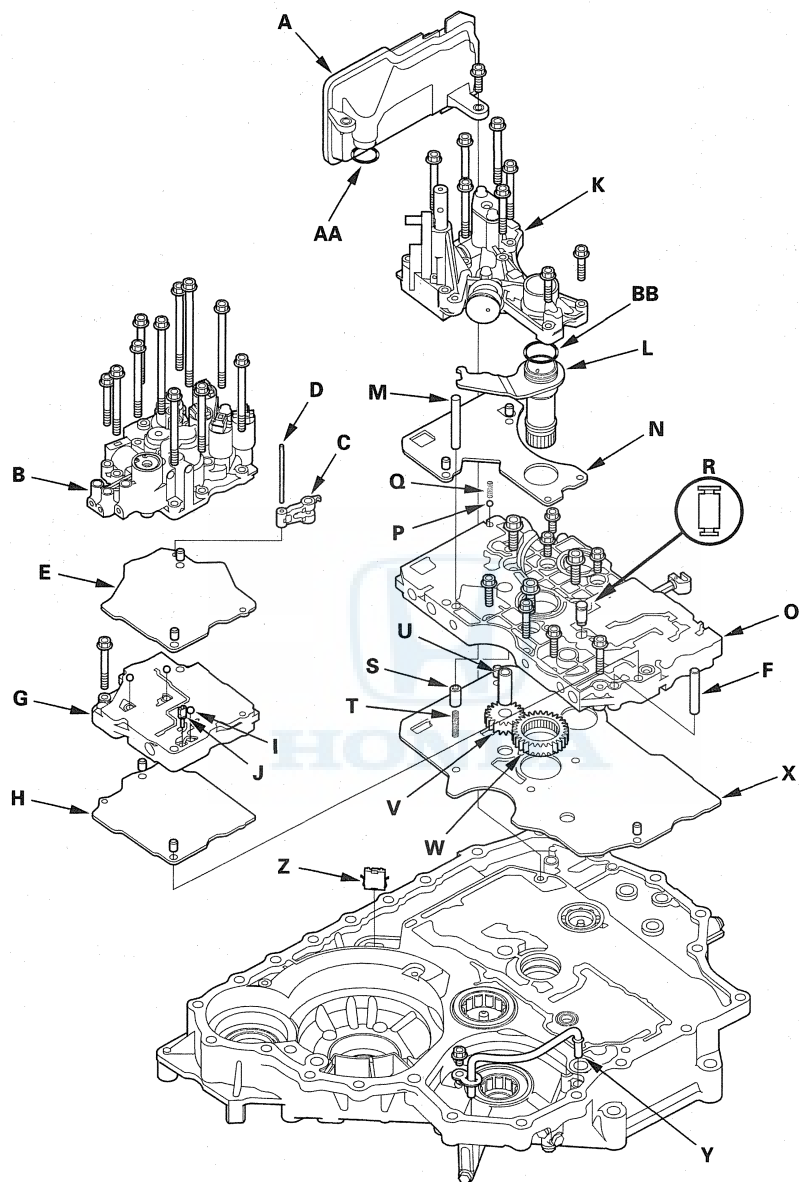
29. Remove the control shaft and park lever link (U).
30. Remove the baffle plate (V).
31. Remove the differential assembly (W).
32. 4WD: Remove the transfer output shaft (X).
33. Remove the intermediary shaft (Y).

(cont'd)

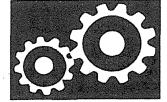
Automatic Transmission

Transmission Disassembly (cont'd)

34. Remove the ATF strainer (A) (one bolt).

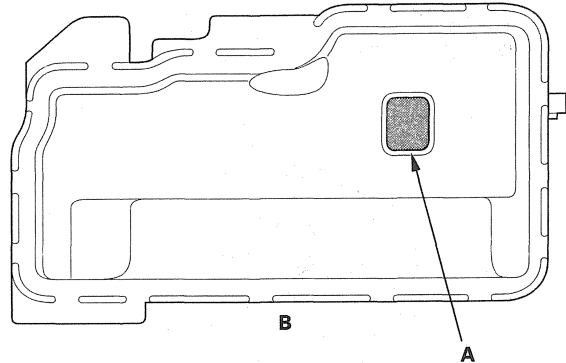


35. Remove the accumulator body (B) (11 bolts), dowel pins (two), detent arm (C), arm shaft (D), and separator plate (E).



36. Remove the ATF feed pipe (F) from the main valve body.
37. Remove the secondary valve body (G) (one bolt), dowel pins (two), and separator plate (H). Do not let the check balls (I) (three) and the choke (J) fall out.
38. Remove the regulator valve body (K) (eight bolts), stator shaft (L), stator shaft stop (M), dowel pins (two), and separator plate (N).
39. Remove the main valve body (O) (8 mm: three bolts, 6 mm: seven bolts). Do not let the cooler check valve (ball) (P), spring (Q), and lubrication check valve (R) fall out.
40. Remove the torque converter check valve (S) and valve spring (T).
41. Remove the ATF pump driven gear shaft (U), then remove the ATF pump drive gear (V) and driven gear (W).
42. Remove the dowel pins (two) and main separator plate (X).
43. Remove the ATF passage pipe (Y).
44. Remove the ATF magnet (Z), clean it, then reinstall.
45. Remove the O-ring (AA) from the ATF strainer, and replace the new O-ring when reassembling the transmission.
46. Remove the O-ring (BB) from the stator shaft, and replace the new O-ring when reassembling the transmission.

47. Clean the inlet opening (A) of the ATF strainer (B) thoroughly with compressed air, then check that it is good condition and that inlet opening is not clogged.



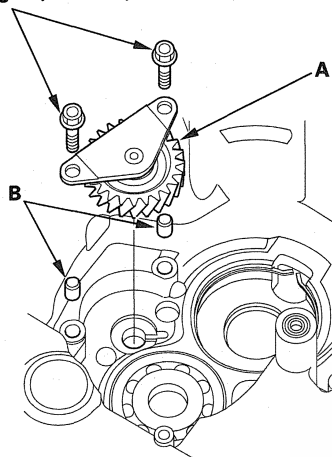
48. Test the ATF strainer by pouring clean ATF through the inlet opening, and replace if it is clogged or damaged.

Transmission Housing

Reverse Idler Gear Removal/ Installation

1. Remove the reverse idler gear assembly (A) from the transmission housing.

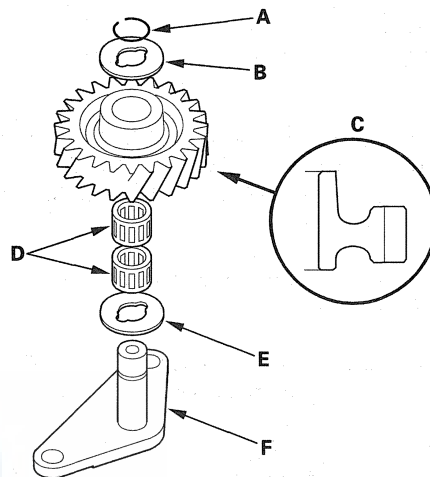
8 x 1.25 mm
26 N·m
(2.7 kgf·m, 20 lbf·ft)



2. Install the reverse idler gear assembly with the two dowel pins (B) in the transmission housing.

Reverse Idler Gear Disassembly/ Inspection/Reassembly

1. Remove the snap ring (A), then remove the thrust washer (B), reverse idler gear (C), needle bearings (D), and thrust washer (E) from the reverse idler gear shaft/holder (F).

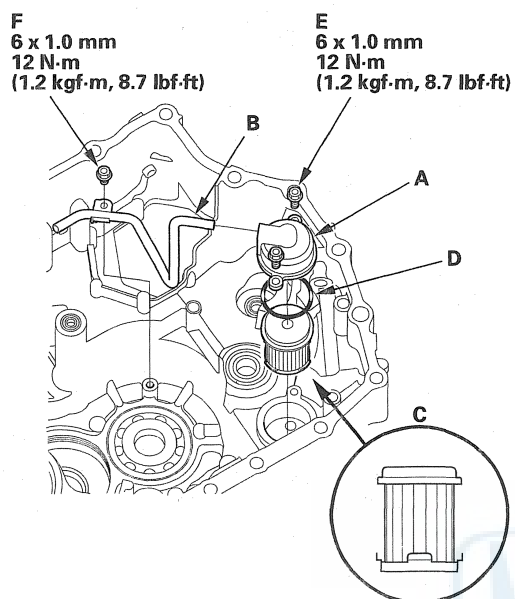


2. Inspect the reverse idler gear and gear shaft for excessive wear and damage.
3. Inspect the needle bearings for galling and rough movement.
4. Install the thrust washer and needle bearings over the gear shaft.
5. Install the reverse idler gear in the direction shown.
6. Install the thrust washer, then install the snap ring to secure the idler gear.



ATF Filter Removal/Inspection/Installation

1. Remove the three 6.0 mm bolts securing the ATF filter cover (A) and ATF pipe (B).

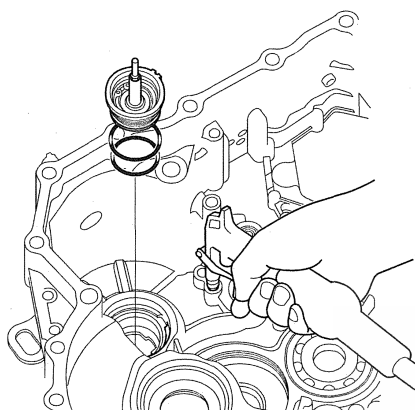


2. Remove the ATF pipe from the ATF filter cover, and remove the ATF filter (C) from the cover.
3. Clean the ATF filter, then check that it is in good condition, and is not clogged. Replace the ATF filter if it is clogged or damaged.
4. Install the ATF filter with the new O-ring (D) in the filter cover, and install the ATF pipe in the cover, then install them in the transmission housing.
5. Secure the ATF filter cover with the two bolts (E), then secure the ATF pipe with the bolt (F).

Transmission Housing

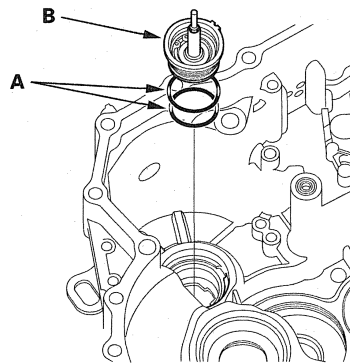
Secondary Shaft ATF Feed Pipe Cap Removal

1. Cover the tip of the 1st-hold clutch ATF feed pipe with a shop rag.
2. Apply air pressure to the ATF feed pipe hole of the 1st-hold clutch pressure circuit, and remove the ATF feed pipe cap from the transmission housing.

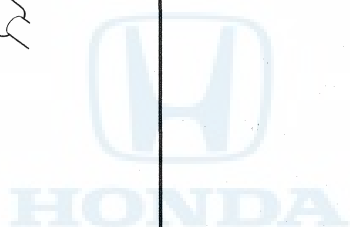


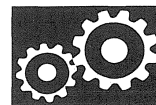
Secondary Shaft ATF Feed Pipe Cap Installation

1. Install the new O-rings (A) on the ATF feed pipe cap (B).



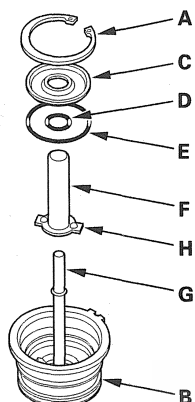
2. Install the ATF feed pipe cap in the transmission housing. Do not pinch the O-ring.





Secondary Shaft ATF Feed Pipe Cap, Feed Pipe Replacement

1. Remove the ATF feed pipe cap from the transmission housing (see page 14-284).
2. Remove the snap ring (A) from the feed pipe cap (B), then remove the feed pipe guide (C), O-rings (D) (E), and 1st clutch ATF feed pipe (F).



3. Replace the 1st clutch ATF feed pipe or 1st-hold clutch ATF feed pipe/ATF feed pipe cap assembly. The 1st-hold clutch ATF feed pipe/ATF feed pipe cap is not available separately.
4. Install the new O-ring (D) over the 1st clutch ATF feed pipe, then install the feed pipe over the 1st-hold clutch ATF feed pipe (G) while aligning the feed pipe tabs (H) with the guide in the cap.
5. Install the new O-ring (E) in the cap and feed pipe guide, then secure the guide with the snap ring.

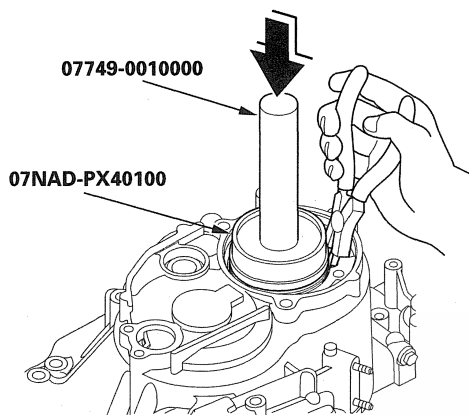
Transmission Housing

Mainshaft Bearing Removal

Special Tools Required

- Driver 07749-0010000
- Attachment, 78 x 80 mm 07NAD-PX40100

1. To remove the mainshaft bearing, expand the snap ring with the snap ring pliers, then push the bearing out. Do not remove the snap ring unless it's necessary to clean the groove in the housing.

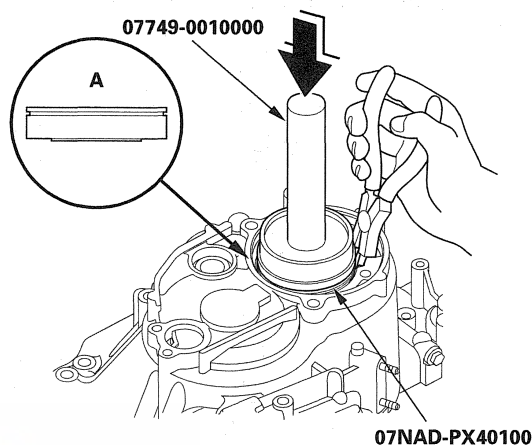


Mainshaft Bearing Installation

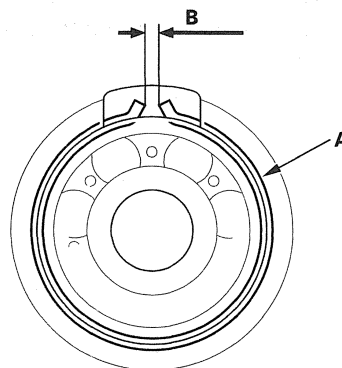
Special Tools Required

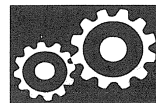
- Driver 07749-0010000
- Attachment, 78 x 80 mm 07NAD-PX40100

1. Install the bearing (A) in the direction shown.



2. Expand the snap ring with the snap ring pliers, and insert the bearing part-way into the housing.
3. Release the pliers, then push the bearing down into the housing until the snap ring snaps in place around it.
4. After installing the bearing, check that the snap ring (A) is seated in the bearing and housing groove, and that the ring end gap (B) is 0—7 mm (0—0.28 in.).



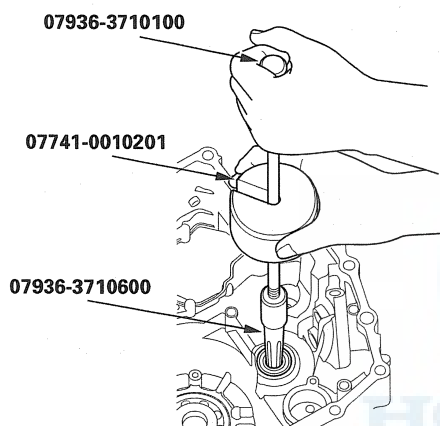


Intermediary Shaft Bearing Replacement

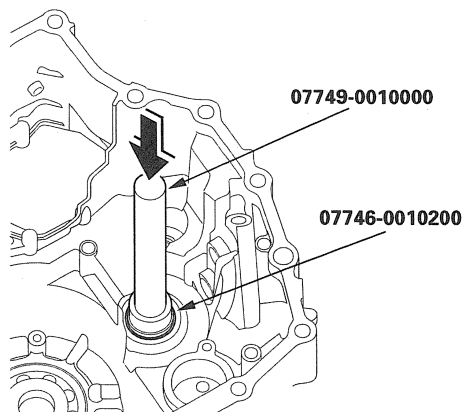
Special Tools Required

- Bearing remover shaft set, 20 mm 07936-3710600
- Bearing remover shaft handle 07936-3710100
- Sliding hammer weight 07741-0010201
- Driver 07749-0010000
- Attachment, 37 x 40 mm 07746-0010200

1. Remove the intermediary shaft bearing from the transmission housing using the bearing remover shaft set (20 mm), the bearing remover shaft handle, and the sliding hammer weight.



2. Install the new bearing until it bottoms in the transmission housing using the driver and the attachment (37 x 40 mm).

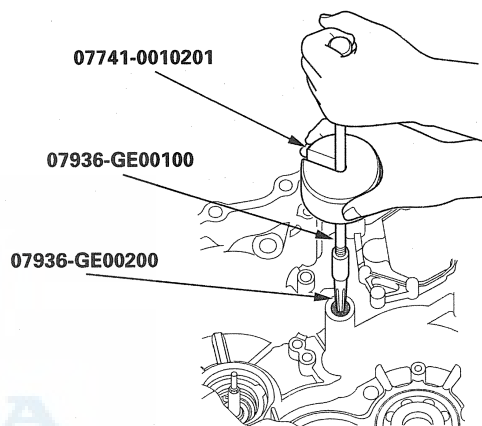


Park Lever Shaft Bearing Replacement

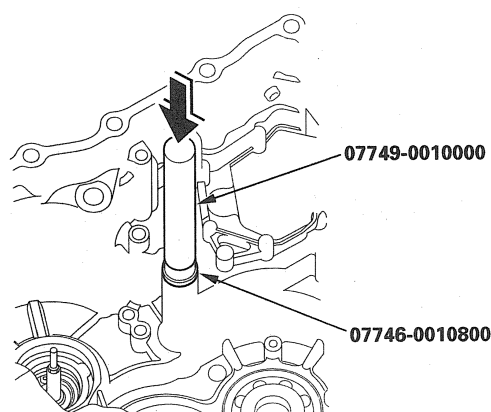
Special Tools Required

- Bearing remover shaft, 10 mm 07936-GE00100
- Bearing remover head, 10 mm 07936-GE00200
- Sliding hammer weight 07741-0010201
- Driver 07749-0010000
- Attachment, 22 x 24 mm 07746-0010800

1. Remove the park lever shaft bearing from the transmission housing using the bearing remover head (10 mm), the bearing remover shaft (10 mm), and the sliding hammer weight.



2. Install the new bearing until it bottoms in the transmission housing using the driver and the attachment (22 x 24 mm).



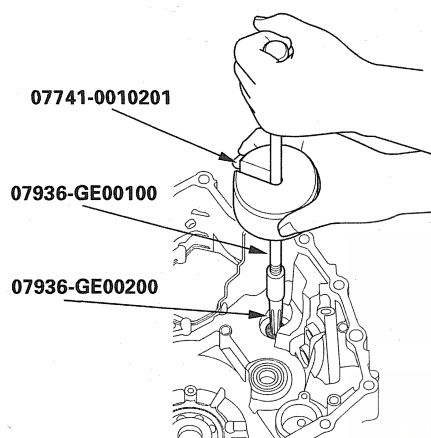
Transmission Housing

Control Shaft Bearing Replacement

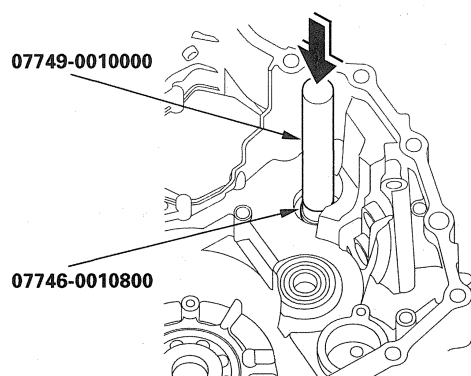
Special Tools Required

- Bearing remover shaft, 10 mm 07936-GE00100
- Bearing remover head, 10 mm 07936-GE00200
- Sliding hammer weight 07741-0010201
- Driver 07749-0010000
- Attachment, 22 x 24 mm 07746-0010800

1. Remove the control shaft bearing from the transmission housing using the bearing remover head (10 mm), the bearing remover shaft (10 mm), and the sliding hammer weight.



2. Install the new bearing until it bottoms in the transmission housing using the driver and the attachment (22 x 24 mm).

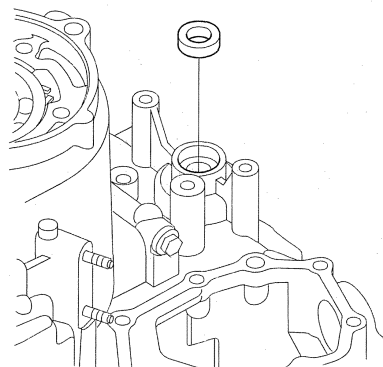


Control Shaft Oil Seal Replacement

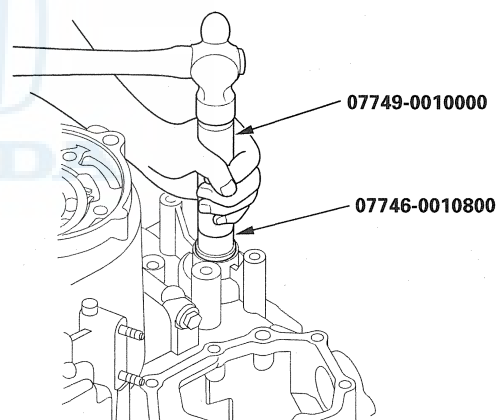
Special Tools Required

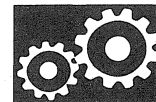
- Driver 07749-0010000
- Attachment, 22 x 24 mm 07746-0010800

1. Remove the oil seal from the transmission housing.



2. Install the new oil seal in the transmission housing using the driver and the attachment (22 x 24 mm).



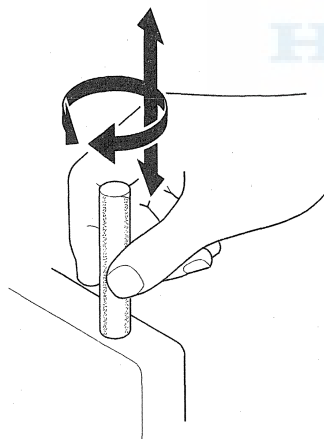


Valve Body Repair

NOTE: Valve body repair is only necessary if one or more of the valves in a valve body do not slide smoothly in their bores. Use this procedure to free the valves.

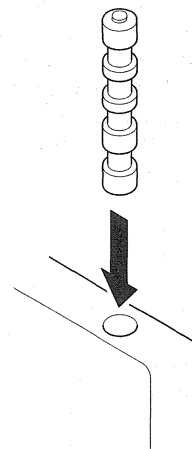
1. Soak a sheet of # 600 abrasive paper in ATF for about 30 minutes.
2. Carefully tap the valve body so the sticking valve drops out of its bore. It may be necessary to use a small screwdriver to pry the valve free. Be careful not to scratch the bore with the screwdriver.
3. Inspect the valve for any scuff marks. Use the ATF-soaked # 600 paper to polish off any burrs that are on the valve, then wash the valve in solvent and dry it with compressed air.
4. Roll up half of the ATF-soaked # 600 paper and insert it in the valve bore of the sticking valve. Twist the paper slightly, so that it unrolls and fits the bore tightly, then polish the bore by twisting the paper as you push it in and out.

NOTE: The valve body is aluminum and doesn't require much polishing to remove any burrs.



5. Remove the # 600 paper. Thoroughly wash the entire valve body in solvent, then dry it with compressed air.

6. Coat the valve with ATF, then drop it into its bore. It should drop to the bottom of the bore under its own weight. If not, repeat steps 4 and 5, then retest. If the valve still sticks, replace the valve body.

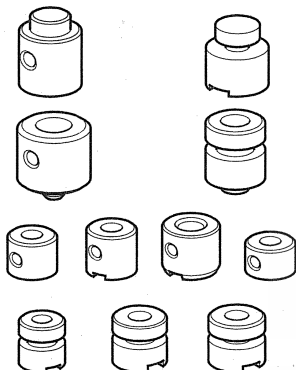


7. Remove the valve, and thoroughly clean it and the valve body with solvent. Dry all parts with compressed air, then reassemble using ATF as a lubricant.

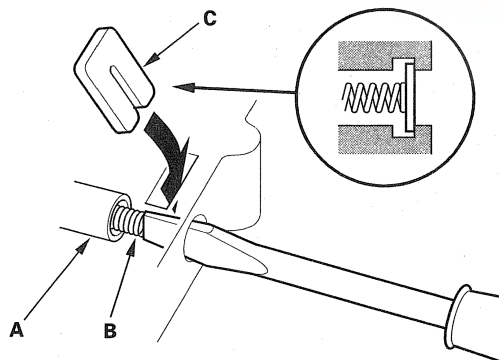
Valve Body

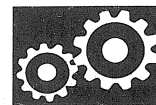
Valve Body Valve Installation

1. Coat all parts with ATF before assembly.
2. Install the valves and springs in the sequence shown for the main valve body (see page 14-291), secondary valve body (see page 14-293), regulator valve body (see page 14-294), and accumulator body (see page 14-295). Refer to the following valve cap illustrations, and install each valve cap so the end shown facing up will be facing the outside of the valve body, then secure the valve cap with the valve cap clip.



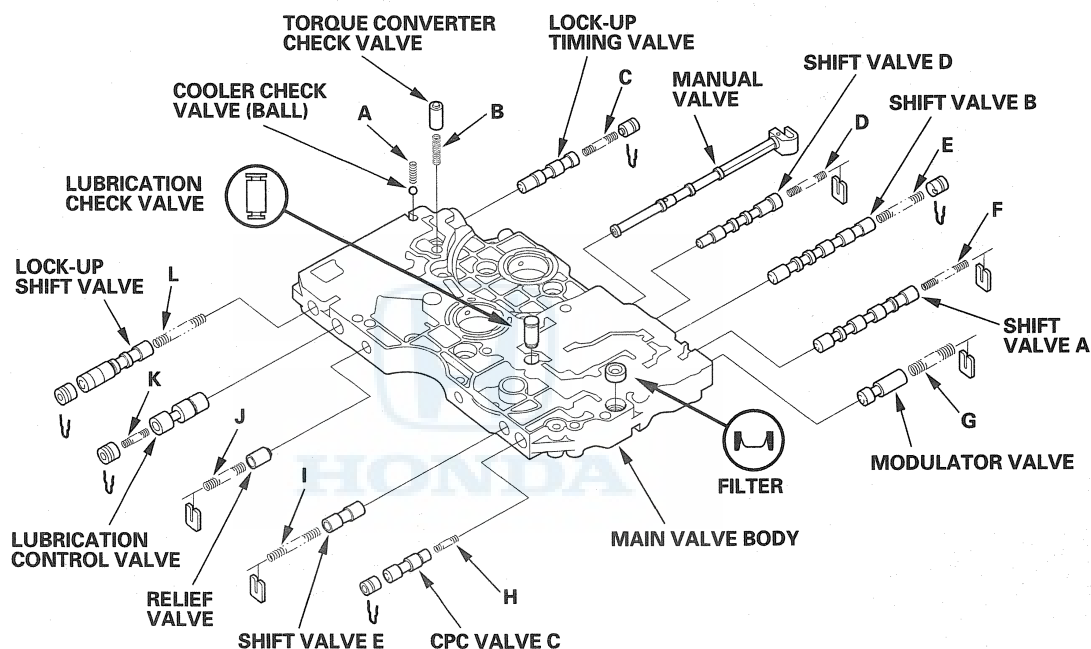
3. Install the valve (A) and valve spring (B) in the valve body. Push the valve spring in with a screwdriver, then install the spring seat (C).





Main Valve Body Disassembly, Inspection, and Reassembly

1. Clean all parts thoroughly in solvent, and dry them with compressed air. Blow out all passages.
2. Do not use a magnet to remove the cooler check valve, it may magnetize the check valve (ball).
3. Inspect the main valve body for scoring and damage.
4. Check all valves for free movement. If any fail to slide freely, refer to valve body repair (see page 14-289).
5. Coat all parts with ATF during assembly.
6. Replace the filter with a new one, and install it and the lubrication check valve in the direction shown.



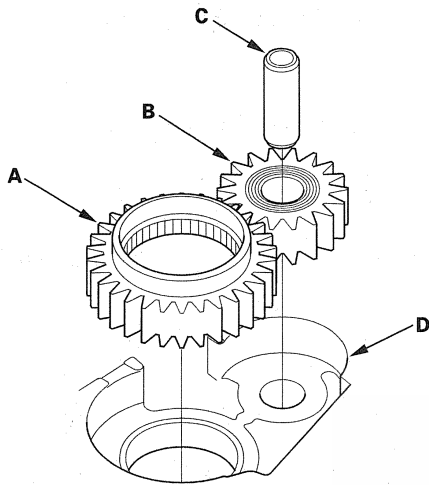
VALVE SPRING SPECIFICATIONS

Valve Springs		Standard (New)-Unit: mm (in.)			
		Wire Diameter	O.D.	Free Length	No. of Coils
A	Cooler check valve spring	0.6 (0.024)	5.8 (0.228)	14.5 (0.571)	6.8
B	Torque converter check valve spring	1.1 (0.043)	8.6 (0.339)	35.0 (1.378)	12.6
C	Lock-up timing valve spring	0.6 (0.024)	6.6 (0.260)	30.9 (1.217)	11.1
D	Shift valve D spring	0.7 (0.028)	6.6 (0.260)	32.2 (1.268)	13.4
E	Shift valve B spring	0.8 (0.031)	6.6 (0.260)	49.1 (1.933)	21.7
F	Shift valve A spring	0.8 (0.031)	6.6 (0.260)	49.1 (1.933)	21.7
G	Modulator valve spring	1.6 (0.063)	10.4 (0.409)	33.5 (1.319)	9.8
H	CPC valve C spring	0.7 (0.028)	6.1 (0.240)	17.8 (0.701)	7.9
I	Shift valve E spring	0.8 (0.031)	7.1 (0.280)	49.0 (1.929)	17.2
J	Relief valve spring	1.1 (0.043)	8.6 (0.339)	32.1 (1.264)	11.2
K	Lubrication control valve spring	0.7 (0.028)	7.7 (0.303)	28.8 (1.134)	10.4
L	Lock-up shift valve spring	0.9 (0.035)	7.6 (0.299)	63.0 (2.480)	22.4

Valve Body

ATF Pump Inspection

1. Install the ATF pump drive gear (A), driven gear (B), and ATF pump driven gear shaft (C) in the main valve body (D). Lubricate all parts with ATF, and install the ATF pump driven gear with its grooved and chamfered side facing up.



2. Measure the side clearance of the ATF pump drive gear (A) and driven gear (B).

ATF Pump Gears Side (Radial) Clearance

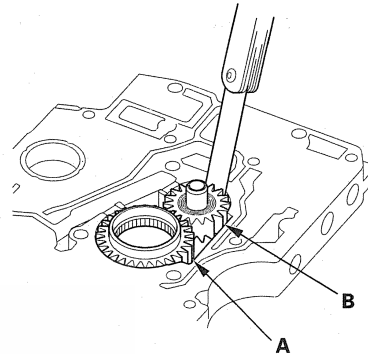
Standard (New):

ATF Pump Drive Gear:

0.210—0.265 mm (0.0083—0.0104 in.)

ATF Pump Driven Gear:

0.070—0.125 mm (0.0028—0.0049 in.)



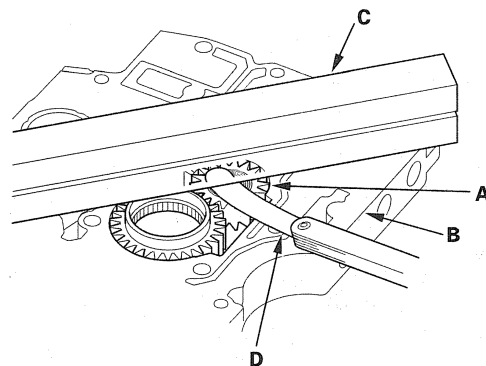
3. Remove the ATF pump driven gear shaft. Measure the thrust clearance between the ATF pump driven gear (A) and the valve body (B) with a straight edge (C) and a feeler gauge (D).

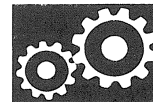
ATF Pump Drive/Driven Gear Thrust (Axial) Clearance:

Standard (New):

0.03—0.06 mm (0.001—0.002 in.)

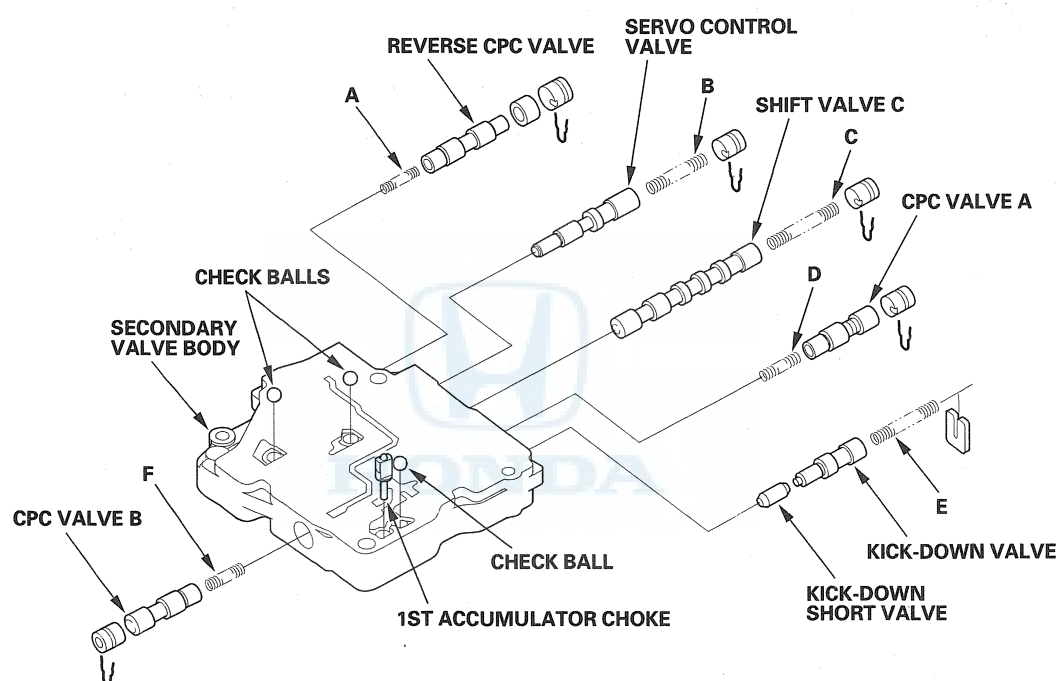
Service Limit: 0.07 mm (0.003 in.)





Secondary Valve Body Disassembly, Inspection, and Reassembly

1. Clean all parts thoroughly in solvent, and dry them with compressed air. Blow out all passages.
2. Do not use a magnet to remove the check balls, it may magnetize the check balls.
3. Inspect the secondary valve body for scoring and damage.
4. Check all valves for free movement. If any fail to slide freely, refer to valve body repair (see page 14-289).
5. Coat all parts with ATF during assembly.
6. Install the 1st accumulator choke in the direction shown.



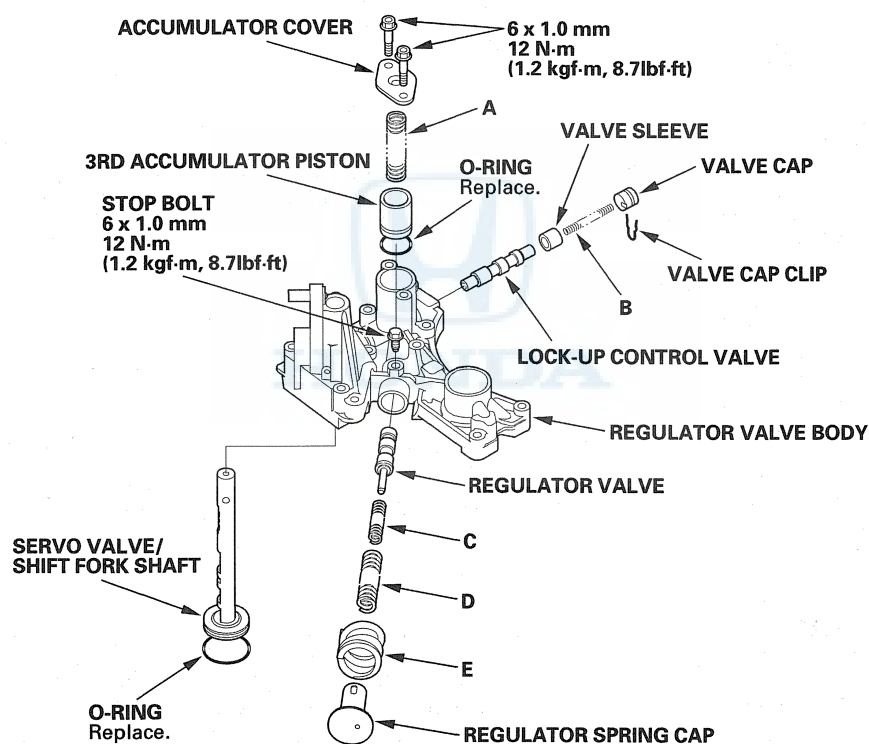
VALVE SPRING SPECIFICATIONS

Valve Springs		Standard (New)-Unit: mm (in.)			
		Wire Diameter	O.D.	Free Length	No. of Coils
A	Reverse CPC valve spring	0.7 (0.028)	6.1 (0.240)	17.8 (0.701)	7.9
B	Servo control valve spring	0.7 (0.028)	6.6 (0.260)	35.7 (1.406)	17.2
C	Shift valve C spring	0.8 (0.031)	6.6 (0.260)	49.1 (1.933)	21.7
D	CPC valve A spring	0.7 (0.028)	6.1 (0.240)	17.8 (0.701)	7.9
E	Kick-down valve spring	0.8 (0.031)	6.6 (0.260)	49.1 (1.933)	21.7
F	CPC valve B spring	0.7 (0.028)	6.1 (0.240)	17.8 (0.701)	7.9

Valve Body

Regulator Valve Body Disassembly, Inspection, and Reassembly

1. Clean all parts thoroughly in solvent, and dry them with compressed air. Blow out all passages.
2. Inspect the regulator valve body for scoring and damage.
3. Hold the regulator spring cap in place while removing the stop bolt. The regulator spring cap is spring loaded. Once the stop bolt is removed, release the spring cap slowly so it does not pop out.
4. Check all valves for free movement. If any fail to slide freely, refer to valve body repair (see page 14-289).
5. Coat all parts with ATF during assembly.
6. Align the hole in the regulator spring cap with the stop bolt hole, then press the spring cap into the valve body, and tighten the stop bolt.
7. Install the servo valve with the new O-ring, and the 3rd accumulator piston with the new O-ring.



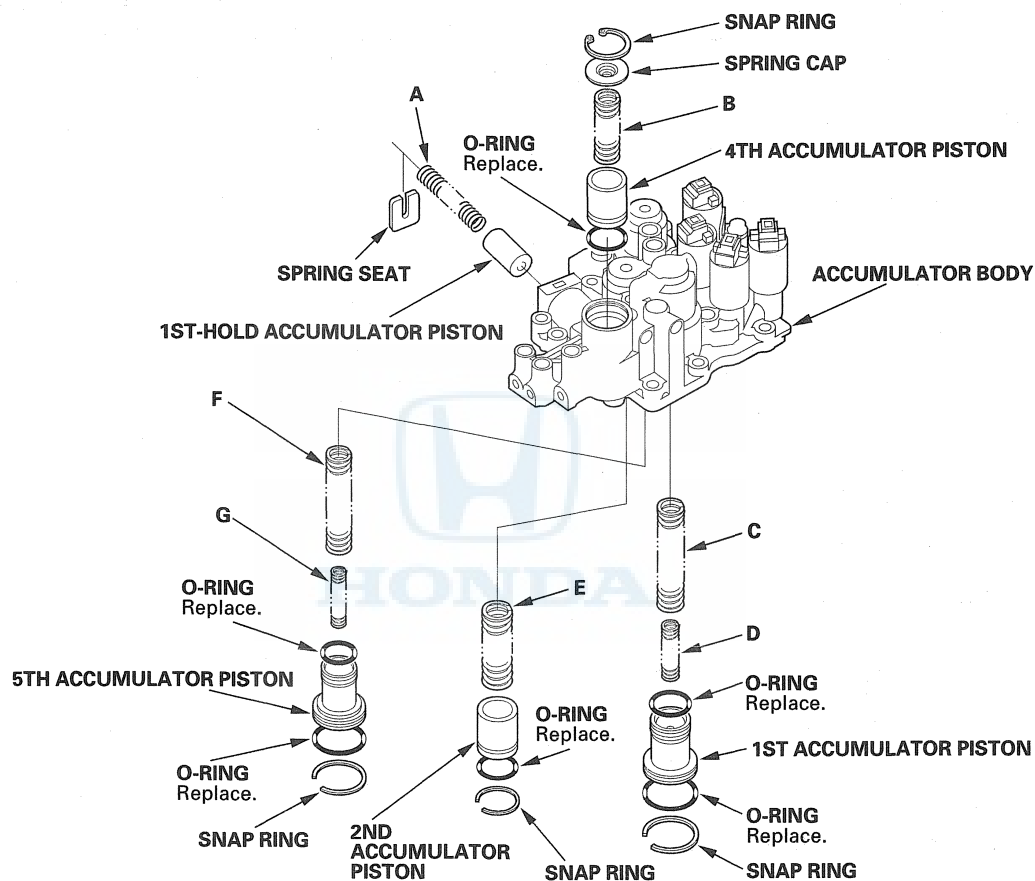
VALVE SPRING SPECIFICATIONS

Valve Springs		Standard (New)-Unit: mm (in.)			
		Wire Diameter	O.D.	Free Length	No. of Coils
A	3rd accumulator spring	3.1 (0.122)	19.6 (0.772)	41.4 (1.630)	5.5
B	Lock-up control valve spring	0.7 (0.028)	6.6 (0.260)	42.9 (1.689)	14.2
		0.8 (0.031)	6.6 (0.260)	44.3 (1.744)	25.5
C	Regulator valve spring B	1.4 (0.055)	8.8 (0.346)	44.0 (1.732)	12.0
D	Regulator valve spring A	1.85 (0.073)	14.7 (0.579)	86.9 (3.421)	16.2
E	Stator reaction spring	5.5 (0.217)	37.4 (1.472)	30.3 (1.193)	2.1



Accumulator Body Disassembly, Inspection, and Reassembly

1. Clean all parts thoroughly in solvent, and dry them with compressed air. Blow out all passages.
2. Inspect the accumulator body for scoring and damage.
3. Coat all parts with ATF during assembly.
4. Replace the O-rings with new ones.



VALVE SPRING SPECIFICATIONS

Valve Springs		Standard (New)-Unit: mm (in.)			
		Wire Diameter	O.D.	Free Length	No. of Coils
A	1st-hold accumulator spring	2.0 (0.079)	13.1 (0.516)	42.9 (1.689)	9.8
B	4th accumulator spring	3.0 (0.118)	19.6 (0.772)	45.3 (1.783)	6.4
C	1st accumulator spring A	2.2 (0.087)	17.7 (0.697)	77.6 (3.055)	12.1
D	1st accumulator spring B	2.0 (0.079)	7.1 (0.280)	49.0 (1.929)	10.0
E	2nd accumulator spring	3.1 (0.122)	19.6 (0.772)	53.4 (2.102)	7.5
F	5th accumulator spring A	2.2 (0.087)	16.4 (0.646)	75.7 (2.980)	14.2
G	5th accumulator spring B	2.0 (0.079)	6.0 (0.236)	45.5 (1.791)	11.6

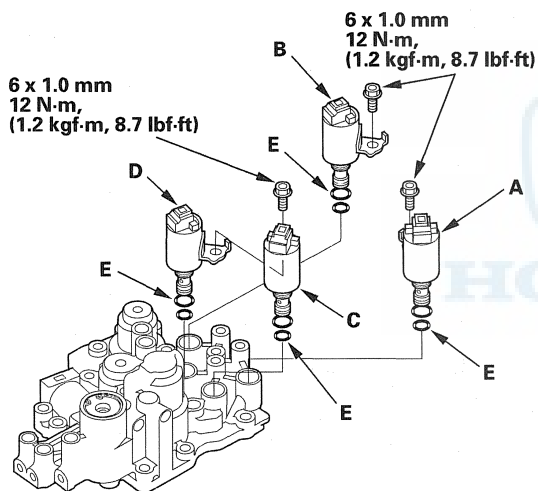
Valve Body

Shift Solenoid Valve, Torque Converter Clutch Solenoid Valve Removal and Installation

NOTE:

- Do not hold the solenoid valve connector to remove and install the solenoid valve. Be sure to hold the solenoid valve body.
 - Do not install shift solenoid valve C before installing torque converter clutch solenoid valve (D). If shift solenoid valve C is installed before installing torque converter clutch solenoid valve, it may damage the hydraulic control system.
1. Remove the mounting bolts, then remove the solenoid valves by holding the solenoid valve body.
 2. Install the new O-rings (E) on each solenoid valves.

NOTE: If you are installing a new solenoid valve, it comes with new O-rings already installed.



3. Install shift solenoid valve A (brown connector) by holding the shift solenoid valve body; be sure the mounting bracket contacts to the accumulator body.
4. Install torque converter clutch solenoid valve (black connector) by holding the solenoid valve body; be sure the mounting bracket contacts to the accumulator body.

5. Install shift solenoid valve C (brown connector) by holding the shift solenoid valve body; be sure to position the mounting bracket on top of the bracket of torque converter clutch solenoid valve.
6. Install shift solenoid valve B (black connector) by holding the shift solenoid valve body; be sure to install mounting bracket contacts to the accumulator body.

Torque Converter Housing

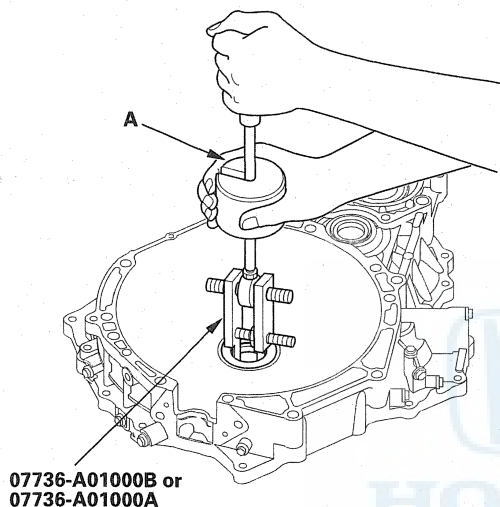


Mainshaft Bearing and Oil Seal Replacement

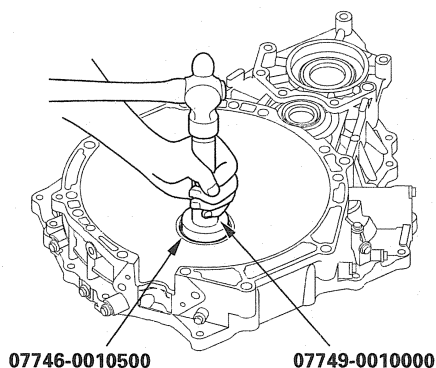
Special Tools Required

- Adjustable bearing puller, 25—40 mm 07736-A01000B or 07736-A01000A
- Driver 07749-0010000
- Attachment, 62 x 68 mm 07746-0010500
- Attachment, 72 x 75 mm 07746-0010600

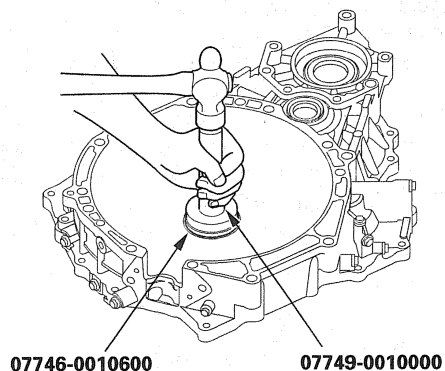
1. Remove the mainshaft bearing and oil seal using the adjustable bearing puller (25—40 mm) and a commercially available 3/8"-16 slide hammer (A).



2. Install the new mainshaft bearing until it bottoms in the housing using the driver and the attachment (62 x 68 mm).



3. Install the new oil seal flush to the housing using the driver and the attachment (72 x 75 mm).



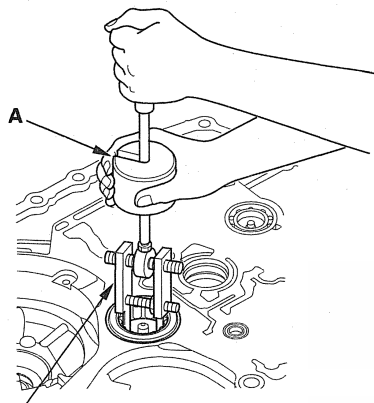
Torque Converter Housing

Countershaft Bearing Replacement

Special Tools Required

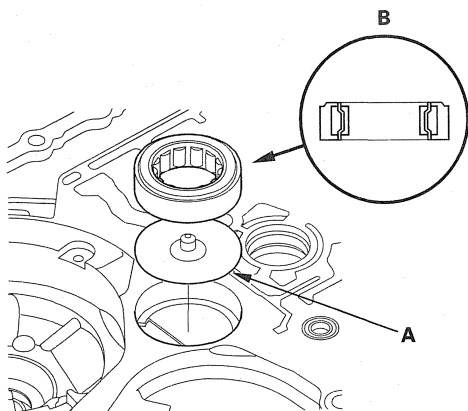
- Adjustable bearing puller, 25—40 mm
07736-A01000B or 07736-A01000A
- Driver 07749-0010000
- Attachment, 78 x 80 mm 07NAD-PX40100

1. Remove the countershaft bearing from the torque converter housing using the adjustable bearing puller (25—40 mm) and a commercially available 3/8"-16 slide hammer (A).

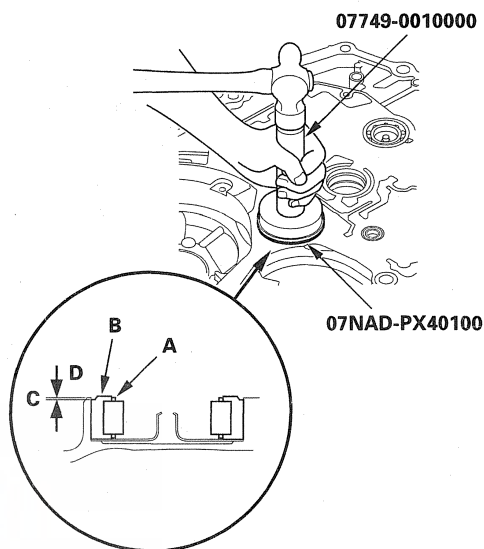


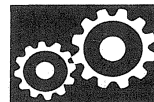
07736-A01000B or
07736-A01000A

2. Install the ATF guide plate (A) into the housing, then install the new bearing (B) in the direction shown.



3. Install the bearing (A) in the housing using the driver and the attachment (78 x 80 mm); install bearing outer notch-cut (B) in depth (C) of 0—0.03 mm (0—0.001 in.) below the housing surface (D).



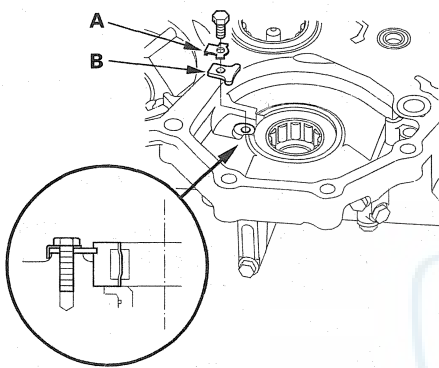


Secondary Shaft Bearing Replacement

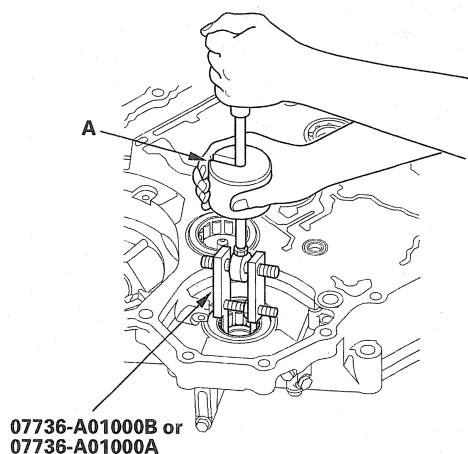
Special Tools Required

- Adjustable bearing puller, 25—40 mm 07736-A01000B or 07736-A01000A
- Bearing remover shaft set, 30 mm 07936-8890300
- Bearing remover shaft handle 07936-3710100
- Sliding hammer weight 07741-0010201
- Driver 07749-0010000
- Attachment, 37 x 40 mm 07746-0010200
- Attachment, 62 x 68 mm 07746-0010500

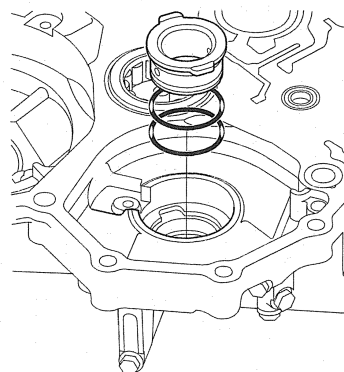
1. Remove the bolt, then remove the lock washer (A) and bearing set plate (B).



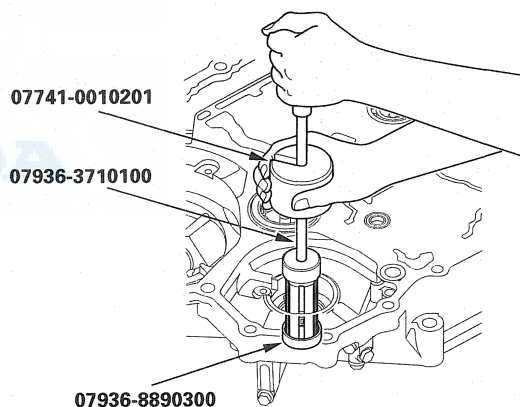
2. Remove the secondary shaft bearing from the torque converter housing using the adjustable bearing puller (25—40 mm) and a commercially available 3/8"-16 slide hammer (A).



3. Remove the ATF guide collar from the torque converter housing.



4. Remove the 29 x 39 x 9.5 mm secondary shaft bearing from the torque converter housing using the bearing remover shaft set (30 mm), the bearing remover shaft handle, and the sliding hammer weight.

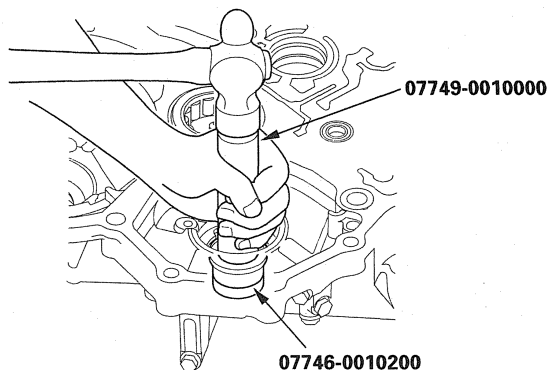


(cont'd)

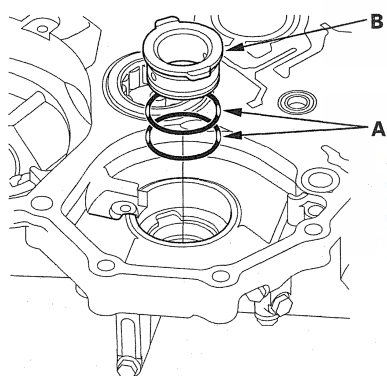
Torque Converter Housing

Secondary Shaft Bearing Replacement (cont'd)

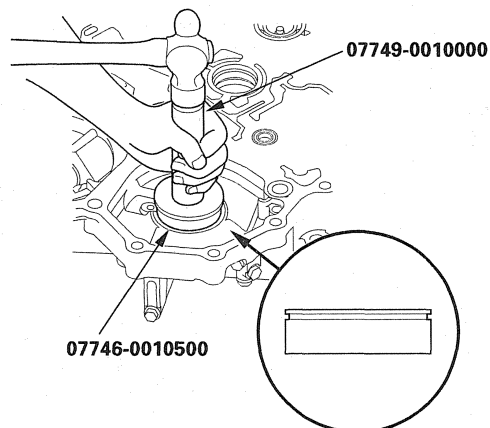
5. Install the 29 x 39 x 9.5 mm bearing into the torque converter housing using the driver and the attachment (37 x 40 mm).



6. Install the new O-rings (A) on the ATF guide collar (B), then install the guide collar in the torque converter housing.

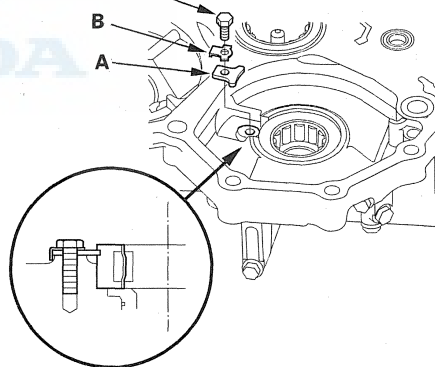


7. Install the bearing in the direction shown in the housing using the driver and the attachment (62 x 68 mm).

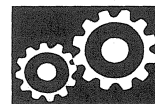


8. Check that the bearing groove aligns with the set plate mounting surface, then install the set plate (A) by aligning it with the bearing groove.

6 x 1.0 mm
12 N·m
(1.2 kgf·m, 8.7 lbf·ft)



9. Install the new lock washer (B) and bolt, then bend the lock tab of the lock washer against the bolt head.

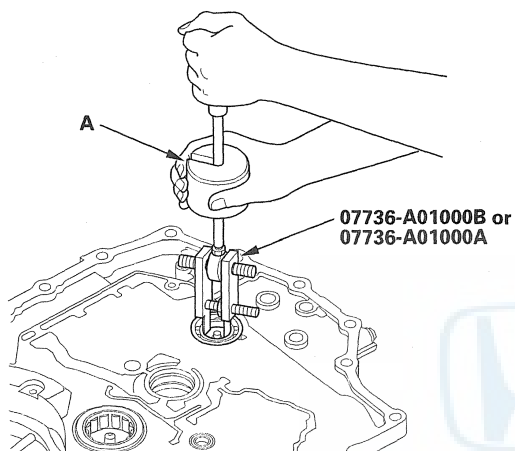


Intermediary Shaft Bearing Replacement

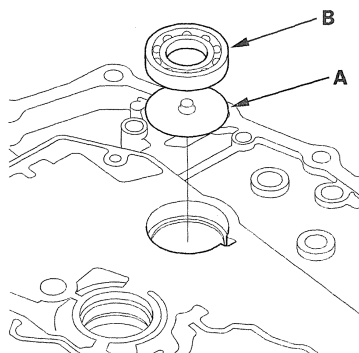
Special Tools Required

- Adjustable bearing puller, 25—40 mm
07736-A01000B or 07736-A01000A
- Driver 07749-0010000
- Attachment, 52 x 55 mm 07746-0010400

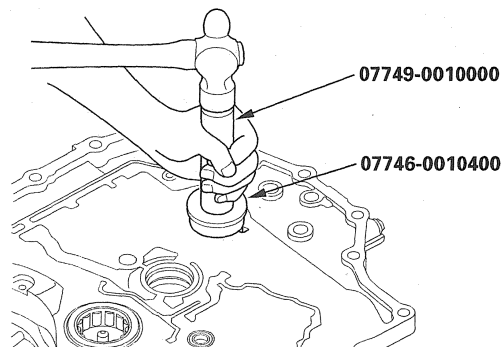
1. Remove the intermediary shaft bearing from the torque converter housing using the adjustable bearing puller (25—40 mm) and a commercially available 3/8"-16 slide hammer (A).



2. Install the ATF guide plate (A), then install the new bearing (B) in the housing.



3. Drive the bearing into the housing using the driver (07749-0010000) and the attachment (52 x 55 mm).



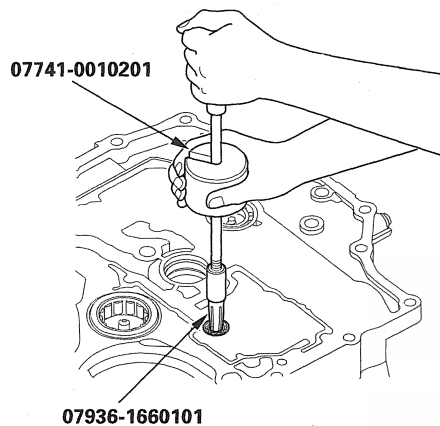
Torque Converter Housing

Park Lever Shaft Bearing Replacement

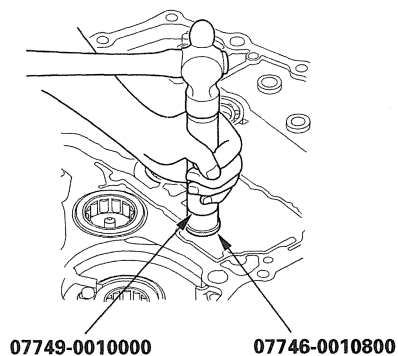
Special Tools Required

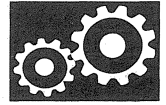
- Bearing remover shaft set, 12 mm 07936-1660101
- Sliding hammer weight 07741-0010201
- Driver 07749-0010000
- Attachment, 22 x 24 mm 07746-0010800

1. Remove the park lever shaft bearing from the torque converter housing using the bearing remover shaft set (12 mm) and the sliding hammer weight.



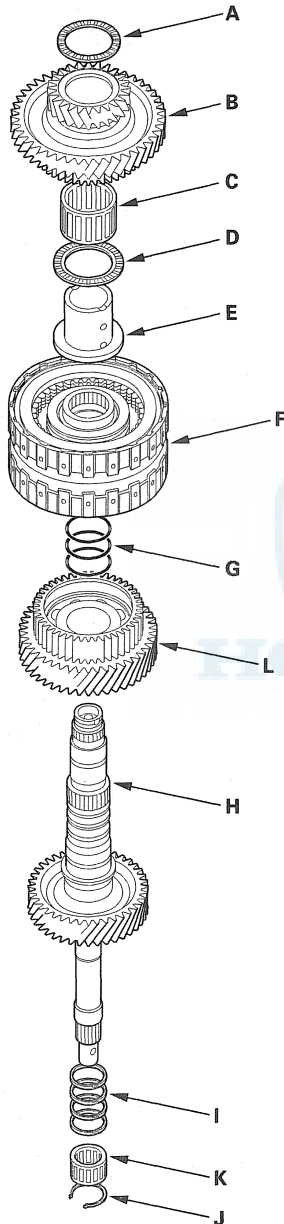
2. Install the new bearing until it bottoms in the housing using the driver and the attachment (22 x 24 mm).





Mainshaft Disassembly, Inspection, and Reassembly

1. Remove the thrust needle bearing (A), mainshaft 5th gear (B), needle bearing (C), thrust needle bearing (D), mainshaft 5th gear collar (E), 4th/5th clutch (F), and O-rings (G) from the mainshaft (H).



2. Inspect the condition of the sealing rings (I). If the sealing rings are worn, distorted, or damaged, remove the set ring (J) and needle bearing (K), and replace the sealing rings with new ones.
3. Inspect the thrust needle bearing and needle bearing for wear and rough movement.
4. Inspect the splines for excessive wear and damage.
5. Inspect the 4th gear for wear and damage, and inspect 4th gear bearing for wear and rough rotation.
6. Replace the mainshaft 4th gear (L) if the 4th gear is worn or damaged, or the bearing is worn or damaged.
7. Check the shaft bearing surfaces for scoring and excessive wear.
8. Lubricate all parts with ATF during reassembly.
9. Wrap the shaft splines with tape to prevent O-ring damage, install the new O-rings on the mainshaft, then remove the tape.
10. Install the 4th/5th clutch.
11. Install the mainshaft 5th gear collar, thrust needle bearing, needle bearing, mainshaft 5th gear, and thrust needle bearing.

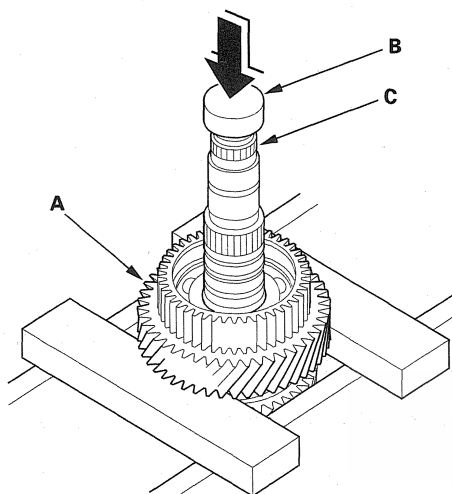
Shafts and Clutches

Mainshaft 4th Gear Replacement

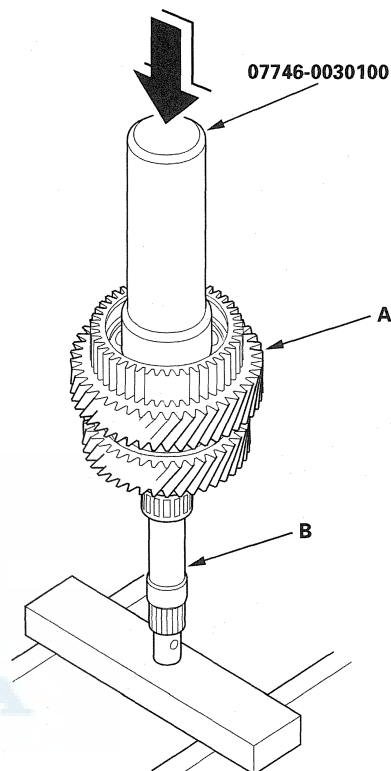
Special Tools Required

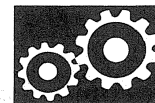
Driver, 40 mm I.D. 07746-0030100

1. Remove the mainshaft 4th gear (A) with a press. Place a shaft protector (B) between the press and mainshaft (C) to prevent damaging the mainshaft.



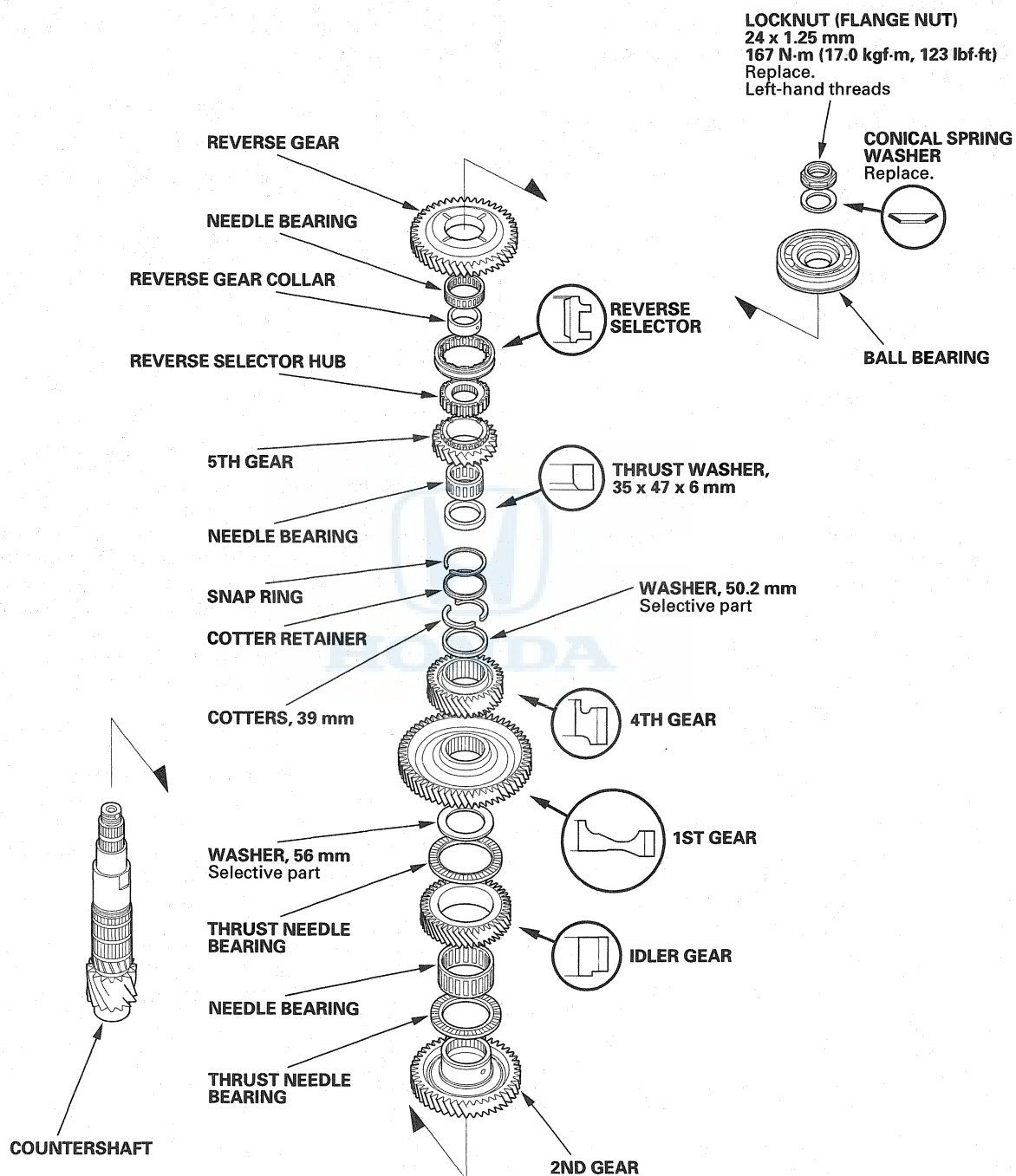
2. Slide the new mainshaft 4th gear (A) over the mainshaft (B), then press it into place using the driver (40 mm I.D.) and a press.





Countershaft Disassembly

Exploded View



(cont'd)

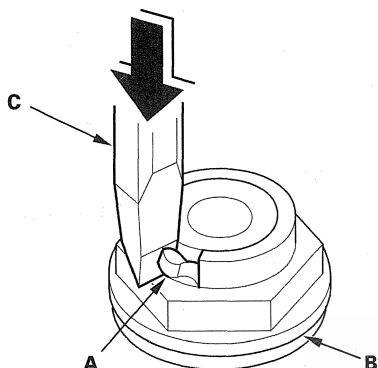
Shafts and Clutches

Countershaft Disassembly (cont'd)

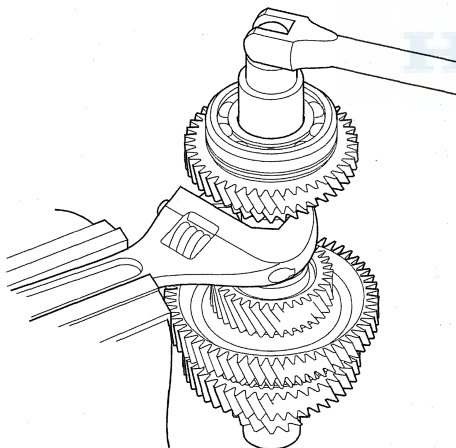
NOTE: Refer to the Exploded View as needed during the following procedure.

1. Cut the lock tab (A) of the countershaft locknut (B) using a chisel (C).

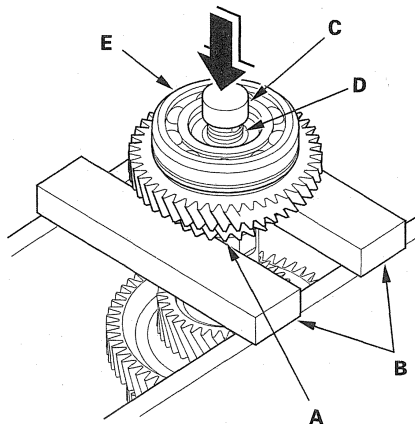
NOTE: Keep all of the chiseled particles out of the countershaft.



2. Hold the countershaft securely with a wrench and a vise, loosen the locknut, and remove it. The locknut has left-hand threads.



3. Place the countershaft 5th gear (A) on press bases (B), and place a shaft protector (C) between the countershaft (D) and a press to prevent damaging the countershaft.



4. Press the countershaft out of the press-fitted bearing (E) and the press-fitted reverse selector hub, and remove the countershaft while holding the underside of the countershaft. The countershaft falls down when pressing the countershaft out of the press-fitted reverse selector hub. Some reverse selector hubs are not press-fitted, and the countershaft falls down when pressing the countershaft out of press-fitted bearing.

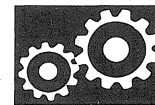
5. Remove the remaining parts from the countershaft.

6. Inspect the bearing for galling and rough movement.

7. Check the shaft bearing surfaces for scoring and excessive wear, and check the shaft splines for excessive wear and damage.

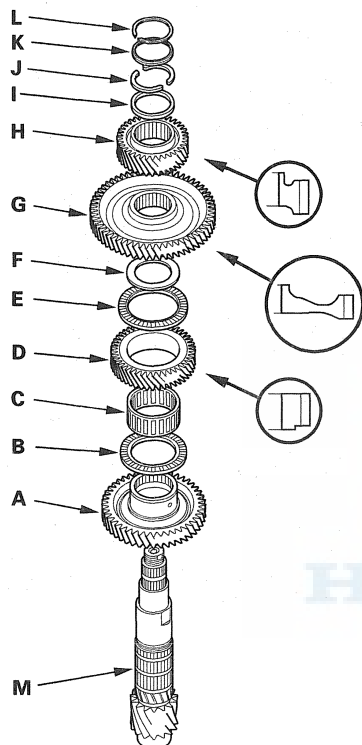
NOTE: If the countershaft is worn or damaged, replace the countershaft with the same letter (A, B, or C) for identification as the identifying letter on the final driven gear.

8. Check the idler gear axial clearance and 4th gear axial clearance (see page 14-307).

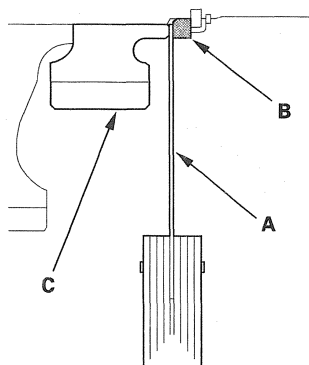


Countershaft Idler Gear and 4th Gear Axial Clearance Inspection

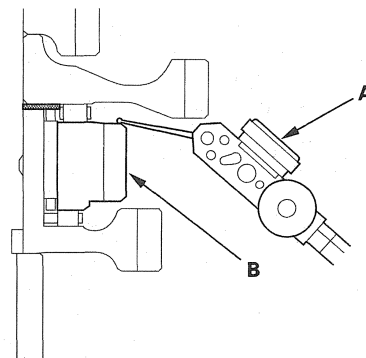
1. Install 2nd gear (A), thrust needle bearing (B), needle bearing (C), idler gear (D), thrust needle bearing (E), selective 56 mm washer (F), 1st gear (G), 4th gear (H), selective 50.2 mm washer (I), 39 mm cotters (J), cotter retainer (K), and snap ring (L) to the countershaft (M). Install the idler gear, 1st gear, and 4th gear in the direction shown.



2. Insert a feeler gauge blade (A) as thick as possible between the 50.2 mm washer (B) and 4th gear (C).

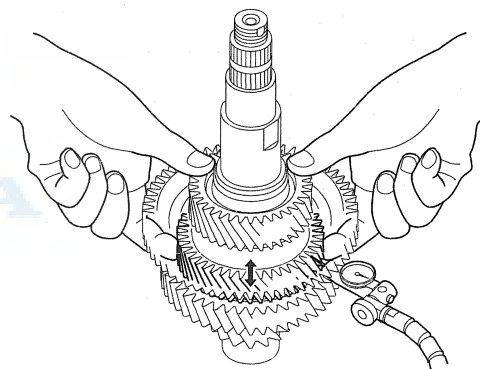


3. Set the dial indicator (A) on the idler gear (B).



4. Measure the idler gear axial clearance in at least three places while moving the idler gear. Use the average as the actual clearance.

Standard: 0.005—0.040 mm (0.0002—0.0016 in.)



5. If the measurement is out of standard, remove the 56 mm washer and measure its thickness.

(cont'd)

Shafts and Clutches

Countershaft Idler Gear and 4th Gear Axial Clearance Inspection (cont'd)

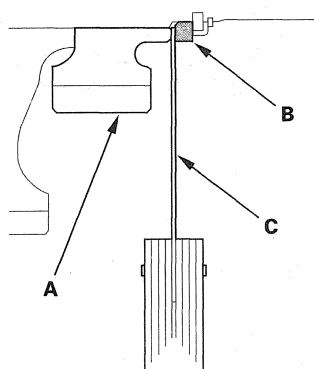
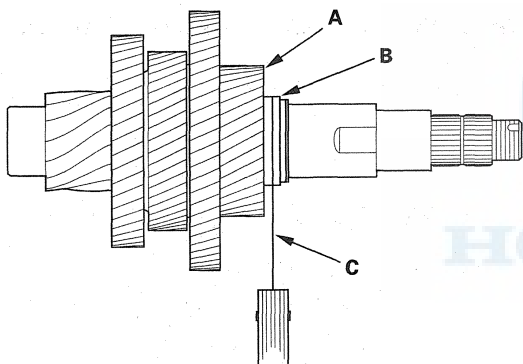
6. Select and install a new washer, then recheck the clearance.

WASHER, 56 mm

No.	Part Number	Thickness
A	90582-RDK-000	1.525 mm (0.0600 in.)
B	90583-RDK-000	1.505 mm (0.0593 in.)
C	90584-RDK-000	1.485 mm (0.0585 in.)
D	90585-RDK-000	1.465 mm (0.0577 in.)
E	90586-RDK-000	1.445 mm (0.0569 in.)
F	90587-RDK-000	1.425 mm (0.0561 in.)
G	90588-RDK-000	1.405 mm (0.0553 in.)

7. Measure the clearance between the 4th gear (A) and the 50.2 mm washer (B) with a feeler gauge (C) in at least three places. Use the average as the actual clearance.

Standard: 0.005—0.040 mm (0.0002—0.0016 in.)



8. If the measurement is out of standard, remove the 50.2 mm washer and measure its thickness.

9. Select and install a new washer, then recheck the clearance.

WASHER, 50.2 mm

No.	Part Number	Thickness
A	90521-RDK-010	3.95 mm (0.1555 in.)
B	90522-RDK-010	3.97 mm (0.1563 in.)
C	90523-RDK-010	3.99 mm (0.1571 in.)
D	90524-RDK-010	4.01 mm (0.1579 in.)
E	90525-RDK-010	4.03 mm (0.1587 in.)
F	90526-RDK-010	4.05 mm (0.1594 in.)
G	90527-RDK-010	4.07 mm (0.1602 in.)
H	90528-RDK-010	4.09 mm (0.1610 in.)
I	90529-RDK-010	4.11 mm (0.1618 in.)
J	90530-RDK-010	4.13 mm (0.1626 in.)
K	90531-RDK-010	4.15 mm (0.1634 in.)
L	90532-RDK-010	4.17 mm (0.1642 in.)
M	90533-RDK-010	4.19 mm (0.1650 in.)
N	90534-RDK-010	4.21 mm (0.1657 in.)
O	90535-RDK-010	4.23 mm (0.1665 in.)
P	90536-RDK-010	4.25 mm (0.1673 in.)
Q	90537-RDK-010	4.27 mm (0.1681 in.)
R	90538-RDK-010	4.29 mm (0.1689 in.)
S	90539-RDK-010	4.31 mm (0.1697 in.)
T	90540-RDK-010	4.33 mm (0.1705 in.)
U	90541-RDK-010	4.35 mm (0.1713 in.)

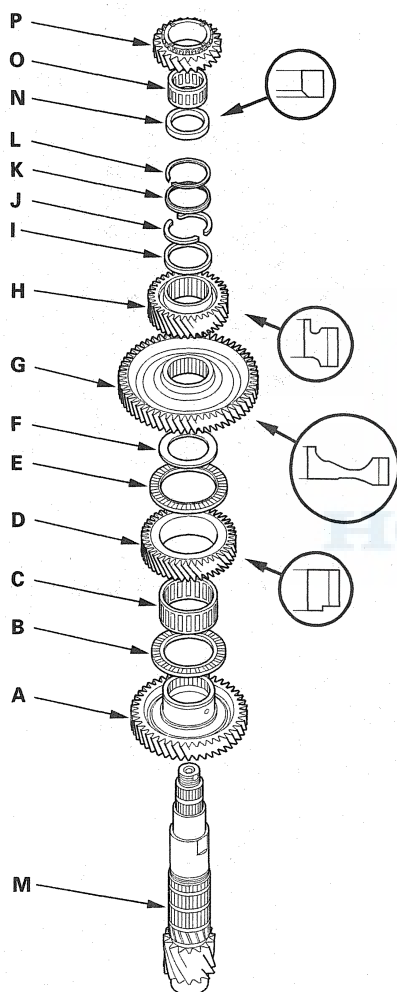


Countershaft Reassembly

Special Tools Required

Driver, 40 mm I.D. 07746-0030100

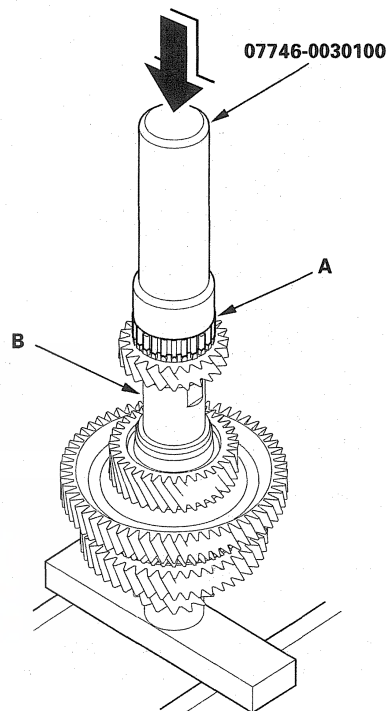
1. Install the 2nd gear (A), thrust needle bearing (B), needle bearing (C), idler gear (D), thrust needle bearing (E), 56 mm washer (F), 1st gear (G), 4th gear (H), 50.2 mm washer (I), 39 mm cotters (J), cotter retainer (K), and snap ring (L) on the countershaft (M).



2. Install the 35 x 47 x 6 mm thrust washer (N) in the direction shown, then install the needle bearing (O) and the 5th gear (P).

3. Slide the reverse selector hub (A) over the countershaft (B), then press it into place using the driver (40 mm I.D.) and a press.

NOTE: Some reverse selector hubs are not press-fitted, and can be installed without using the driver (40 mm I.D.) and a press.



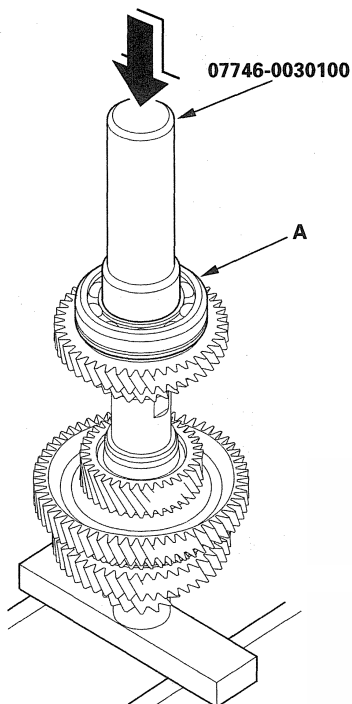
4. Install the reverse selector, reverse gear collar, needle bearing, and reverse gear over the reverse selector hub.

(cont'd)

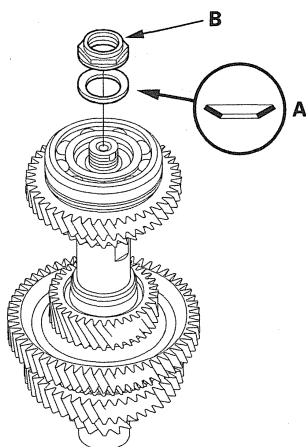
Shafts and Clutches

Countershaft Reassembly (cont'd)

5. Install the ball bearing (A) over the countershaft, then press it into place using the driver (40 mm I.D.) and a press.



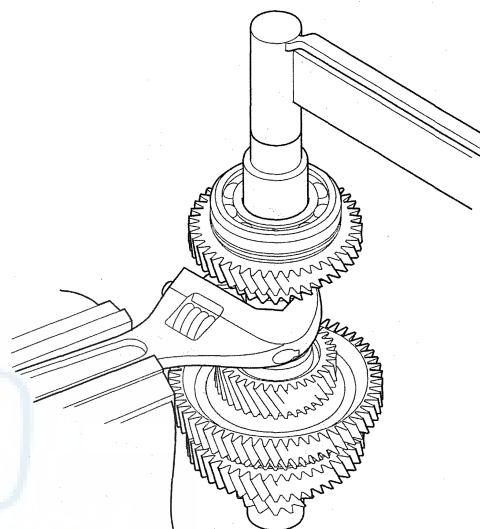
6. Install the new conical spring washer (A) in the direction shown, and install the new locknut (B).



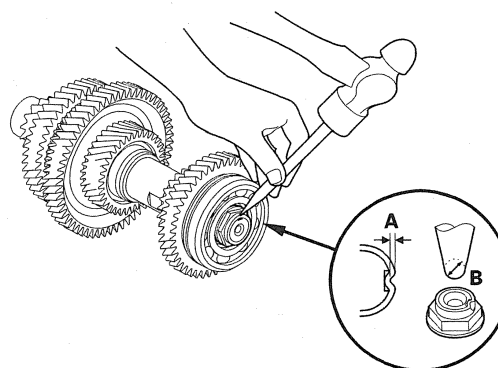
7. Hold the countershaft securely with a wrench and a vise, and tighten the locknut to 167 N·m (17.0 kgf·m, 123 lbf·ft).

NOTE:

- Use a torque wrench to tighten the locknut. Do not use an impact wrench.
- The locknut has left-hand threads.



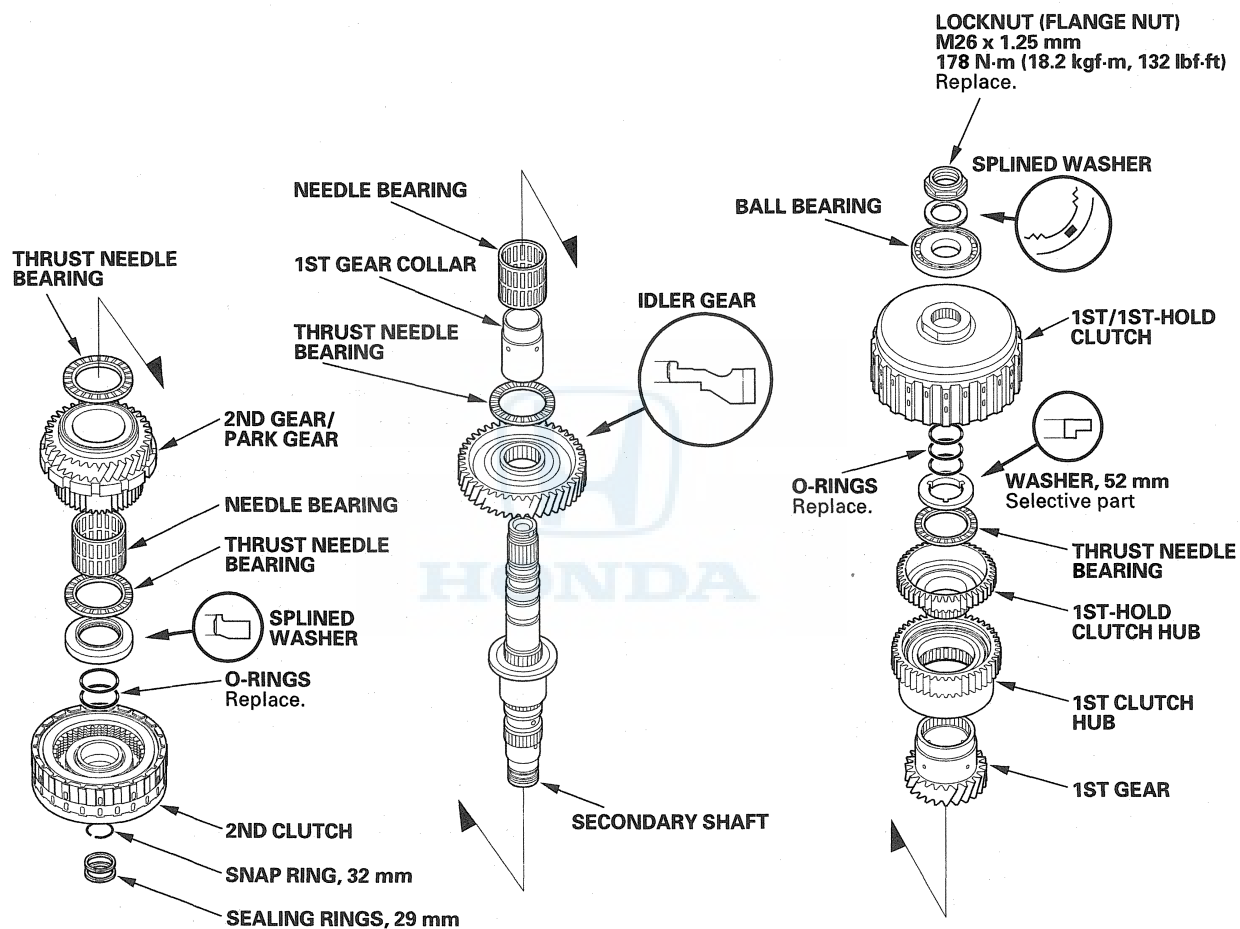
8. Stake the locknut into its shaft in depth (A) of 0.7—1.3 mm (0.03—0.05 in.) using a 3.5 mm punch (B).





Secondary Shaft Disassembly

Exploded View



(cont'd)

Shafts and Clutches

Secondary Shaft Disassembly (cont'd)

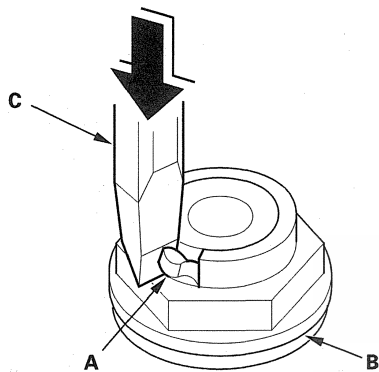
Special Tools Required

Wrench, 40 x 42 mm 07XAA-002010A

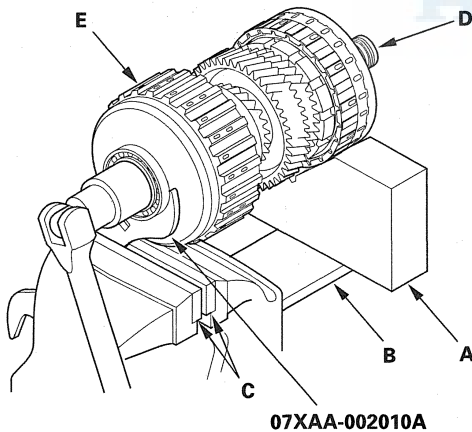
NOTE: Refer to the Exploded View as needed during the following procedure.

1. Cut the lock tab (A) of the secondary shaft locknut (B) using a chisel (C).

NOTE: Keep all of the chiseled particles out of the secondary shaft.

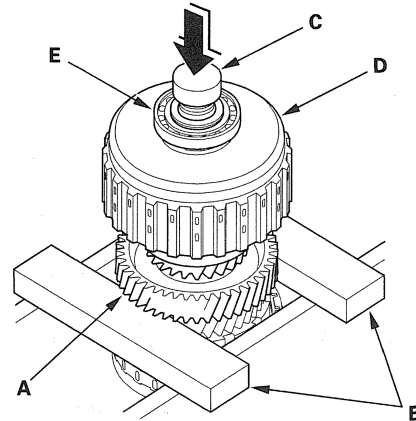


2. Place a V-block (A) on the back of a vise (B), and clamp the wrench, 40 x 42 mm in the vise jaws (C).

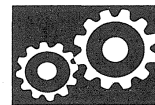


3. Place the secondary shaft (D) on the block and attach the 1st clutch guide (E) to the wrench, 40 x 42 mm. Loosen the locknut, and remove it. Remove any burrs from the splines on the shaft and spline washer.

4. Place the idler gear (A) on press bases (B), and place a shaft protector (C) between the secondary shaft (D) and a press to prevent damaging the secondary shaft.



5. Press the secondary shaft out of the press-fitted bearing (E), and remove the secondary shaft while holding the underside of the secondary shaft. The secondary shaft falls down when pressing the secondary shaft out of the press-fitted bearing.
6. Remove the 1st/1st-hold clutch, 52 mm washer, thrust needle bearing, 1st gear assembly, needle bearing, 1st gear collar, thrust needle bearing, and idler gear.
7. Remove the 32 mm snap ring, and remove the 2nd clutch, splined washer, thrust needle bearing, needle bearing, 2nd gear/park gear, and thrust needle bearing.
8. Inspect the bearing for galling and rough movement.
9. Check the shaft bearing surfaces for scoring and excessive wear, and check the shift splines for excessive wear and damage.
10. Check the 1st gear axial clearance (see page 14-313), 1st gear one-way clutch (see page 14-315), and secondary shaft installation height (see page 14-319).

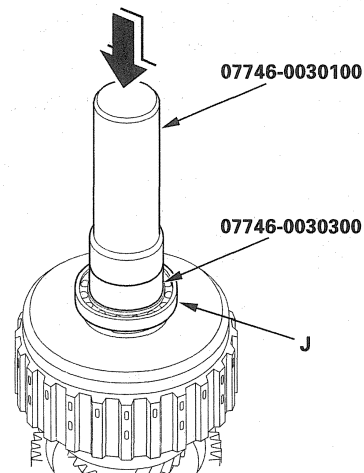
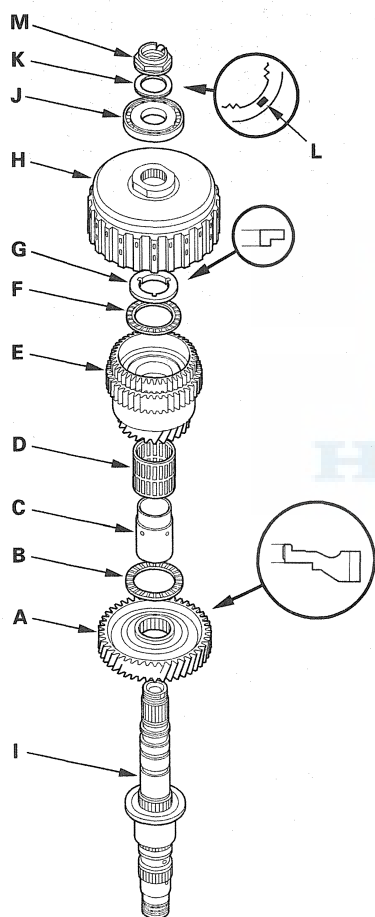


Secondary Shaft 1st Gear Axial Clearance Inspection

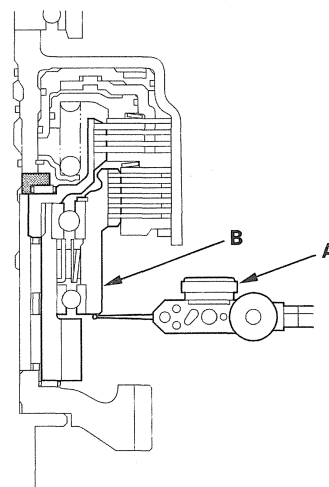
Special Tools Required

- Driver, 40 mm I.D. 07746-0030100
- Attachment, 30 mm I.D. 07746-0030300

1. Install the idler gear (A), thrust needle bearing (B), 1st gear collar (C), needle bearing (D), 1st gear assembly (E), thrust needle bearing (F), selective 52 mm washer (G), and 1st/1st-hold clutch (H) on the secondary shaft (I). Install the idler gear and 52 mm washer in the direction shown. Do not install the O-rings during inspection.



2. Install the ball bearing (J) over the 1st/1st-hold clutch guide using the driver (40 mm I.D.), the attachment (30 mm I.D.) and a press.
3. Install the splined washer (K) with the marked side (L) up over the ball bearing in the same manner as installing the ball bearing using the driver (40 mm I.D.), the attachment (30 mm I.D.) and a press.
4. Install the old lock nut (M) and tighten it to 29 N·m (3.0 kgf·m, 22 lbf·ft).
5. Set the dial indicator (A) on the 1st clutch hub (B).



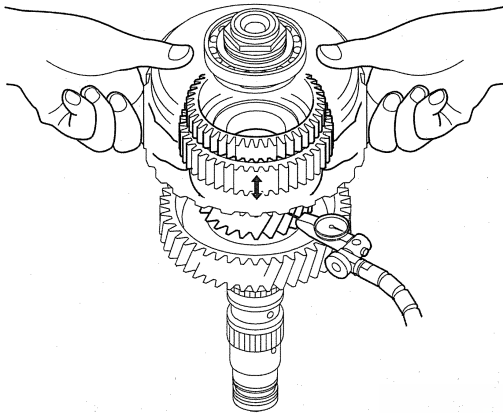
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Shafts and Clutches

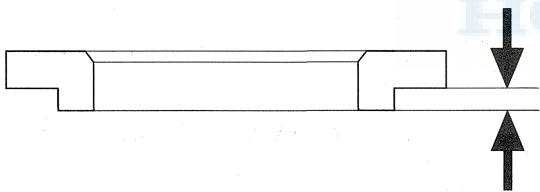
Secondary Shaft 1st Gear Axial Clearance Inspection (cont'd)

6. Measure the 1st gear axial clearance in at least three places while moving the 1st gear. Use the average as the actual clearance.

Standard: 0.085—0.130 mm (0.003—0.005 in.)



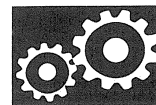
7. If the measurement is out of standard, remove the washer and measure its difference.



8. Select and install a new washer, then recheck the clearance.

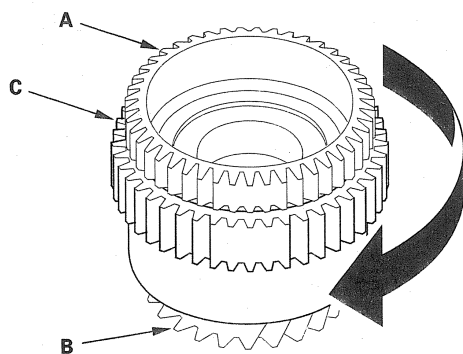
WASHER, 52 mm

No.	Part Number	Thickness
A	90502-RJF-T00	2.705 mm (0.106 in.)
B	90503-RJF-T00	2.680 mm (0.106 in.)
C	90504-RJF-T00	2.655 mm (0.105 in.)
D	90505-RJF-T00	2.630 mm (0.104 in.)
E	90506-RJF-T00	2.605 mm (0.103 in.)
F	90507-RJF-T00	2.580 mm (0.102 in.)
G	90508-RJF-T00	2.555 mm (0.101 in.)
H	90509-RJF-T00	2.530 mm (0.100 in.)
I	90510-RJF-T00	2.505 mm (0.099 in.)
J	90511-RJF-T00	2.480 mm (0.098 in.)
K	90512-RJF-T00	2.455 mm (0.097 in.)
L	90513-RJF-T00	2.430 mm (0.096 in.)
M	90514-RJF-T00	2.405 mm (0.095 in.)



1st Gear One-way Clutch Inspection

1. Hold the 1st-hold clutch hub (A), and turn the 1st gear (B) in the direction shown to be sure it turns freely. Also make sure the 1st gear locks in the opposite direction.



2. If any problem occurs on the 1st gear one-way clutch, replace the 1st clutch hub (C). The 1st gear one-way clutch is not available separately from the 1st clutch hub.
3. Also check the 1st gear and the 1st-hold clutch hub for wear and damage. If the 1st gear and 1st-hold clutch hub are worn or damaged, replace the damaged part, refer to 1st Clutch Hub Replacement (see page 14-316).

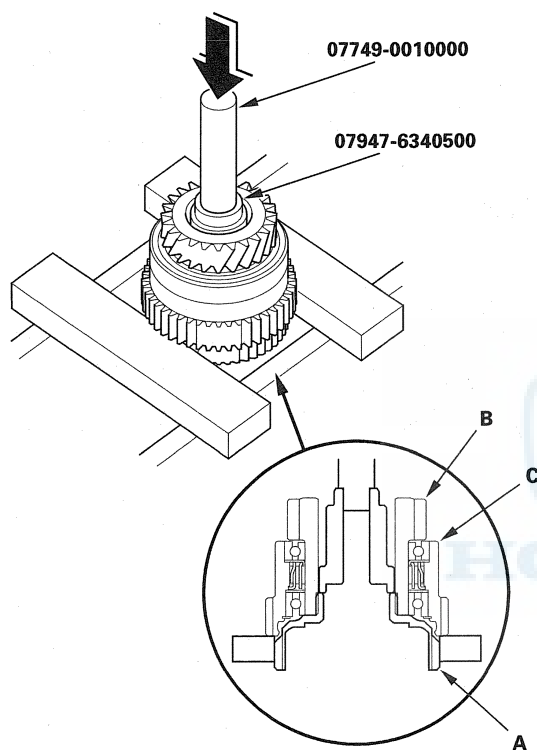
Shafts and Clutches

1st Clutch Hub Replacement

Special Tools Required

- Driver 07749-0010000
- Driver attachment 07947-6340500
- Attachment, 78 x 90 mm 07GAD-SD40101

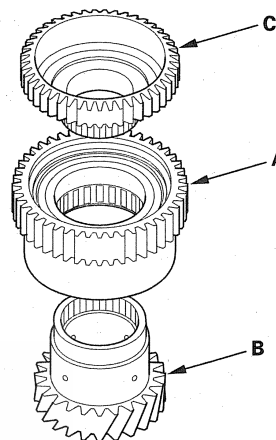
1. Remove the 1st-hold clutch hub (A) from the 1st gear (B) using the driver, the driver attachment, and a press.



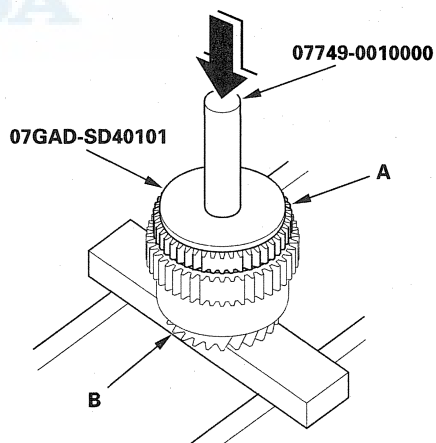
2. Remove the 1st clutch hub (C) from the 1st gear.

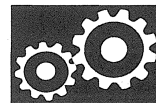
3. Install the new 1st clutch hub (A) over the 1st gear (B), and install the 1st-hold clutch hub (C) in the 1st gear.

NOTE: If the 1st gear and 1st-hold clutch hub are replaced, use the 1st gear and the 1st-hold clutch hub with the same identifying letters (A or B).



4. Install the 1st-hold clutch hub (A) in the 1st gear (B) using the driver, the attachment (78 x 90 mm) and a press.



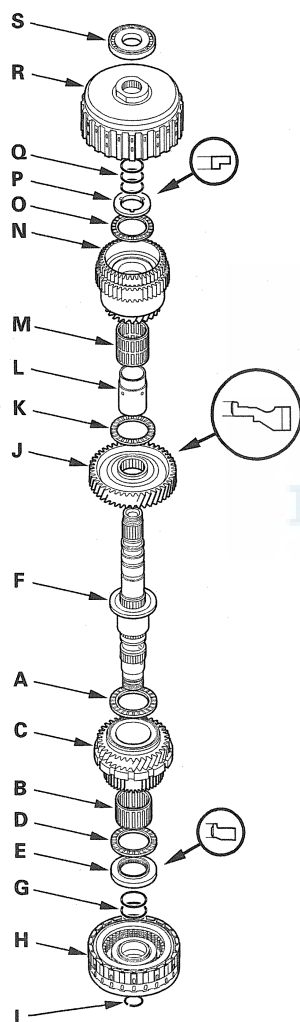


Secondary Shaft Reassembly

Special Tools Required

- Driver, 40 mm I.D. 07746-0030100
- Attachment, 30 mm I.D. 07746-0030300
- Wrench, 40 x 42 mm 07XAA-002010A

1. Install the thrust needle bearing (A), needle bearing (B), 2nd gear/park gear (C), thrust needle bearing (D), and splined washer (E) in the direction shown on the secondary shaft (F).



2. Wrap the shaft splines with tape, and install the new O-rings (G) in 2nd clutch O-ring grooves, then remove the tape.

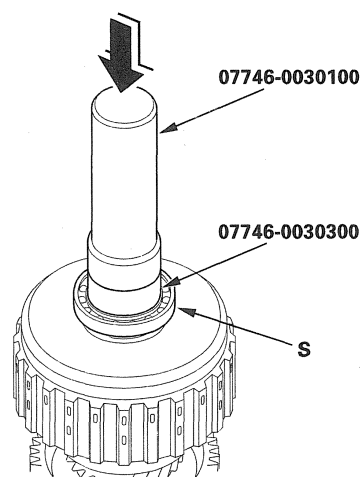
NOTE: To prevent damage to the O-rings, be sure to install the O-rings after installing the splined washer.

3. Install the 2nd clutch (H) on the secondary shaft, and secure the 2nd clutch with the snap ring (I).
4. Install the idler gear (J) in the direction shown, thrust needle bearing (K), 1st gear collar (L), needle bearing (M), 1st gear assembly (N), thrust needle bearing (O), and 52 mm washer (P) in the direction shown on the secondary shaft.

5. Wrap the shaft splines with tape, and install the new O-rings (Q) in 1st/1st-hold clutch O-ring grooves, then remove the tape.

NOTE: To prevent damage to the O-rings, be sure to install the O-rings after installing the 1st gear collar and 52 mm washer.

6. Install the 1st/1st-hold clutch (R).
7. Install the ball bearing (S) over the 1st/1st-hold clutch guide using the driver (40 mm I.D.), and the attachment (30 mm I.D.), and a press.

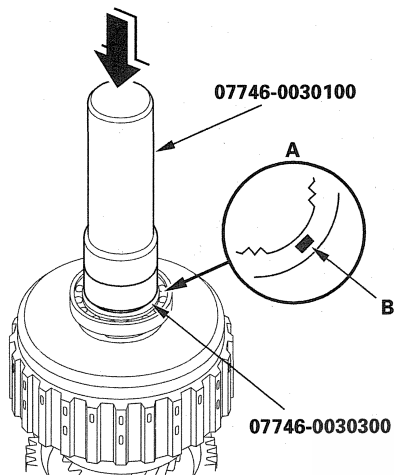


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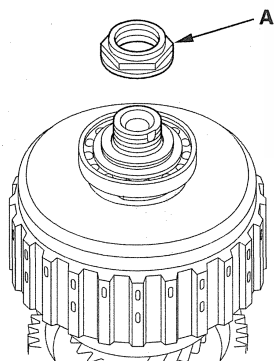
Shafts and Clutches

Secondary Shaft Reassembly (cont'd)

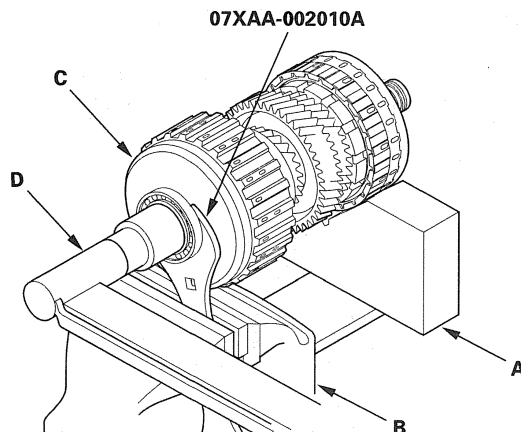
8. Install the new splined washer (A) with the marked side (B) up over the ball bearing using the driver (40 mm I.D.), the attachment (30 mm I.D.), and a press.



9. Install the new locknut (A).



10. Place a V-block (A) on a vise (B), and put the secondary shaft (C) on the V-block and vise.

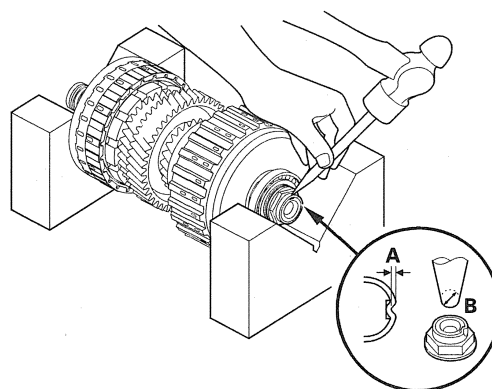


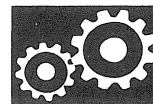
11. Attach the wrench (40 x 42 mm), onto the 1st clutch guide, and secure the wrench (40 x 42 mm), with the vise to hold the secondary shaft. Tighten the locknut to 178 N·m (18.2 kgf·m, 132 lbf·ft) with the torque wrench (D).

NOTE:

- Use a torque wrench to tighten the locknut. Do not use an impact wrench.
- The locknut has left-hand threads.

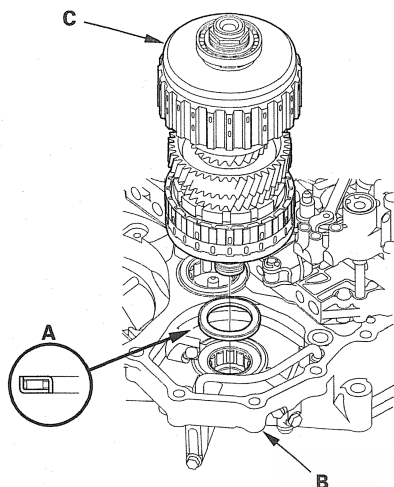
12. Stake the locknut to a depth (A) of 0.7—1.3 mm (0.03—0.05 in.) using a 3.5 mm punch (B).



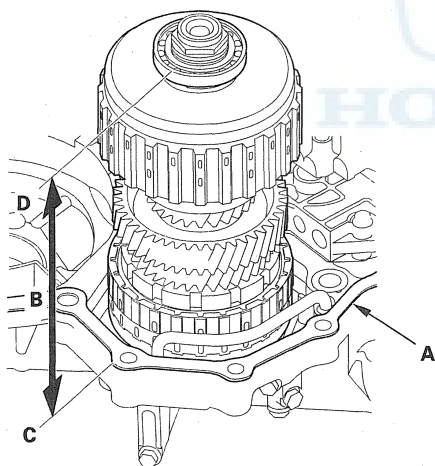


Secondary Shaft Installation Height Inspection/Adjustment

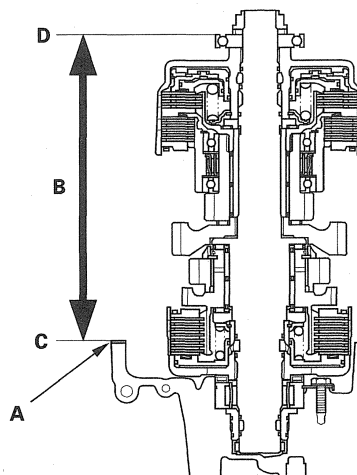
1. Install the thrust needle bearing (A) in the torque converter housing (B) in the direction shown, and install the secondary shaft assembly (C).



2. Install the new gasket (A) on the torque converter housing.



Secondary Shaft Cutaway View



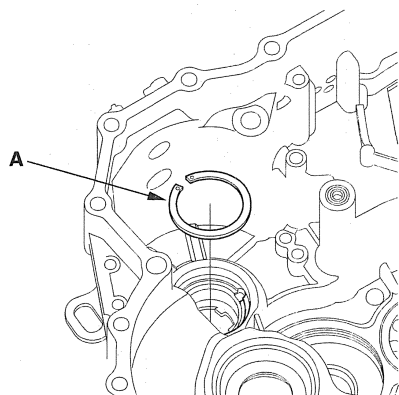
3. Measure the height (B) of the secondary shaft installation between the surface (C) of the gasket and the top of the ball bearing outer race (D), then note the measurement.

(cont'd)

Shafts and Clutches

Secondary Shaft Installation Height Inspection/Adjustment (cont'd)

4. Remove the 65 mm thrust shim (A) from the transmission housing, and measure its thickness.



5. Calculate the thickness of the 65 mm thrust shim using the formula.

Formula:

65 mm Thrust Shim Thickness

= Secondary Shaft Installation Height Standard

— Measurement

Secondary Shaft Installation Height

Standard:

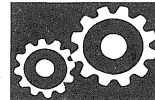
222.54—222.63 mm (8.761—8.765 in.)

6. Select the 65 mm thrust shim from the following table.

THRUST SHIM, 65 mm

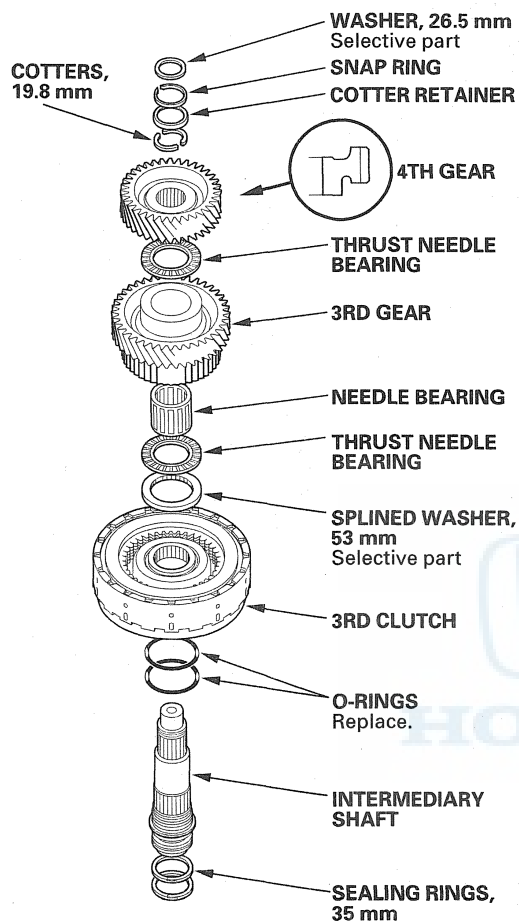
No.	Part Number	Thickness
0A	90460-RDK-000	0.80 mm (0.031 in.)
A	90461-RDK-010	0.84 mm (0.033 in.)
B	90462-RDK-010	0.88 mm (0.035 in.)
C	90463-RDK-010	0.92 mm (0.036 in.)
D	90464-RDK-010	0.96 mm (0.038 in.)
E	90465-RDK-010	1.00 mm (0.039 in.)
F	90466-RDK-010	1.04 mm (0.041 in.)
G	90467-RDK-010	1.08 mm (0.043 in.)
H	90468-RDK-010	1.12 mm (0.044 in.)
I	90469-RDK-010	1.16 mm (0.046 in.)
J	90470-RDK-010	1.20 mm (0.047 in.)
K	90471-RDK-010	1.24 mm (0.049 in.)
L	90472-RDK-010	1.28 mm (0.050 in.)
M	90473-RDK-010	1.32 mm (0.052 in.)
N	90474-RDK-010	1.36 mm (0.054 in.)
O	90475-RDK-010	1.40 mm (0.055 in.)
P	90476-RDK-010	1.44 mm (0.057 in.)
Q	90477-RDK-010	1.48 mm (0.058 in.)
R	90478-RDK-010	1.52 mm (0.060 in.)
S	90479-RDK-010	1.56 mm (0.061 in.)
T	90480-RDK-010	1.60 mm (0.063 in.)
U	90481-RDK-000	1.64 mm (0.065 in.)
V	90482-RDK-000	1.68 mm (0.066 in.)
W	90483-RDK-000	1.72 mm (0.068 in.)
X	90484-RDK-000	1.76 mm (0.069 in.)
Y	90485-RDK-000	1.80 mm (0.071 in.)
Z	90486-RDK-000	1.84 mm (0.072 in.)
AA	90487-RDK-000	1.88 mm (0.074 in.)
AB	90488-RDK-000	1.92 mm (0.076 in.)
AC	90489-RDK-000	1.96 mm (0.077 in.)
AD	90490-RDK-000	2.00 mm (0.079 in.)
AE	90491-RDK-000	2.04 mm (0.080 in.)
AF	90492-RDK-000	2.08 mm (0.082 in.)
AG	90493-RDK-000	2.12 mm (0.083 in.)
AH	90494-RDK-000	2.16 mm (0.085 in.)
AI	90495-RDK-000	2.20 mm (0.087 in.)
AJ	90496-RDK-000	2.24 mm (0.088 in.)
AK	90497-RDK-000	2.28 mm (0.090 in.)
AL	90498-RDK-000	2.32 mm (0.091 in.)

7. Install the thrust shim in the transmission housing.



Intermediary Shaft Disassembly, Inspection, and Reassembly

1. Remove the 26.5 mm washer, snap ring, cotter retainer, and cotters from the intermediary shaft.



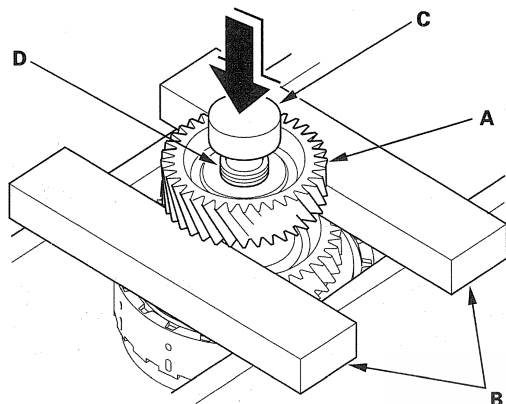
2. Remove the intermediary shaft 4th gear using a press (see page 14-322), and disassemble the shaft and gears.
3. Inspect the bearings for galling and rough movement.

4. Check the shaft bearing surfaces for scoring and excessive wear, and check the shaft splines for excessive wear and damage.
5. Check the sealing rings for excessive wear and damage.
6. Check the 3rd gear axial clearance (see page 14-323), and intermediary shaft installation height (see page 14-325).
7. Before installing the O-rings, wrap the shaft splines with tape to prevent damage to the O-rings.
8. Lubricate all parts with ATF, and reassemble the shaft and gears.
9. Install the press-fitted 4th gear using the driver (40 mm I.D.) and a press (see page 14-322) in the direction shown.

Shafts and Clutches

Intermediary Shaft 4th Gear Removal

1. Place the 4th gear (A) on press bases (B), and place a shaft protector (C) between the intermediary shaft (D) and a press to prevent damaging the intermediary shaft.



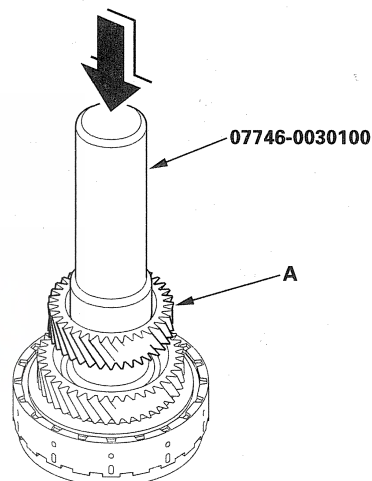
2. Press the intermediary shaft out of the press-fitted 4th gear, and remove the intermediary shaft while holding the underside the intermediary shaft. The intermediary shaft falls down when pressing the intermediary shaft out of the press-fitted gear.
3. Remove the remaining parts from the intermediary shaft.

Intermediary Shaft 4th Gear Installation

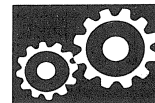
Special Tools Required

Driver, 40 mm I.D. 07746-0030100

1. Wrap the shaft splines with tape, and install the new O-rings in the 3rd clutch O-ring grooves, then remove the tape.
2. Install the 3rd clutch, 53 mm splined washer, thrust needle bearing, needle bearing, 3rd gear, thrust needle bearing on the intermediary shaft (see page 14-321).
3. Install the 4th gear (A) using the driver (40 mm I.D.) and a press.



4. Install the 19.8 mm cotters, cotter retainer, and snap ring.
5. Install the 26.5 mm washer on the top of the intermediary shaft.

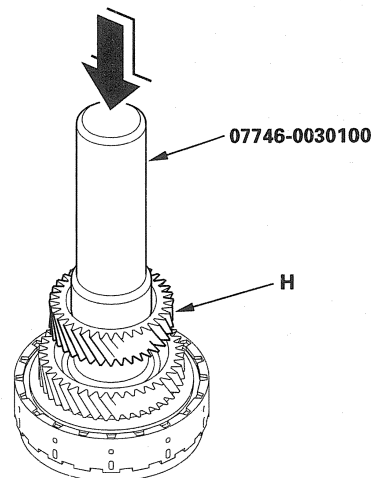
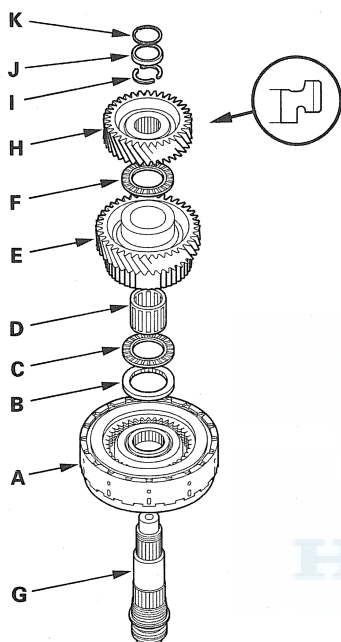


Intermediary Shaft 3rd Gear Axial Clearance Inspection

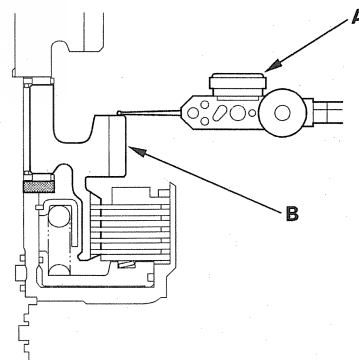
Special Tools Required

Driver, 40 mm I.D. 07746-0030100

1. Install the 3rd clutch (A), the original thickness 53 mm splined washer (B), thrust needle bearing (C), needle bearing (D), 3rd gear (E), and thrust needle bearing (F) on the Intermediary shaft (G). Do not install the O-rings during inspection.



2. Install the 4th gear (H) using the driver (40 mm I.D.) and a press.
3. Install the cotters (I), cotter retainer (J), and snap ring (K).
4. Set the dial indicator (A) on the 3rd gear (B).



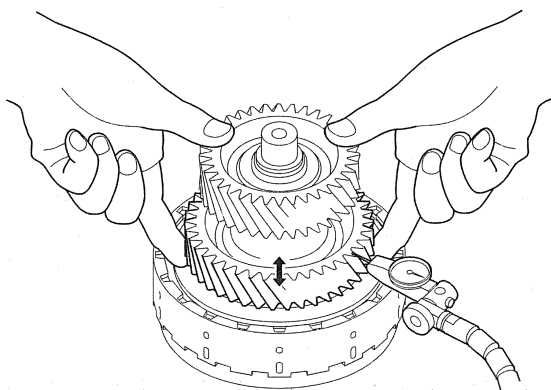
(cont'd)

Shafts and Clutches

Intermediary Shaft 3rd Gear Axial Clearance Inspection (cont'd)

5. Measure the 3rd gear axial clearance in at least three places while moving the 3rd gear. Use the average as the actual clearance.

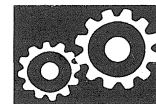
Standard: 0.005—0.045 mm (0.0002—0.0018 in.)



6. If the clearance is out of standard, remove the splined washer and measure its thickness.
7. Select and install a new splined washer, then recheck the clearance.

SPLINED WASHER, 53 mm

No.	Part Number	Thickness
A	90546-RDK-000	3.995 mm (0.1573 in.)
B	90547-RDK-000	4.015 mm (0.1581 in.)
C	90548-RDK-000	4.035 mm (0.1589 in.)
D	90549-RDK-000	4.055 mm (0.1596 in.)
E	90550-RDK-000	4.075 mm (0.1604 in.)
F	90551-RDK-000	4.095 mm (0.1612 in.)
G	90552-RDK-000	4.115 mm (0.1620 in.)
H	90553-RDK-000	4.135 mm (0.1628 in.)
I	90554-RDK-000	4.155 mm (0.1636 in.)
J	90555-RDK-000	4.175 mm (0.1644 in.)
K	90556-RDK-000	4.195 mm (0.1652 in.)
L	90557-RDK-000	4.215 mm (0.1659 in.)
M	90558-RDK-000	4.235 mm (0.1667 in.)
N	90559-RDK-000	4.255 mm (0.1675 in.)



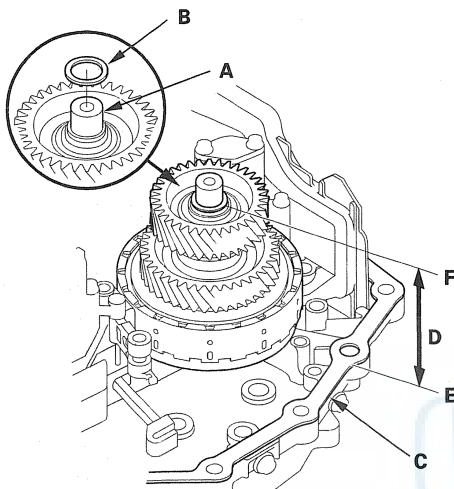
Intermediary Shaft Installation Height Inspection/Adjustment

1. Install the intermediary shaft (A) in the torque converter housing, and install the original thickness 26.5 mm washer (B) on the intermediary shaft.

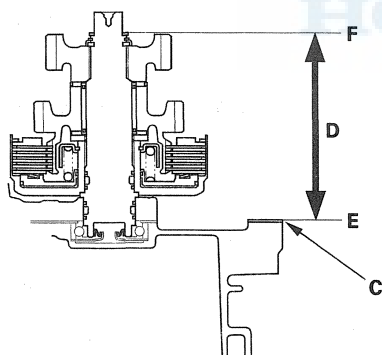
Intermediary Shaft Installation Height

Standard:

133.785—133.885 mm (5.2671—5.2711 in.)



Intermediary Shaft Cutaway View



2. Install the new gasket (C) on the torque converter housing.
3. Measure the height (D) of the intermediary shaft installation between the surface (E) of the gasket and the surface of the 26.5 mm washer (F).

4. If the measurement is out of standard, remove the 26.5 mm washer and measure its thickness.
5. Select and install a new washer, then recheck the installation height.

WASHER, 26.5 mm

No.	Part Number	Thickness
A	90564-RDK-000	1.05 mm (0.041 in.)
B	90565-RDK-000	1.13 mm (0.044 in.)
C	90566-RDK-000	1.21 mm (0.048 in.)
D	90567-RDK-000	1.29 mm (0.051 in.)
E	90568-RDK-000	1.37 mm (0.054 in.)
F	90569-RDK-000	1.45 mm (0.057 in.)
G	90570-RDK-000	1.53 mm (0.060 in.)
H	90571-RDK-000	1.61 mm (0.063 in.)
I	90572-RDK-000	1.69 mm (0.067 in.)
J	90573-RDK-000	1.77 mm (0.070 in.)
K	90574-RDK-000	1.85 mm (0.073 in.)
L	90575-RDK-000	1.93 mm (0.076 in.)
M	90576-RDK-000	2.01 mm (0.079 in.)
N	90577-RDK-000	2.09 mm (0.082 in.)

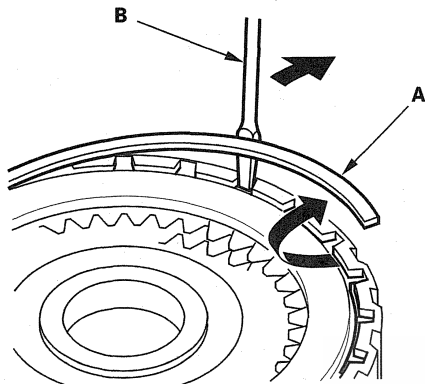
Shafts and Clutches

Clutch Disassembly

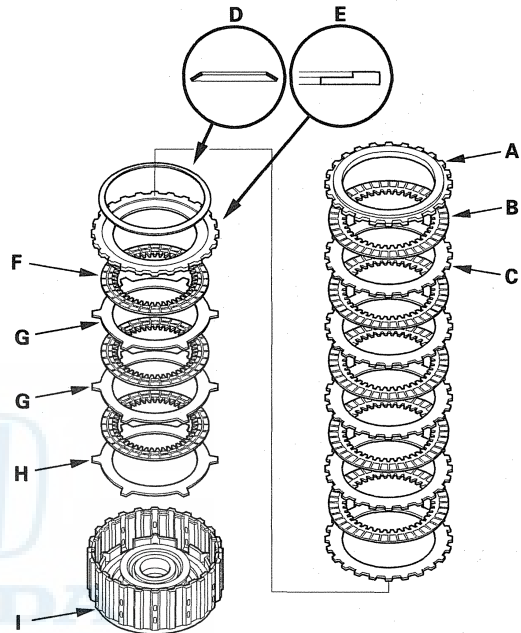
Special Tools Required

- Clutch spring compressor attachment
07LAE-PX40100 or 07HAE-PL50101
- Clutch spring compressor bolt assembly
07GAE-PG40200 or 07GAE-PG4020A

1. Remove the snap ring (A), with a screwdriver (B).



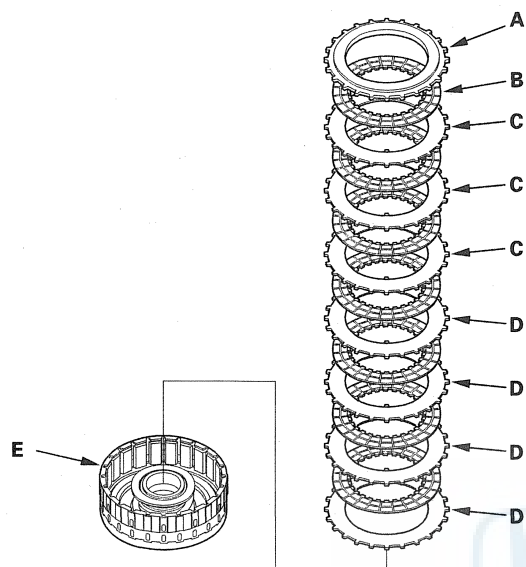
2. Remove the 1st clutch end-plate (A), 1st clutch discs (B) (5), 1st clutch wave-plates (C) (5), disc spring (D), 1st-hold clutch plate B (E), 1st-hold clutch discs (F) (3), 1st-hold clutch wave-plates (G) (2), and 1st-hold clutch flat-plate (H) from the 1st/1st-hold clutch drum (I).



3. Make reference marks on the clutch wave-plates.

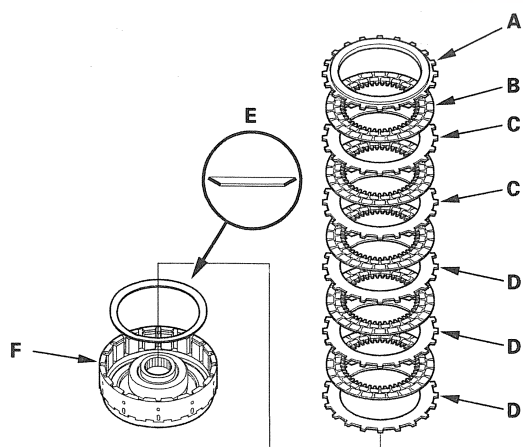


4. Remove the clutch end-plate (A), clutch discs (B) (7), clutch wave-plates (C) (3), and clutch flat-plates (D) (4) from the 2nd clutch drum (E).



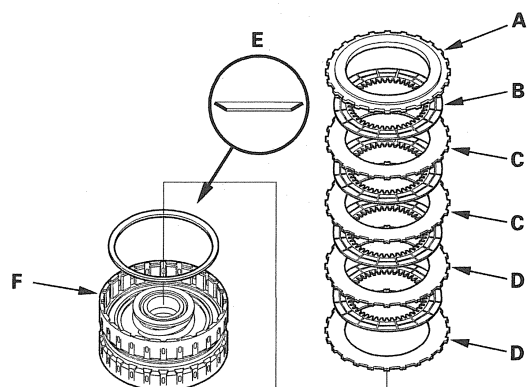
5. Make reference marks on the clutch wave-plates.

6. Remove the clutch end-plate (A), clutch discs (B) (5), clutch wave-plates (C) (2), clutch flat-plates (D) (3), and disc spring (E) from the 3rd clutch drum (F).



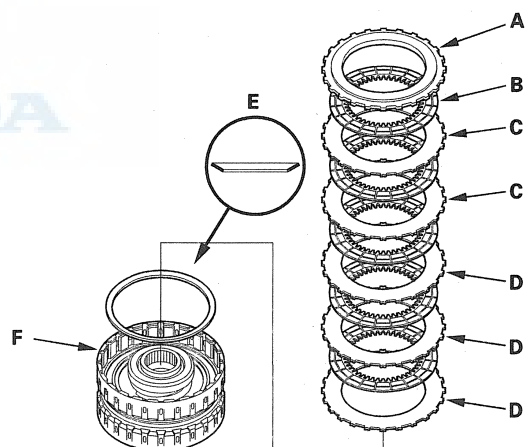
7. Make reference marks on the clutch wave-plates.

8. Remove the clutch end-plate (A), clutch discs (B) (4), clutch wave-plates (C) (2), clutch flat-plates (D) (2), and disc spring (E) from the 4th clutch drum (F).



9. Make reference marks on the clutch wave-plates.

10. Remove the clutch end-plate (A), clutch discs (B) (5), clutch wave-plates (C) (2), clutch flat-plates (D) (3), and disc spring (E) from the 5th clutch drum (F).



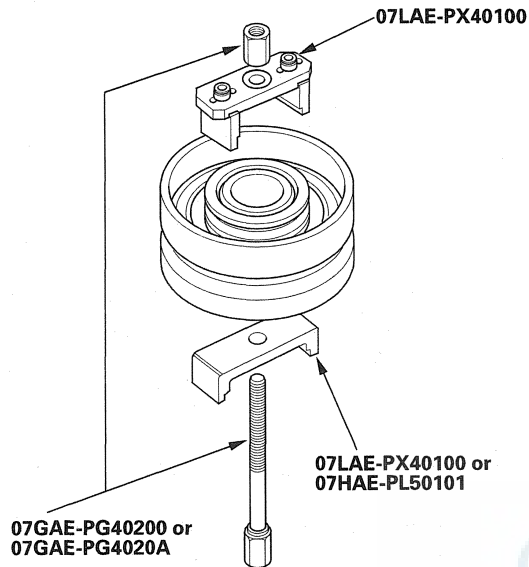
11. Make reference marks on the clutch wave-plates.

(cont'd)

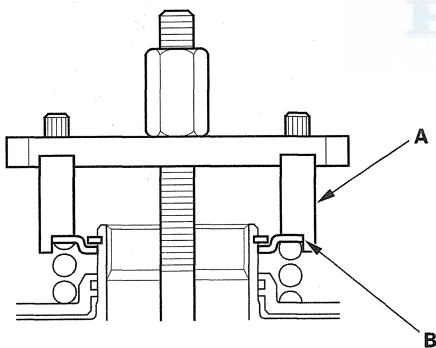
Shafts and Clutches

Clutch Disassembly (cont'd)

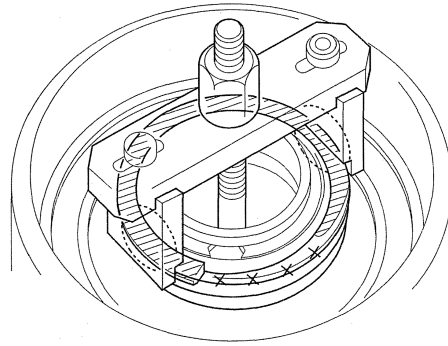
12. Install the clutch spring compressor attachment and the clutch spring compressor bolt assembly.



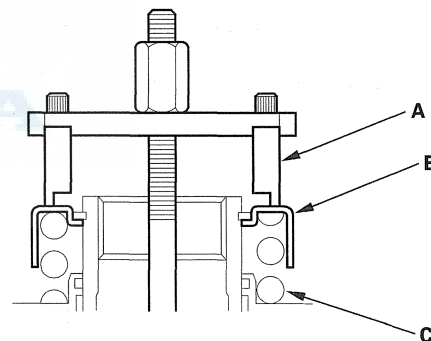
13. Be sure the clutch spring compressor attachment (A) is adjusted to have full contact with the spring retainer (B) on the 1st, 2nd, and 4th clutches.

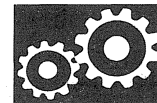


14. If either end of the clutch spring compressor attachment is set over an area of the spring retainer that is unsupported by the return spring, the retainer may be damaged.

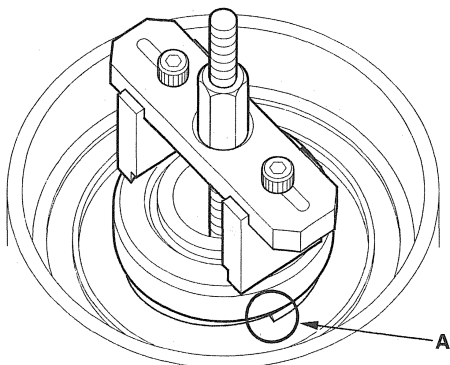


15. Set the clutch spring compressor attachment (A) on the spring retainer (B) of the 3rd and 5th clutches so the clutch spring compressor attachment works on the clutch return spring (C).

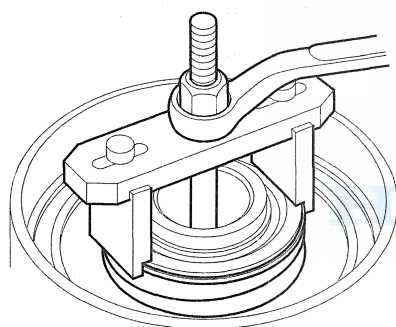




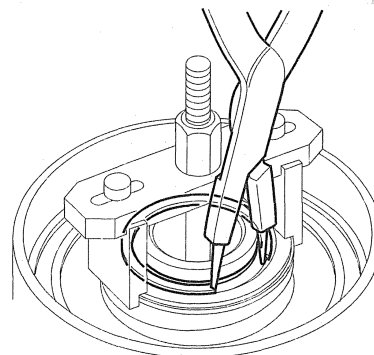
16. If either end of the clutch spring compressor attachment is not set over the clutch return spring end (A), the retainer may be damaged.



17. Compress the return spring until the snap ring can be removed.

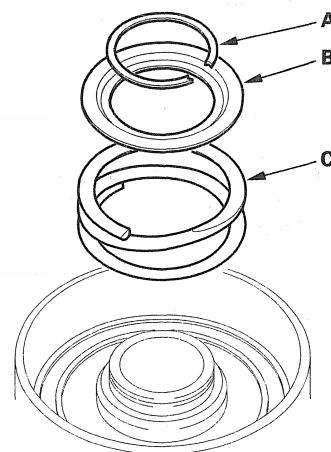


18. Remove the snap ring with the snap ring pliers.



19. Remove the clutch spring compressor attachment.

20. Remove the snap ring (A), spring retainer (B), and return spring (C).

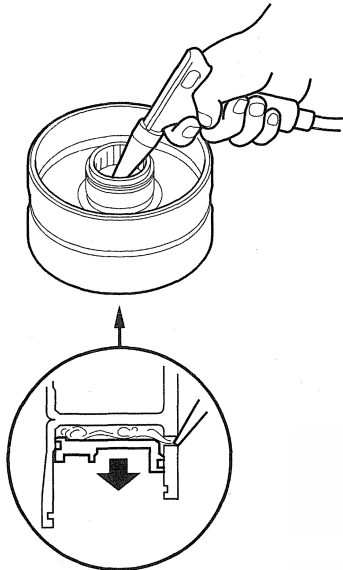


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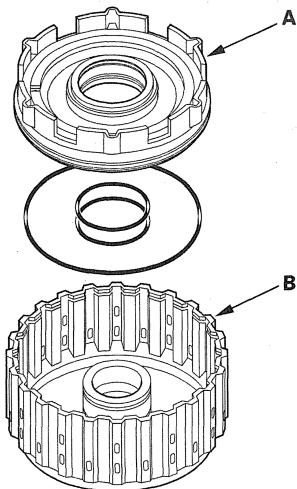
Shafts and Clutches

Clutch Disassembly (cont'd)

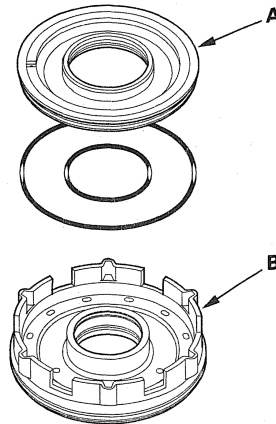
21. Wrap a shop rag around the clutch drum, and apply air pressure to the fluid passage to remove the piston. Place a finger tip on the other passage while applying air pressure.



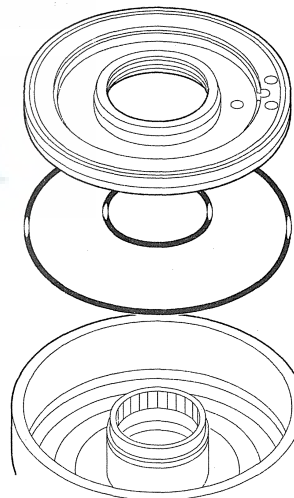
22. Remove the 1st/1st-hold clutch piston (A) from the clutch drum (B), and remove the O-rings from the 1st clutch piston.



23. Remove the 1st-hold clutch piston (A) from the 1st clutch piston (B), and remove the O-rings from the 1st-hold clutch piston.



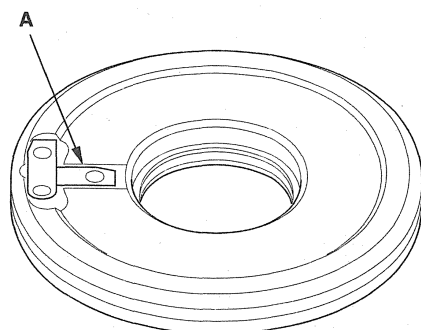
24. Remove the clutch piston, and remove the O-rings from the 2nd, 3rd, 4th, and 5th clutch pistons.





Clutch Inspection

1. Inspect the clutch pistons and clutch piston check valves (A).



2. If the clutch piston check valve is loose or damaged, replace the clutch piston.
3. Check the spring retainer for wear and damage.
4. If the spring retainer is worn or damaged, replace it.
5. Inspect the clutch discs, clutch plates, and clutch end-plate for wear, damage, and discoloration.

Clutch Discs:

Standard Thickness: 1.94 mm (0.076 in.)

Clutch Flat-plates and Clutch Wave-plates

Standard Thickness:

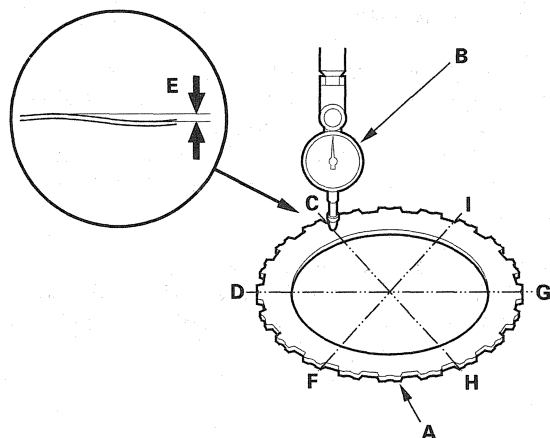
1st Clutch:	1.6 mm (0.063 in.)
1st-hold Clutch:	1.8 mm (0.071 in.)
2nd Clutch:	1.8 mm (0.071 in.)
3rd Clutch:	2.0 mm (0.079 in.)
4th Clutch:	1.8 mm (0.071 in.)
5th Clutch:	1.6 mm (0.063 in.)

6. If the clutch discs are worn or damaged, replace them as a set. If the clutch discs are replaced, inspect the clearance between the clutch end-plate and the top disc.
7. If any plate is worn, damaged, or discolored, replace the damaged plate with a new plate, and inspect the other wave-plates for a phase difference. If the clutch plate is replaced, inspect the clearance between the clutch end-plate and the top disc.
8. If the clutch end-plate is worn, damaged, or discolored, inspect the clearance between the clutch end-plate and the top disc, then replace the clutch end-plate.

Shafts and Clutches

Clutch Wave-plate Phase Difference Inspection

1. Place the clutch wave-plate (A) on a surface plate, and set a dial indicator (B) on the wave-plate.

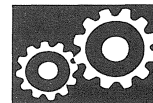


2. Find the bottom (C) of a phase difference of the wave-plate, zero the dial indicator and make a reference mark on the bottom of the wave-plate.
3. Rotate the clutch wave-plate of the 1st, 1st-hold, 2nd, 4th, and 5th clutches about 60-degrees apart from the bottom while holding the wave-plate by its circumference, and rotate the 3rd clutch wave-plate about 72-degrees or 54-degrees apart from the bottom while holding the wave-plate by its circumference. The dial indicator should be at the top (D) of a phase difference. Do not rotate the wave-plate while holding its surface, always rotate it by holding its circumference.
4. Read the dial indicator. The dial indicator reads the phase difference (E) of the wave-plate between the bottom and top.

Standard Phase Difference

1st Clutch:	0.17—0.30 mm (0.007—0.012 in.)
1st-hold Clutch:	0.10—0.20 mm (0.004—0.008 in.)
2nd Clutch:	0.11—0.21 mm (0.004—0.008 in.)
3rd Clutch:	0.12—0.24 mm (0.005—0.009 in.)
4th Clutch:	0.12—0.24 mm (0.005—0.009 in.)
5th Clutch:	0.12—0.22 mm (0.005—0.009 in.)

5. Rotate the wave-plate of the 1st, 1st-hold, 2nd, 4th, and 5th clutches about 60-degrees, and the 3rd clutch wave-plate about 54-degrees or 72-degrees. The dial indicator should be at the bottom of a phase difference (F and G), and zero the dial indicator.
6. Measure the phase difference at the other two tops (H and I) of the wave-plate by following steps 3 thru 5.
7. If the two values of the three measurements are within the standard, the wave-plate is OK. If the two values of the three measurements are out of the standard, replace the wave-plate.

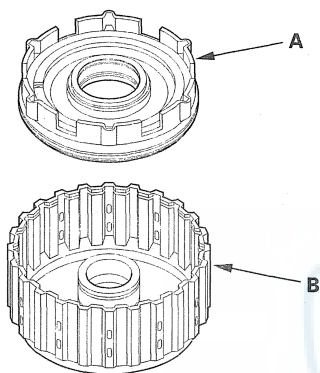


Clutch Clearance Inspection

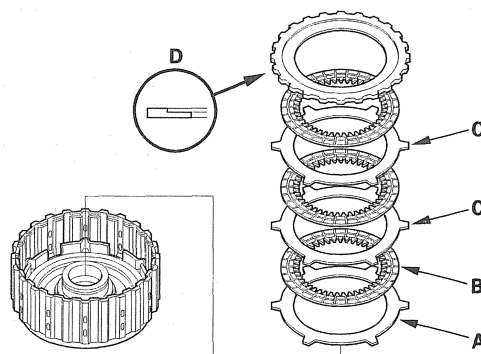
Special Tools Required

Clutch compressor attachment 07ZAE-PRP0100

1. Inspect the clutch piston, discs, plates, and end-plate for wear and damage (see page 14-331), and inspect the clutch wave-plate phase difference (see page 14-332), if necessary.
2. Install the 1st-hold clutch piston in the 1st clutch piston, and install 1st/1st-hold clutch piston (A) in the 1st/1st-hold clutch drum (B). Do not install the O-rings on the clutch pistons during inspection.

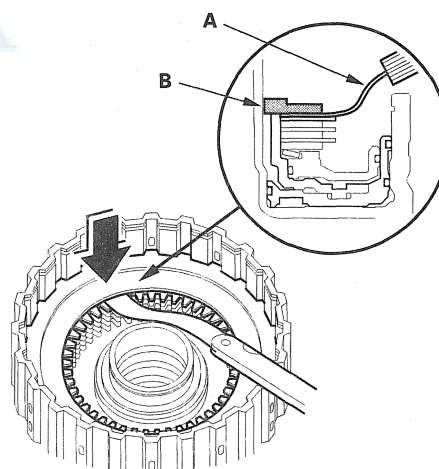


3. Install the 1st-hold clutch flat-plate (A), alternately install the clutch discs (B) (3) and the 1st-hold clutch wave-plates (C) (2), then install 1st-hold clutch plate B (D) with the flat side down in the direction shown.



4. Measure the 1st-hold clutch plate B-to-top-disc clearance with a feeler gauge (A) while pressing 1st-hold clutch plate B down. Take measurements in at least three places, and use the average as the actual clearance.

1st-hold Clutch Plate B-to-Top-Disc Clearance:
Service Limit: 0.6—1.0 mm (0.024—0.039 in.)



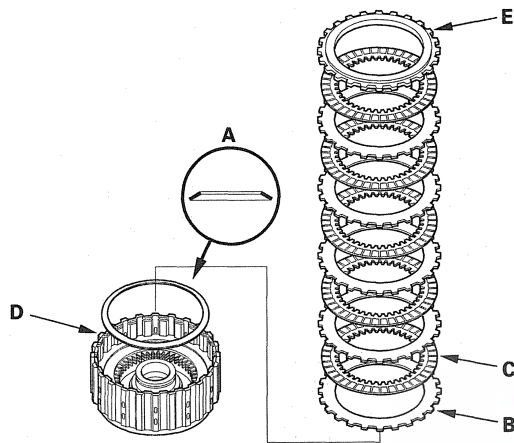
5. If the clearance is out of standard, replace the 1st-hold clutch plates and discs as a set, and recheck.

(cont'd)

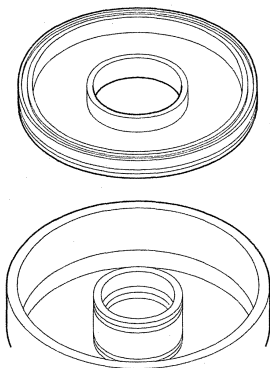
Shafts and Clutches

Clutch Clearance Inspection (cont'd)

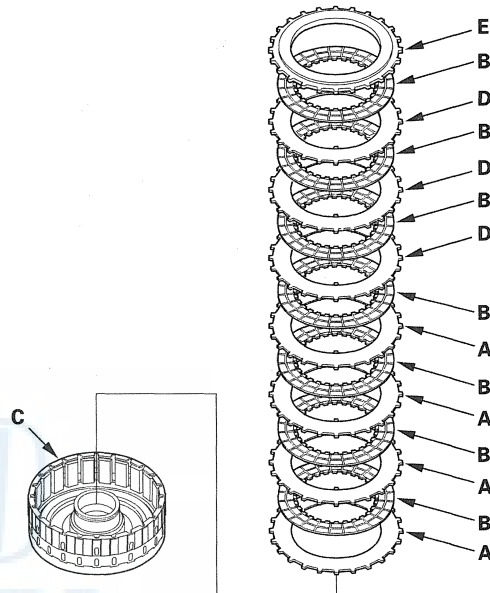
6. Install the disc spring (A) on 1st-hold clutch plate B in the direction shown. Starting with the 1st clutch wave-plate, alternately install the wave-plates (B) (5) and discs (C) (5) in the 1st clutch drum (D), then install the clutch end-plate (E) with the flat side down.



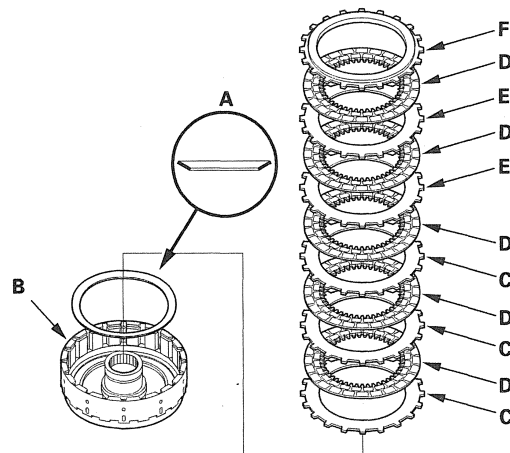
7. Install the clutch pistons in the 2nd, 3rd, 4th, and 5th clutch drums. Do not install the O-rings on the clutch pistons during inspection.



8. Starting with the 2nd clutch flat-plate, alternately install the flat-plates (A) (4) and discs (B) (4) in the 2nd clutch drum (C), and alternately install the wave-plates (D) (3) and discs (B) (3). Install the clutch end-plate (E) with the flat side down on the top disc.

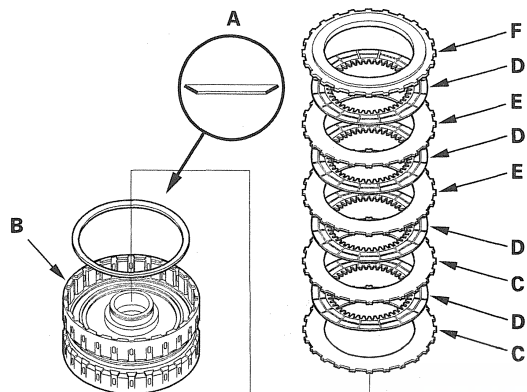


9. Install the disc spring (A) in the 3rd clutch drum (B) in the direction shown. Starting with the 3rd clutch flat-plate, alternately install the flat-plates (C) (3) and discs (D) (3), and alternately install the wave-plates (E) (2) and discs (D) (2). Install the clutch end-plate (F) with the flat side down on the top disc.

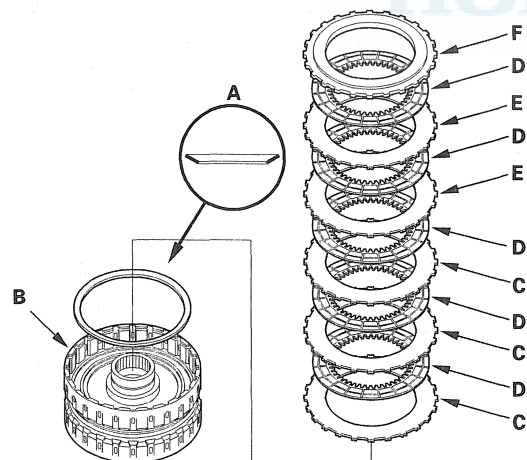




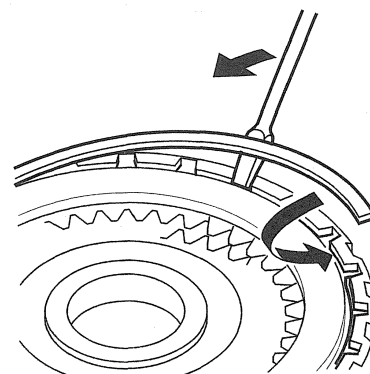
10. Install the disc spring (A) in the 4th clutch drum (B) in the direction shown. Starting with the 4th clutch flat-plate, alternately install the flat-plates (C) (2) and discs (D) (2), and alternately install the wave-plates (E) (2) and discs (D) (2). Install the clutch end-plate (F) with the flat side down on the top disc.



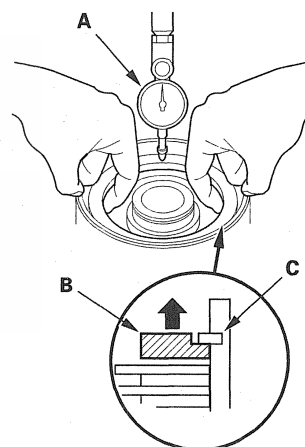
11. Install the disc spring (A) in the 5th clutch drum (B) in the direction shown. Starting with the 5th clutch flat-plate, alternately install the flat-plates (C) (3) and discs (D) (3), and alternately install the wave-plates (E) (2) and discs (D) (2). Install the clutch end-plate (F) with the flat side down on the top disc.



12. Install the snap ring with a screwdriver to secure the clutch end-plate.



13. Set a dial indicator (A) on the clutch end-plate (B).



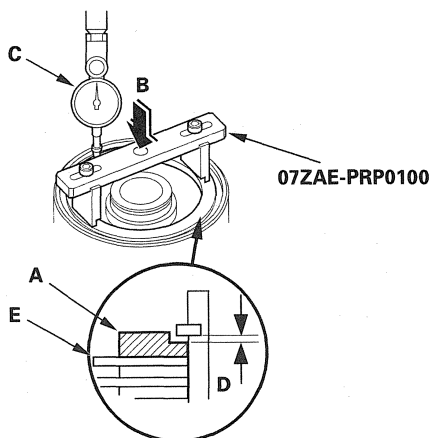
14. Zero the dial indicator with the clutch end-plate lifted up to the snap ring (C).

(cont'd)

Shafts and Clutches

Clutch Clearance Inspection (cont'd)

15. Release the clutch end-plate to lower the clutch end-plate, then put the clutch compressor attachment on the end-plate (A).



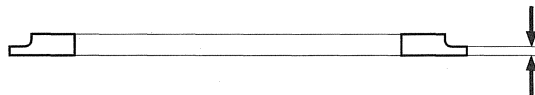
16. Press the clutch compressor attachment down with 150—160 N (15—16 kgf, 33—35 lbf) (B) using a force gauge, and read the dial indicator (C).
17. The dial indicator reads the clearance (D) between the clutch end-plate and the top disc (E). Take measurements in at least three places, and use the average as the actual clearance.

Clutch End-Plate-to-Top Disc Clearance

Service Limit:

- 1st Clutch: 1.15—1.35 mm (0.045—0.053 in.)
2nd Clutch: 1.05—1.25 mm (0.041—0.049 in.)
3rd Clutch: 0.80—1.00 mm (0.031—0.039 in.)
4th Clutch: 0.70—0.90 mm (0.028—0.035 in.)
5th Clutch: 0.75—0.95 mm (0.030—0.037 in.)

18. If the clearance is out of the service limit, select a new clutch end-plate from the following table.



1ST CLUTCH END-PLATES

Plate No.	Part Number	Thickness
1	22551-RDK-003	3.1 mm (0.122 in.)
2	22552-RDK-003	3.2 mm (0.126 in.)
3	22553-RDK-003	3.3 mm (0.130 in.)
4	22554-RDK-003	3.4 mm (0.134 in.)
5	22555-RDK-003	3.5 mm (0.138 in.)
6	22556-RDK-003	3.6 mm (0.142 in.)
7	22557-RDK-003	3.7 mm (0.146 in.)
8	22558-RDK-003	3.8 mm (0.150 in.)
9	22559-RDK-003	3.9 mm (0.154 in.)

2ND CLUTCH END-PLATES

Plate No.	Part Number	Thickness
1	22561-RDK-003	2.1 mm (0.083 in.)
2	22562-RDK-003	2.2 mm (0.087 in.)
3	22563-RDK-003	2.3 mm (0.091 in.)
4	22564-RDK-003	2.4 mm (0.094 in.)
5	22565-RDK-003	2.5 mm (0.098 in.)
6	22566-RDK-003	2.6 mm (0.102 in.)
7	22567-RDK-003	2.7 mm (0.106 in.)
8	22568-RDK-003	2.8 mm (0.110 in.)
9	22569-RDK-003	2.9 mm (0.114 in.)



3RD CLUTCH END-PLATES

Plate No.	Part Number	Thickness
1	22591-RDK-A01	2.1 mm (0.083 in.)
2	22592-RDK-A01	2.2 mm (0.087 in.)
3	22593-RDK-A01	2.3 mm (0.091 in.)
4	22594-RDK-A01	2.4 mm (0.094 in.)
5	22595-RDK-A01	2.5 mm (0.098 in.)
6	22596-RDK-A01	2.6 mm (0.102 in.)
7	22597-RDK-A01	2.7 mm (0.106 in.)
8	22598-RDK-A01	2.8 mm (0.110 in.)
9	22599-RDK-A01	2.9 mm (0.114 in.)

4TH and 5TH CLUTCH END-PLATES

Plate No.	Part Number	Thickness
1	22571-RJB-003	2.1 mm (0.083 in.)
2	22572-RJB-003	2.2 mm (0.087 in.)
3	22573-RJB-003	2.3 mm (0.091 in.)
4	22574-RJB-003	2.4 mm (0.094 in.)
5	22575-RJB-003	2.5 mm (0.098 in.)
6	22576-RJB-003	2.6 mm (0.102 in.)
7	22577-RJB-003	2.7 mm (0.106 in.)
8	22578-RJB-003	2.8 mm (0.110 in.)
9	22579-RJB-003	2.9 mm (0.114 in.)

19. Install the new clutch end-plate, and recheck the clearance. If the thickest clutch end-plate is installed, but the clearance is still over the service limit, replace the clutch discs and plates.

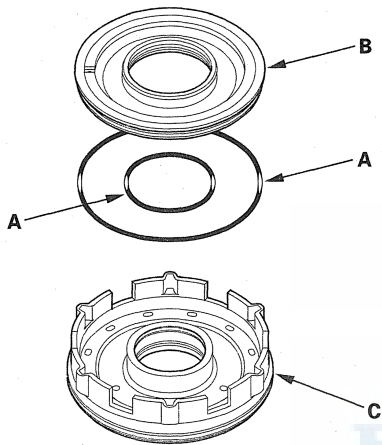
Shafts and Clutches

Clutch Reassembly

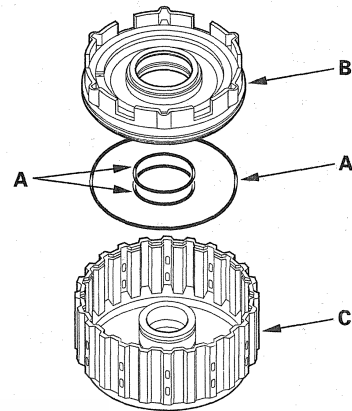
Special Tools Required

- Clutch spring compressor attachment
07LAE-PX40100 or 07HAE-PL50101
- Clutch spring compressor bolt assembly
07GAE-PG40200 or 07GAE-PG4020A

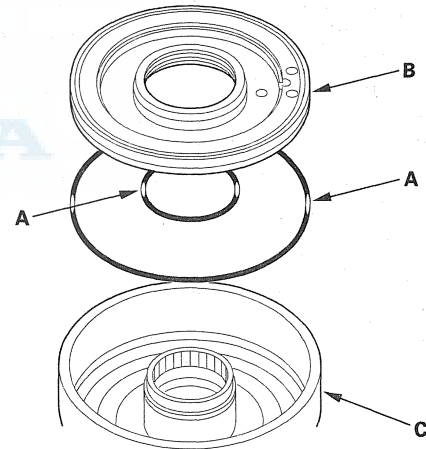
1. Soak the clutch discs thoroughly in ATF for a minimum of 30 minutes.
2. Install the new O-rings (A) on the 1st-hold clutch piston (B), and install the 1st-hold clutch piston in the 1st clutch piston (C).



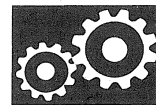
3. Install the new O-rings (A) on the 1st clutch piston (B), and install the 1st/1st-hold clutch piston in the 1st/1st-hold clutch drum (C) while applying pressure and rotating to ensure proper seating. Do not pinch the O-ring.



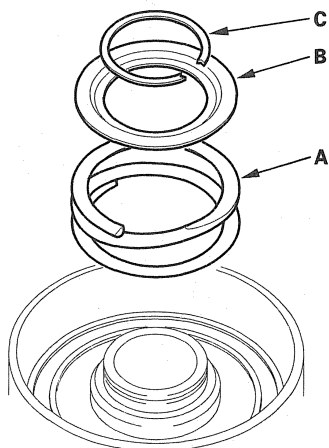
4. Install the O-rings (A) on the 2nd, 3rd, 4th, and 5th clutch piston (B).



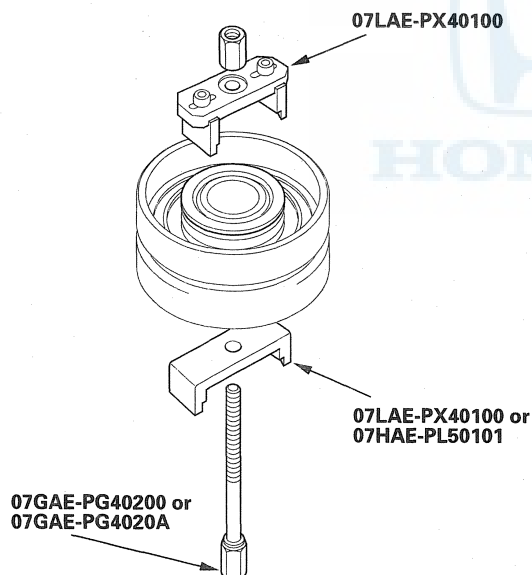
5. Install the clutch pistons in the clutch drums (C) while applying pressure and rotating to ensure proper seating. Do not pinch the O-ring.



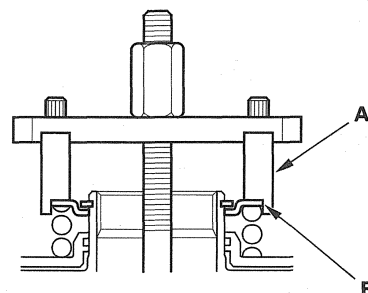
6. Install the return spring (A) and spring retainer (B), and position the snap ring (C) on the spring retainer.



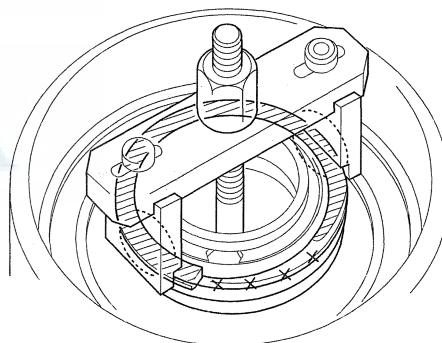
7. Install the clutch spring compressor attachments and the clutch spring compressor bolt assembly.



8. Be sure the clutch spring compressor attachment (A) is adjusted to have full contact with the spring retainer (B) on the 1st, 2nd, and 4th clutches.



9. If either end of the clutch spring compressor attachment is set over an area of the spring retainer that is unsupported by the return spring, the retainer may be damaged.

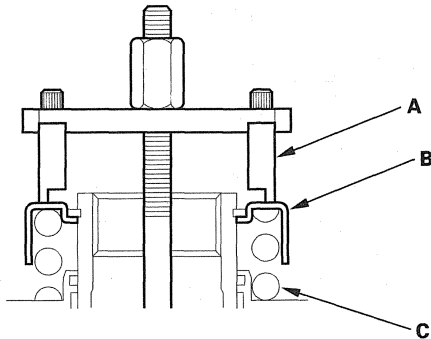


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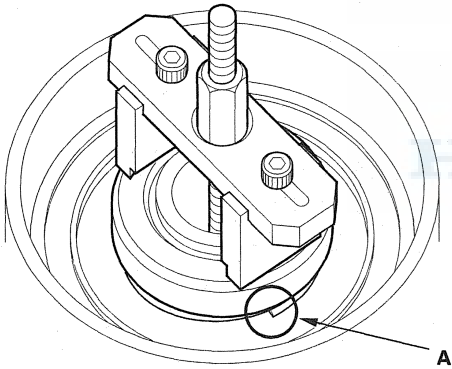
Shafts and Clutches

Clutch Reassembly (cont'd)

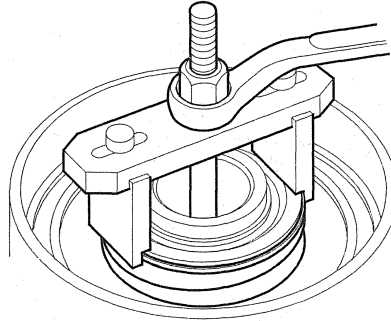
10. Set the clutch spring compressor attachment (A) on the spring retainer (B) of the 3rd and 5th clutches so the clutch spring compressor attachment works on the clutch return spring (C).



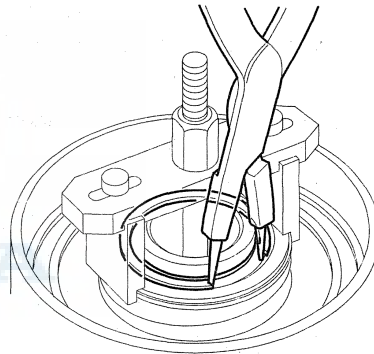
11. If either end of the clutch spring compressor attachment is not set over the clutch return spring end (A), the retainer may be damaged.



12. Compress the return spring until the snap ring can be installed.



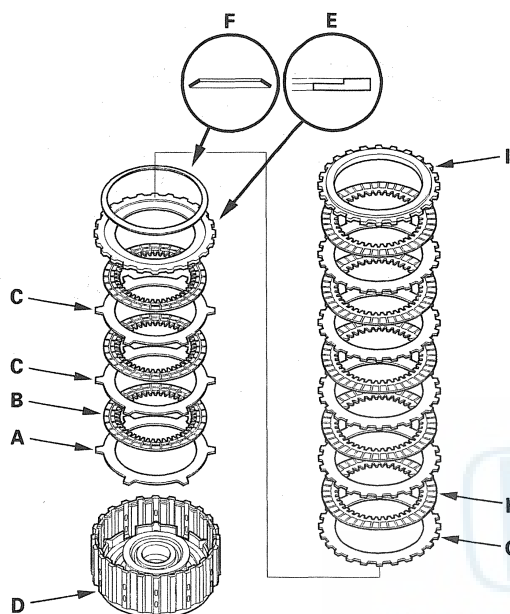
13. Install the snap ring with the snap ring pliers.



14. Remove the clutch spring compressor attachments and the clutch spring compressor bolt assembly.

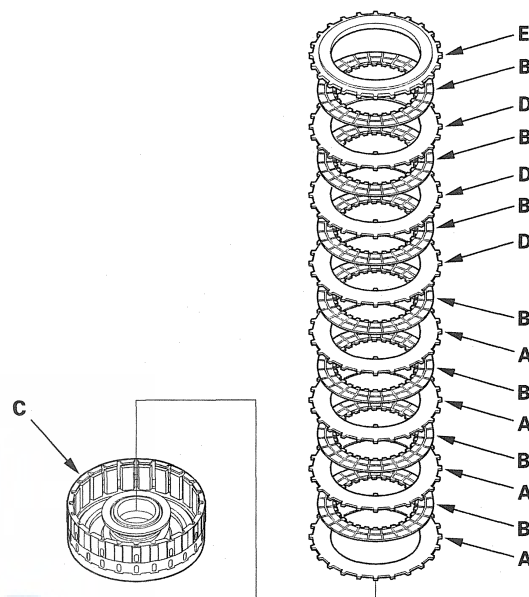


15. Install the 1st-hold clutch flat-plate (A), alternately install the clutch discs (B) (3) and the 1st-hold clutch wave-plates (C) (2) in the 1st/1st-hold clutch drum (D), then install 1st-hold clutch plate B (E) with the flat side down in the direction shown.

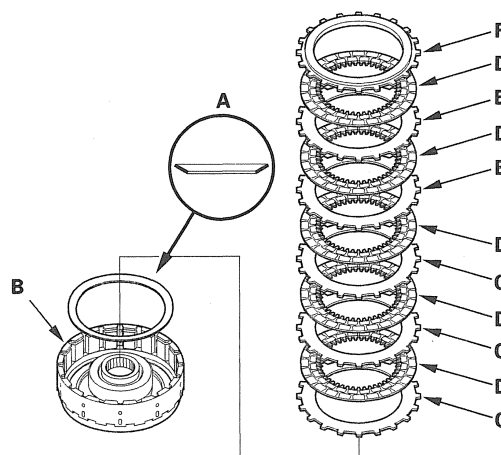


16. Install the disc spring (F) on 1st-hold clutch plate B in the direction shown. Starting with the 1st clutch wave-plate, alternately install the wave-plates (G) (5) and discs (H) (5), then install the clutch end-plate (I) with the flat side down on the top disc.

17. Starting with the 2nd clutch flat-plate, alternately install the flat-plates (A) (4) and discs (B) (4) in the 2nd clutch drum (C), and alternately install the wave-plates (D) (3) and discs (B) (3). Install the clutch end-plate (E) with the flat side down on the top disc.



18. Install the disc spring (A) in the 3rd clutch drum (B) in the direction shown. Starting with the 3rd clutch flat-plate, alternately install the flat-plates (C) (3) and discs (D) (3), and alternately install the wave-plates (E) (2) and discs (D) (2). Install the clutch end-plate (F) with the flat side down on the top disc.

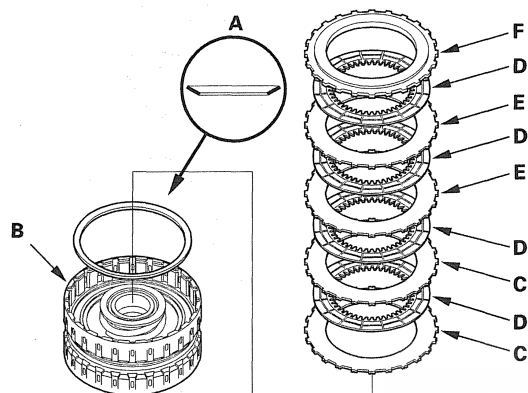


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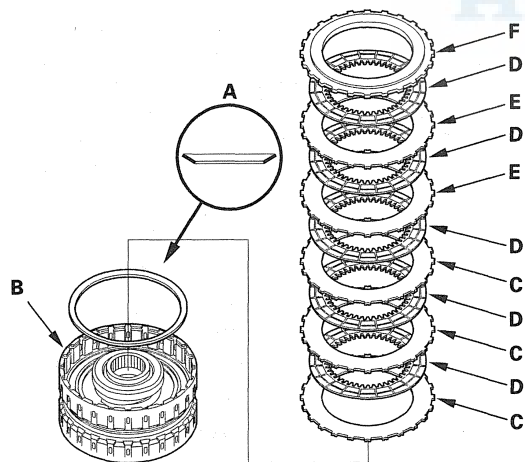
Shafts and Clutches

Clutch Reassembly (cont'd)

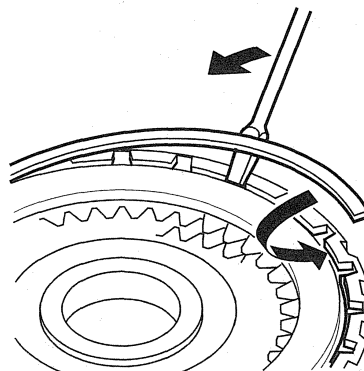
19. Install the disc spring (A) in the 4th clutch drum (B) in the direction shown. Starting with the 4th clutch flat-plate, alternately install the flat-plates (C) (2) and discs (D) (2), and alternately install the wave-plates (E) (2) and discs (D) (2). Install the clutch end-plate (F) with the flat side down on the top disc.



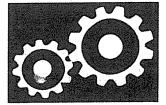
20. Install the disc spring (A) in the 5th clutch drum (B) in the direction shown. Starting with the 5th clutch flat-plate, alternately install the flat-plates (C) (3) and discs (D) (3), and alternately install the wave-plates (E) (2) and discs (D) (2). Install the clutch end-plate (F) with the flat side down on the top disc.



21. Install the snap ring with a screwdriver to secure the clutch end-plate.



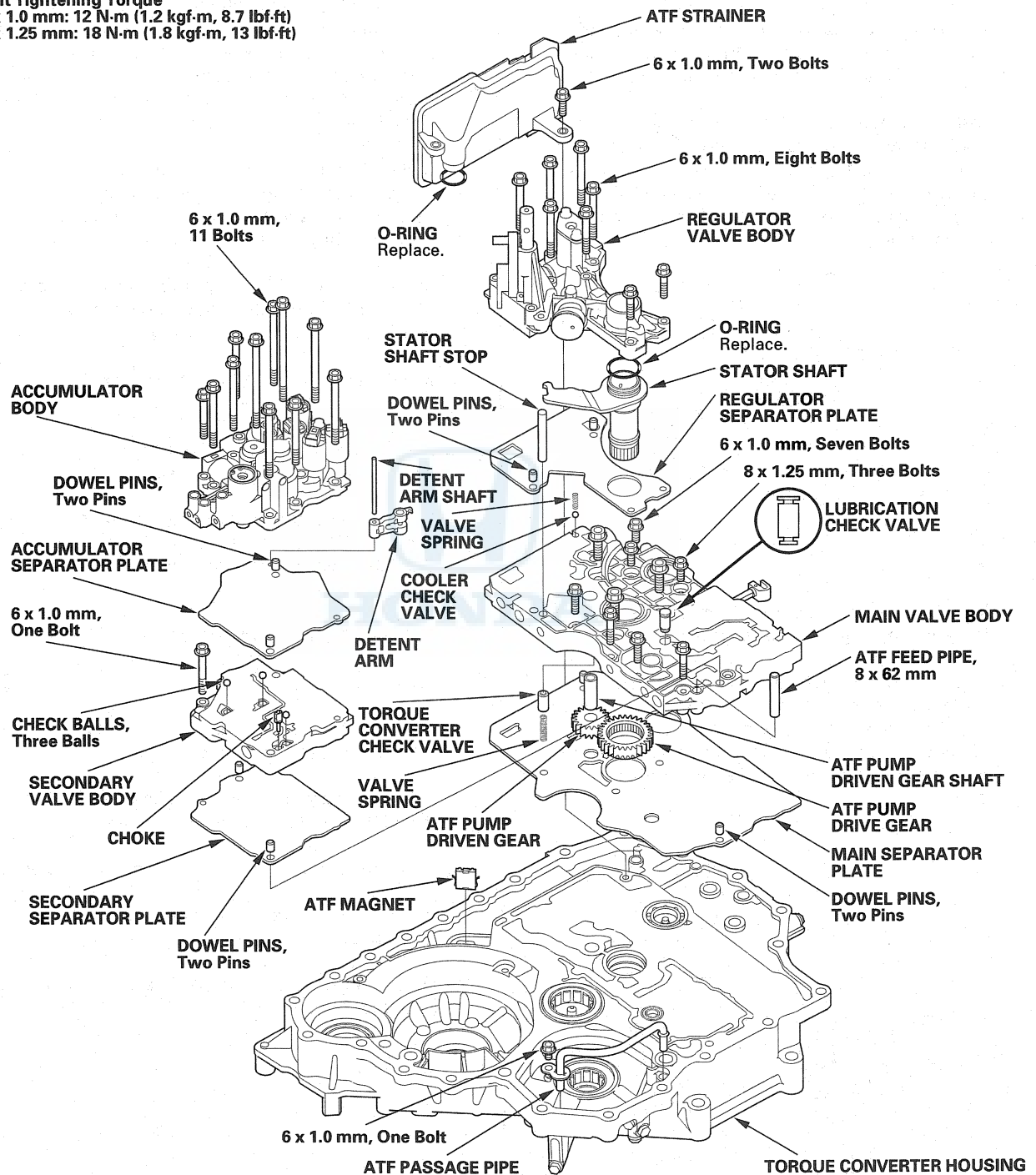
Automatic Transmission



Transmission Reassembly

Exploded View

Bolt Tightening Torque
6 x 1.0 mm: 12 N·m (1.2 kgf·m, 8.7 lbf·ft)
8 x 1.25 mm: 18 N·m (1.8 kgf·m, 13 lbf·ft)



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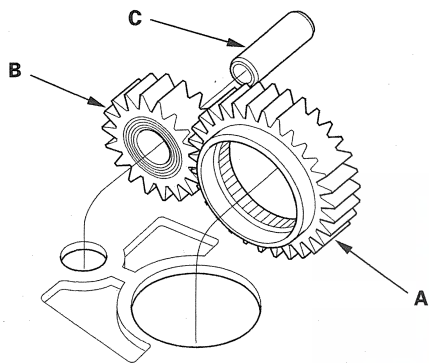
Automatic Transmission

Transmission Reassembly (cont'd)

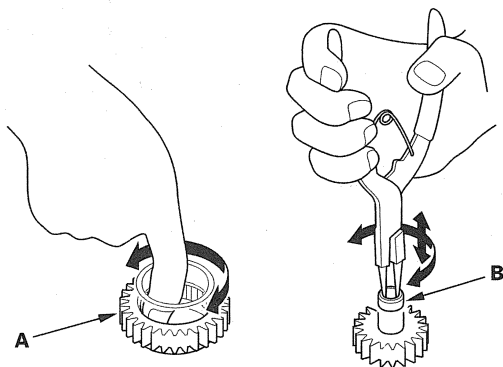
Special Tool Required

Mainshaft holder 07GAB-PF50101 or 07GAB-PF50100

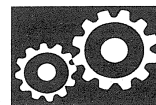
1. Make sure that the ATF magnet is cleaned and installed in the torque converter housing. Clean and install the ATF magnet, if necessary.
2. Install the main separator plate and two dowel pins on the torque converter housing. Then install the ATF pump drive gear (A), driven gear (B), and ATF pump driven gear shaft (C). Install the ATF pump driven gear with its grooved and chamfered side facing down.



3. Install the torque converter check valve spring and valve in the torque converter housing.
4. Install the main valve body (seven 6 mm bolt and three 8 mm bolts). Make sure the ATF pump drive gear (A) rotates smoothly in the normal operating direction, and the ATF pump driven gear shaft (B) moves smoothly in the axial and normal operating direction.

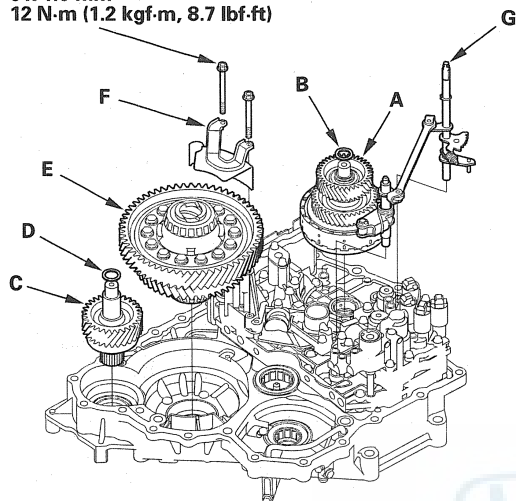


5. If the ATF pump drive gear and ATF pump driven gear shaft do not move smoothly, loosen the main valve body bolts. Realign the ATF pump driven gear shaft, and retighten the bolts to the specified torques, then recheck. Failure to align the ATF pump driven gear shaft correctly will result in a seized ATF pump drive gear or ATF pump driven gear shaft.
6. Install the lubrication check valve, cooler check valve and cooler check valve spring in the main valve body. Install the lubrication check valve in the direction shown in the exploded view.
7. Install the secondary separator plate and two dowel pins on the main valve body, and install the secondary valve body (one bolt).
8. Install the three check balls and choke in the secondary valve body.
9. Install the accumulator separator plate and two dowel pins on the secondary valve body.
10. Position the detent arm on the accumulator separator plate, and install the detent arm shaft into the detent arm through the separator plates to the main valve body.
11. Install the 8 x 62 mm ATF feed pipe in the main valve body, and install the accumulator body (11 bolts).
12. Install the regulator separator plate and two dowel pins on the main valve body.
13. Install the stator shaft with the new O-ring, and install the regulator valve body (eight bolts).
14. Install the stator shaft stop in the main valve body.
15. Install the ATF strainer with the new O-ring (two bolts).
16. Install the ATF passage pipe (one bolt) in the torque converter housing.



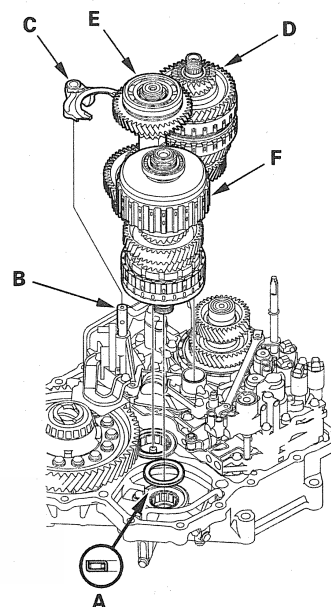
17. Install the intermediary shaft (A) into the main valve body, and install the 26.5 mm washer (B) on the top of the intermediary shaft.

6 x 1.0 mm
12 N·m (1.2 kgf·m, 8.7 lbf·ft)



18. Install the transfer output shaft (C) in the torque converter housing, and install the thrust shim (D) on the top of the transfer output shaft.
19. Install the differential assembly (E) in the torque converter housing.
20. Install the baffle plate (F), and make sure if the differential is clear of the baffle plate.
21. Install the control shaft and park lever link (G).
22. Assemble the mainshaft, countershaft, and secondary shaft.

23. Install the needle bearing (A) on the secondary shaft roller bearing in the torque converter housing.



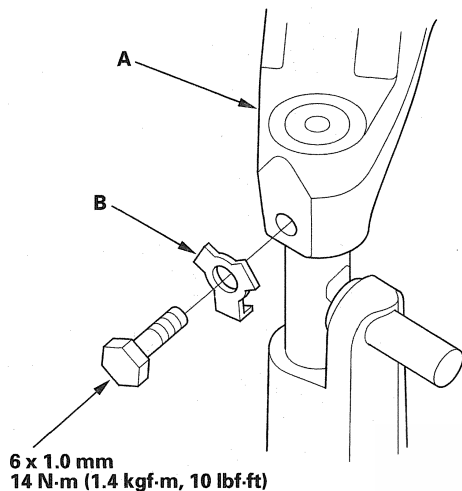
24. Turn the shift fork shaft (B) so the large chamfered hole is facing the fork bolt hole of the shift fork.
25. Engage the shift fork (C) with the reverse selector on the countershaft, and join the mainshaft (D), countershaft (E), and secondary shaft (F), then install them in the torque converter housing and shift fork on the shift fork shaft.

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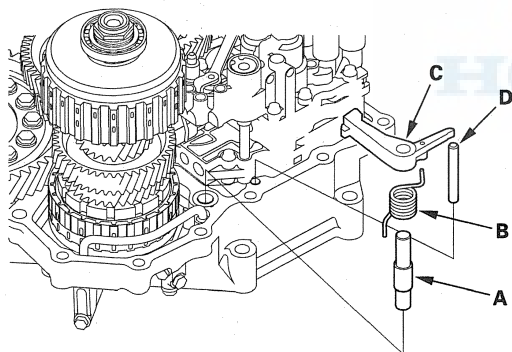
Automatic Transmission

Transmission Reassembly (cont'd)

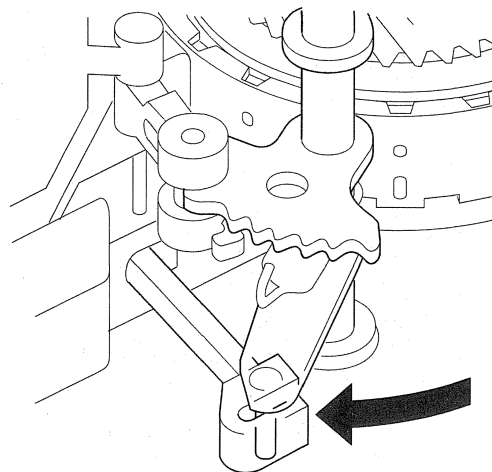
26. Secure the shift fork (A) to the shift fork shaft with the lock bolt and the new lock washer (B), then bend the lock tab of the lock washer against the bolt head.



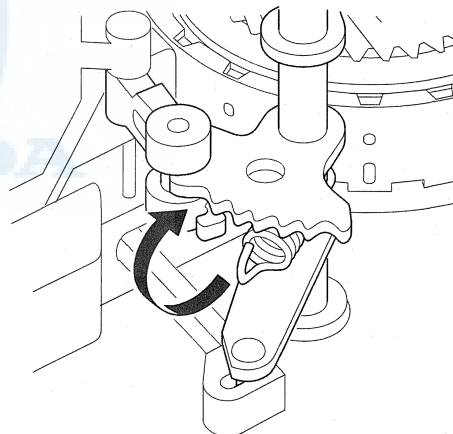
27. Install the park pawl shaft (A), pawl spring (B), park pawl (C), and park pawl stop (D).

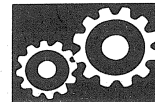


28. Align the control lever pin with the manual valve guide.

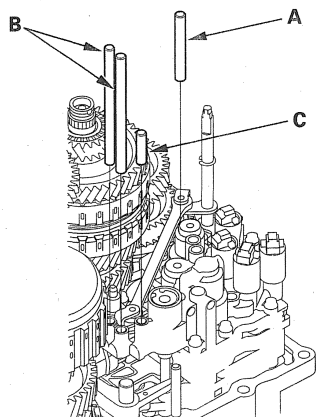


29. Hook the detent arm spring to the detent arm.

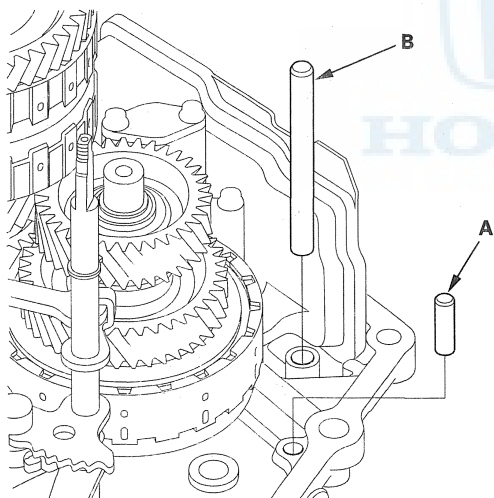




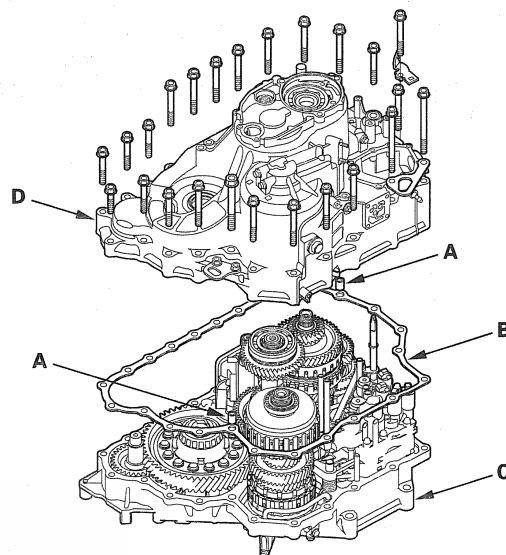
30. Install the 8 x 85 mm ATF feed pipe (A), 8 x 151.5 mm pipes (B), and 8 x 40 mm pipe (C) in the accumulator body.



31. Install the 8 x 57.5 mm ATF feed pipe (A) and 10 x 123 mm pipe (B) in the torque converter housing.

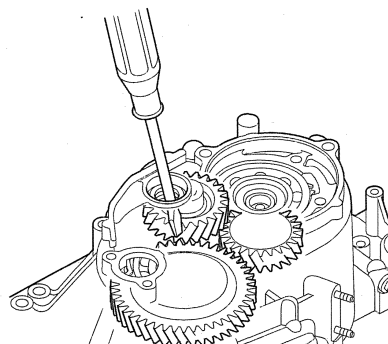


32. Install the two dowel pins (A) and the new gasket (B) on the torque converter housing (C).



33. Place the transmission housing (D) on the torque converter housing.

34. Wrap a screwdriver tip with tape to prevent damaging the reverse idler gear teeth. Engage the reverse idler gear with reverse gears by rotating the idler gear using the screwdriver.

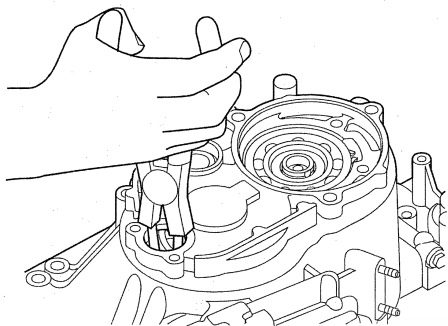


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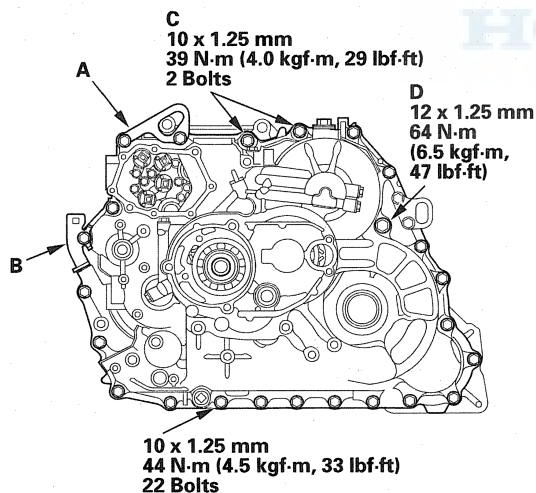
Automatic Transmission

Transmission Reassembly (cont'd)

35. While expanding the snap ring of the countershaft bearing using snap ring pliers, install the transmission housing onto the bearing part-way. Then release the snap ring pliers, and push down on the housing until it bottoms and the snap ring snaps into place in the transmission housing snap ring groove.

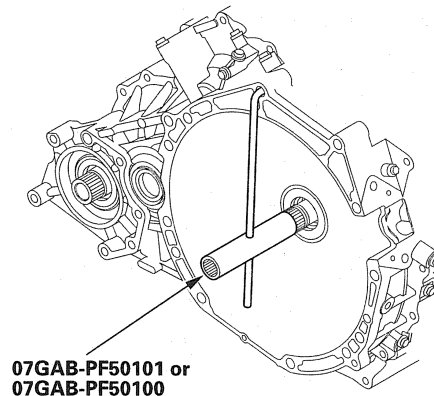


36. Install the transmission housing mounting bolts (22 bolts) along with the transmission hanger (A) and transmission ground terminal bracket (B), and tighten the bolts in two or more steps in a criss-cross pattern to 44 N·m (4.5 kgf·m, 33 lbf·ft).

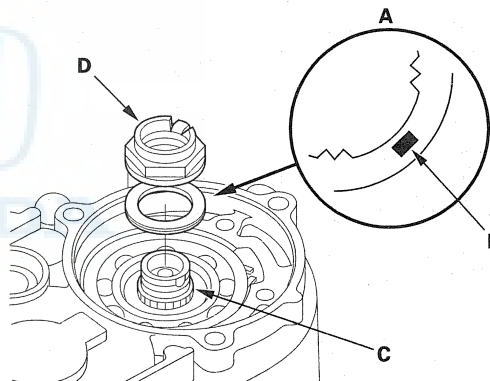


37. Install and tighten the two mounting bolts (C) to 39 N·m (4.0 kgf·m, 29 lbf·ft). Keep the mounting bolts free of grease or oil.
38. Install and tighten the special bolt (D) to 64 N·m (6.5 kgf·m, 47 lbf·ft).

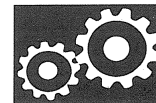
39. Install the mainshaft holder onto the mainshaft.



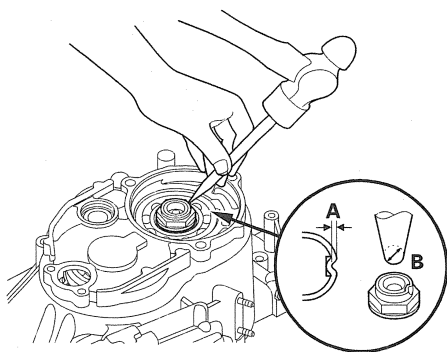
40. Install the new lock washer (A) with the marked side (B) up over the mainshaft (C), and apply ATF to surfaces of the lock washer and old locknut (D).



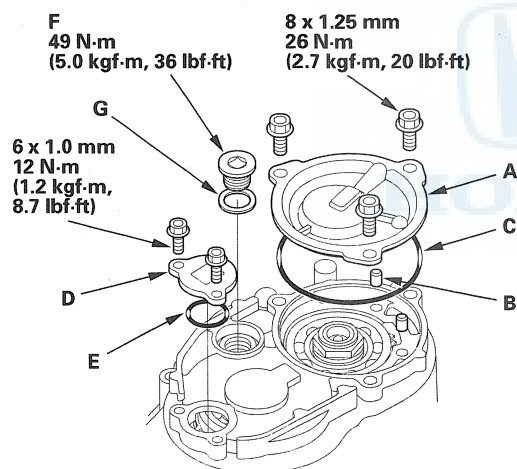
41. Install the old locknut, and tighten it to seat the lock washer to 178 N·m (18.2 kgf·m, 132 lbf·ft), then remove the old locknut.



42. Install the new locknut and tighten it to 176 N·m (18.2 kgf·m, 132 lbf·ft), then stake the locknut to a depth (A) of 0.7—1.3 mm (0.03—0.05 in.) using a 3.5 mm punch (B).



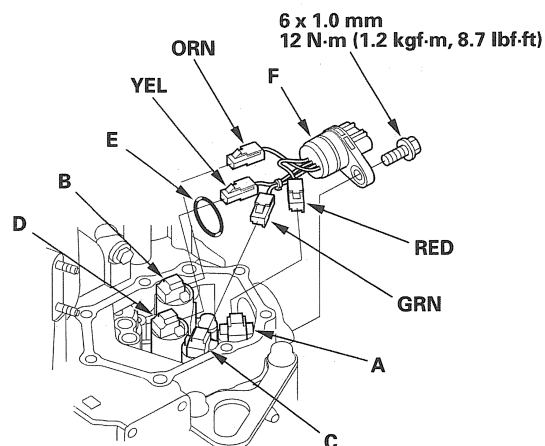
43. Install the end cover (A), dowel pin (B), and new O-ring (C).



44. Install the snap ring cap (D) with the new O-ring (E).

45. Apply thread lock sealant to the threads of the sealing plug (F), and install the sealing plug and the new sealing washer (G).

46. Install the new O-ring (E) on the solenoid harness connector (F).



47. Route the solenoid harness through the transmission housing, and install the solenoid harness connector.

48. Connect the harness terminals to the solenoids:

- RED wire connector to shift solenoid valve A.
- ORN wire connector to shift solenoid valve B.
- GRN wire connector to shift solenoid valve C.
- YEL wire connector to torque converter clutch solenoid valve (D).

49. Secure the solenoid harness connector with the bolt on the transmission housing.

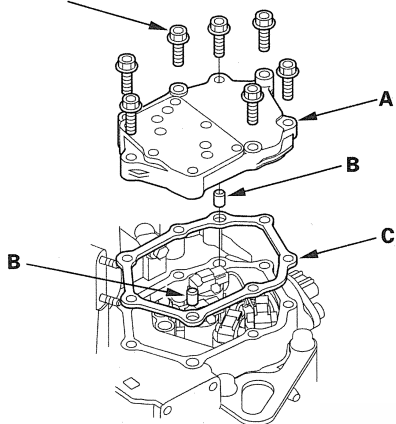
(cont'd)

Automatic Transmission

Transmission Reassembly (cont'd)

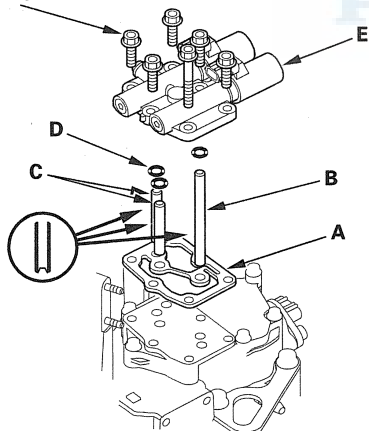
50. Install the solenoid valve cover (A) with the two dowel pins (B) and the new gasket (C), and secure it with the seven bolts.

6 x 1.0 mm
12 N·m (1.2 kgf-m, 8.7 lbf-ft)



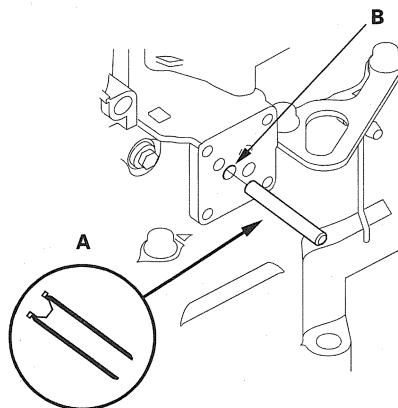
51. Place the new gasket (A) on the solenoid valve cover, then install the 8 x 105.8 mm ATF feed pipe (B) and 8 x 58.3 mm pipes (C) with their filter side into the transmission housing.

6 x 1.0 mm
12 N·m (1.2 kgf-m, 8.7 lbf-ft)

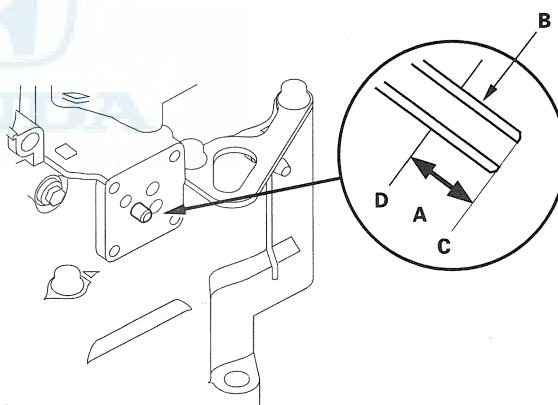


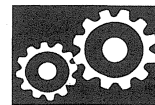
52. Install the new O-rings (D) over the ATF feed pipes, and install A/T clutch pressure control solenoid valves A and B (E).

53. Install the 8 x 53 mm ATF joint pipe (A) with the filter side into its mounting hole (B).

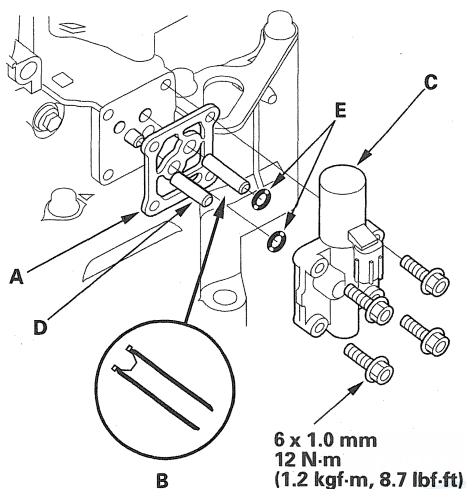


54. Check the height (A) if the 8 x 53 mm ATF joint pipe (B) between the top (C) of the pipe and solenoid valve body mounting surface (D). The height is about 7 mm (0.3 in.). If the height is over 7 mm (0.3 in.), install the pipe securely until it stops the accumulator body.





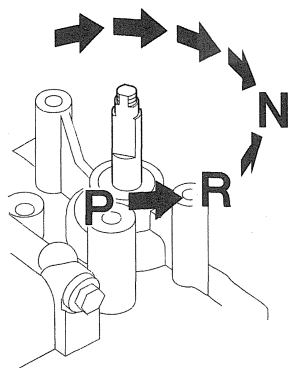
55. Install the new gasket (A) on the transmission housing. Install the 8 x 34.5 mm ATF pipe (B) with the filter side into the transmission housing, and install the 8 x 25.5 mm ATF pipe (D).



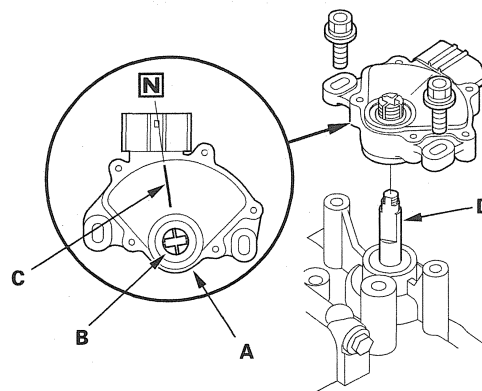
56. Install new O-rings (E) over the ATF joint pipes.

57. Install A/T clutch pressure control solenoid valve C.

58. Set the control shaft is from the P position to the N position by turning the control shaft with a 6.0 mm wrench.

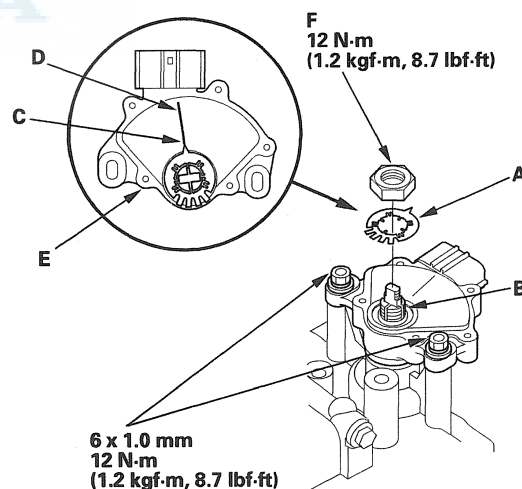


59. Set the transmission range switch (A) to the N position. The transmission range switch clicks in the N position, and the control shaft hole (B) aligns with the N positioning line (C).



60. Install the transmission range switch gently over the control shaft (D), and install the bolts loosely.

61. Install the new lock washer (A) over the control shaft (B) by aligning the projection (C) of the lock washer with the N positioning line (D) on the transmission range switch (E), and install the locknut (F).

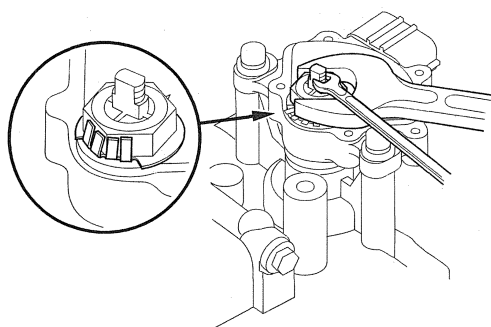


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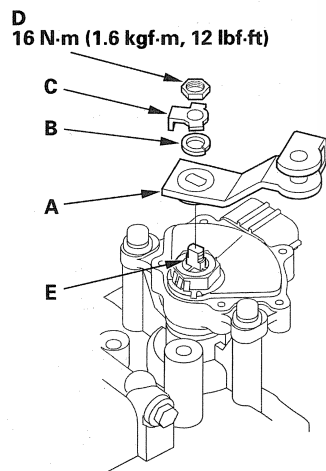
Automatic Transmission

Transmission Reassembly (cont'd)

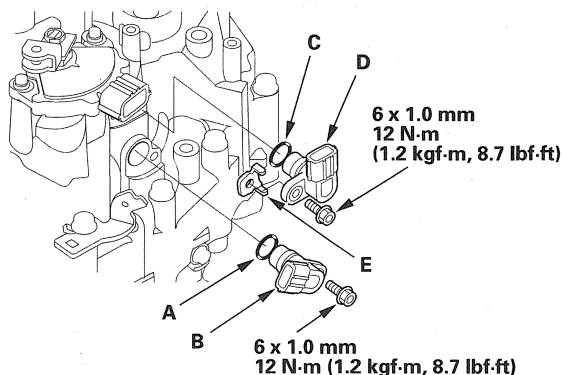
62. Push the locknut against the transmission housing to seat the range switch into the control shaft, and tighten the locknut to 12 N·m (1.2 kgf·m, 8.7 lbf·ft) while holding the control shaft with a 6 mm wrench, then bend the lock tabs against the lock nut.



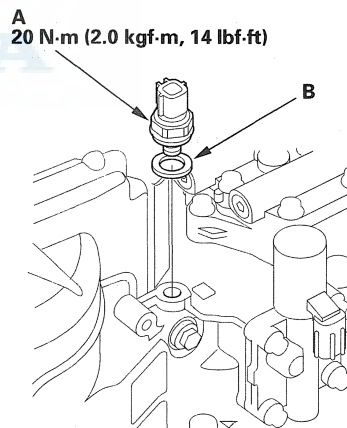
63. Tighten the transmission range switch mounting bolts to 12 N·m (1.2 kgf·m, 8.7 lbf·ft).
64. Install the control lever (A), spring washer (B), lock washer (C), and locknut (D) on the control shaft (E).



65. Install the new O-ring (A) on the input shaft (mainshaft) speed sensor (B), and install the input shaft (mainshaft) speed sensor.

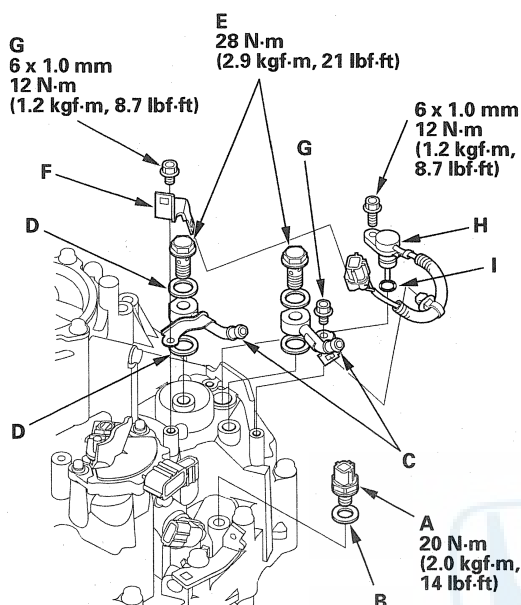


66. Install the new O-ring (C) on the output shaft (countershaft) speed sensor (D), and install the output shaft (countershaft) speed sensor and sensor washer (E).
67. Install the 4th clutch transmission fluid pressure switch (A) with the new sealing washer (B). Tighten the switch with the metal part.



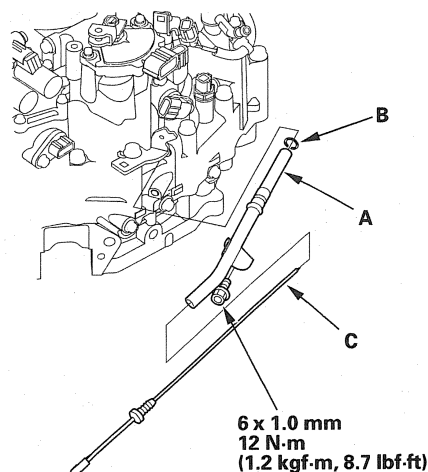


68. Install the 3rd clutch transmission fluid pressure switch (A) with the new sealing washer (B). Tighten the switch on the metal part.

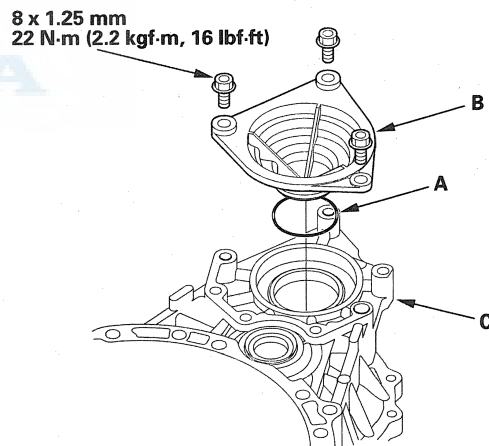


69. Install the ATF cooler lines (C) with the new sealing washers (D) and line bolts (E).
70. Install the connector bracket (F), and secure the ATF lines with the 6.0 mm bolts (G) on the transmission housing. Tighten the bolts to 12 N-m (1.2 kgf-m, 8.7 lbf-ft).
71. Install the ATF temperature sensor (H) with the new O-ring (I), then install the connector on the connector bracket.

72. Install the ATF dipstick tube (A) with the new O-ring (B).



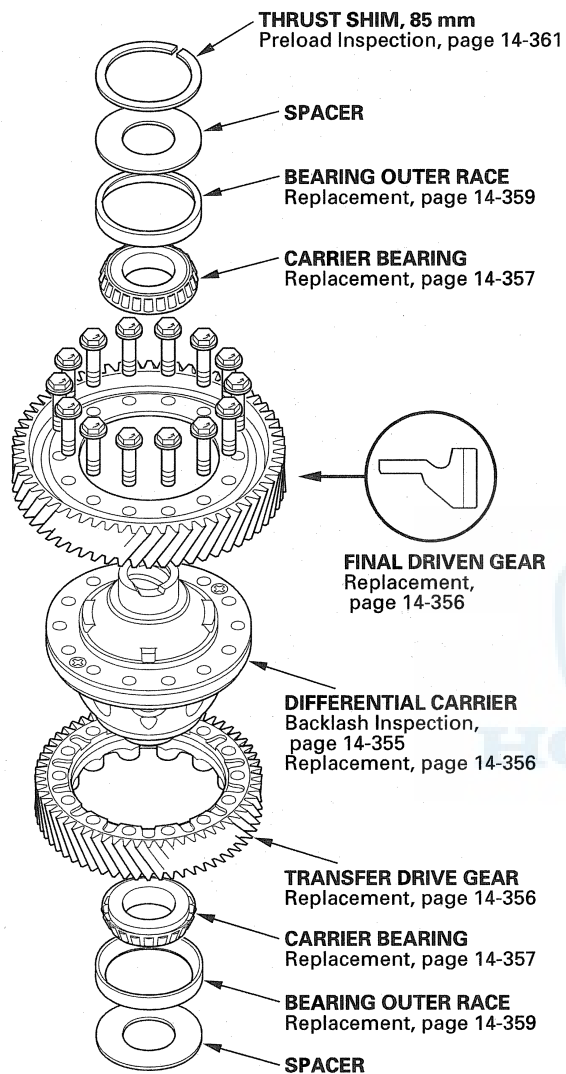
73. Install the ATF dipstick (C) in its guide tube.
74. 2WD: Install the new O-ring (A) on the torque converter housing cap (B), and install the cap in the torque converter housing (C).



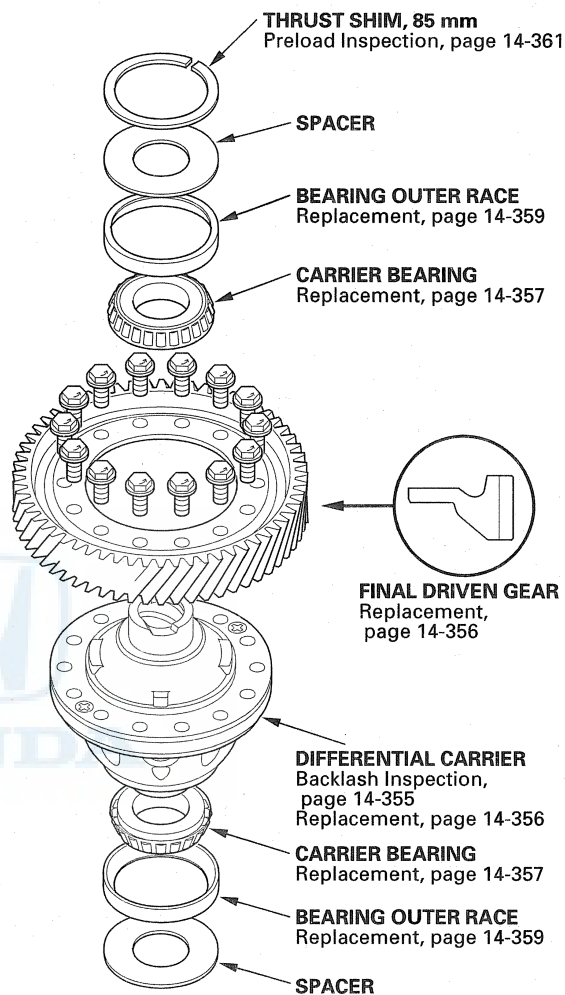
A/T Differential

Component Location Index

4WD



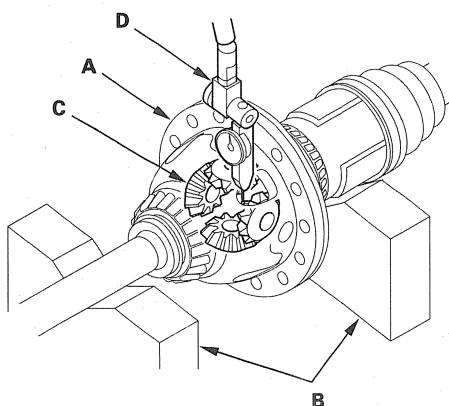
2WD





Backlash Inspection

1. Remove the final driven gear and transfer drive gear (4WD) from the differential carrier.
2. Install both axles into the differential assembly (A), and place the axles on V-blocks (B).



3. Measure the backlash of the pinion gears (C) with a dial indicator (D).

Standard: 0.05—0.15 mm (0.002—0.006 in.)

4. If the backlash is out of standard, replace the differential carrier.
5. Install the final driven gear and transfer drive gear on the differential carrier (see page 14-356).

A/T Differential

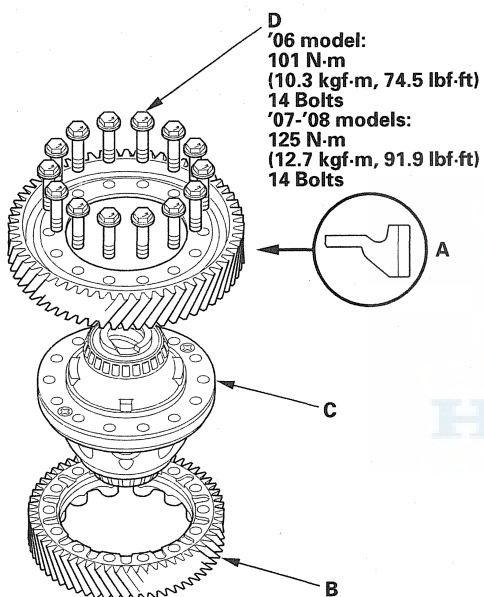
Differential Carrier, Final Driven Gear, and Transfer Drive Gear Replacement

4WD

NOTE: Inspect and adjust the carrier bearing preload whenever the differential carrier is replaced.

1. Remove the final driven gear (A) and transfer drive gear (B) from the differential carrier (C).

NOTE: The final driven gear bolts (D) have left-hand threads.



2. Install the final driven gear with the chamfered side on the inner bore facing the differential carrier.
3. Install the bolts through the differential carrier to the transfer drive gear.
4. Tighten the bolts to specified torque in a crisscross pattern.

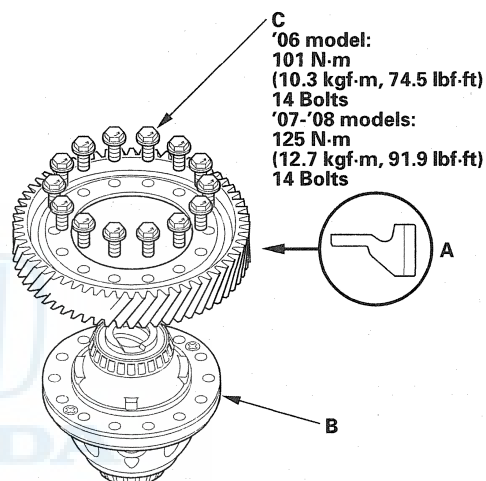
Differential Carrier and Final Driven Gear Replacement

2WD

NOTE: Inspect and adjust the carrier bearing preload whenever the differential carrier is replaced.

1. Remove the final driven gear (A) from the differential carrier (B).

NOTE: The final driven gear bolts (C) have left-hand threads.



2. Install the final driven gear with the chamfered side on the inner bore facing the differential carrier.
3. Install the bolts, and tighten them to specified torque in a crisscross pattern.



Carrier Bearing Replacement

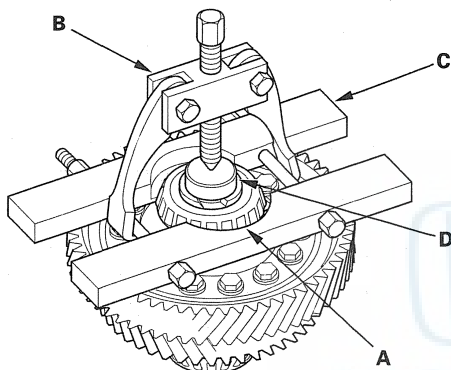
Special Tools Required

Attachment, 45 x 55 mm 07MAD-PR90100

NOTE:

- The bearing and outer race should be replaced as a set.
- Inspect and adjust the bearing preload whenever the bearing is replaced.
- Check the bearing for wear and rough rotation. If the bearing is OK, removal is not necessary.

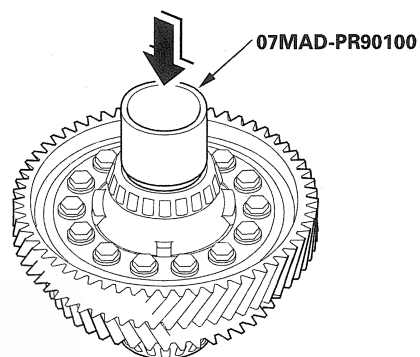
1. Remove the carrier bearing (A) with a commercially available bearing puller (B), bearing separator (C), and stepper adapter (D).



2. Install the new carrier bearing using the attachment (45 x 55 mm) and a press.

NOTE:

- Press the bearing on until it bottoms.
- Use the small end of the attachment (45 x 55 mm) to install the bearings.
- Press the bearing on securely so there is no clearance between the bearing and the carrier.



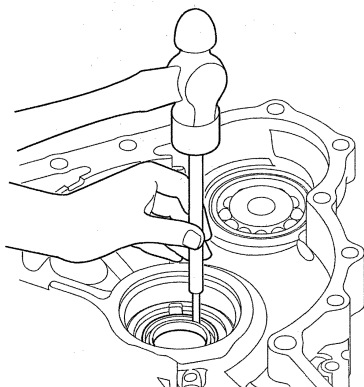
A/T Differential

Oil Seal Replacement

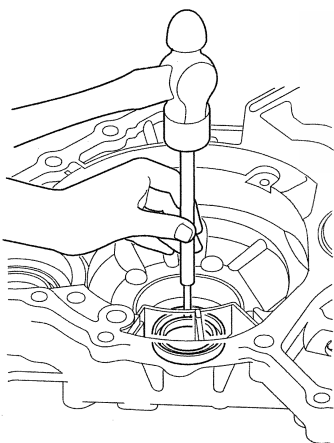
Special Tools Required

- Driver 07749-0010000
- Oil seal driver attachment 07947-SD90101
- Oil seal driver attachment 07JAD-PH80101

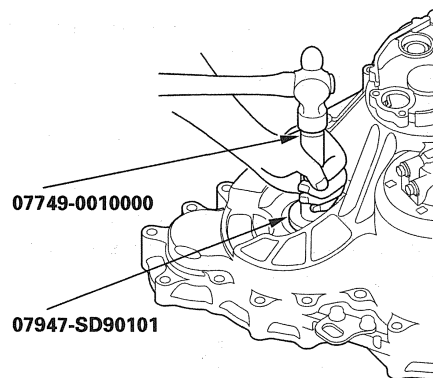
1. Remove the oil seal from the transmission housing.



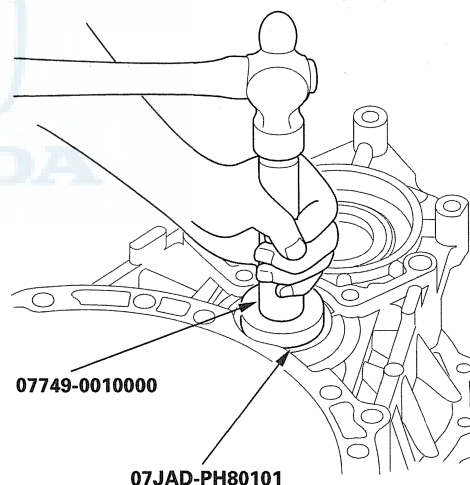
2. Remove the oil seal from the torque converter housing.

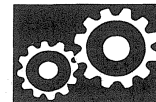


3. Install the new oil seal flush to the transmission housing using the driver and the oil seal driver attachment.



4. Install the new oil seal to the torque converter housing using the driver and the oil seal driver attachment.





Carrier Bearing Outer Race Replacement

Special Tools Required

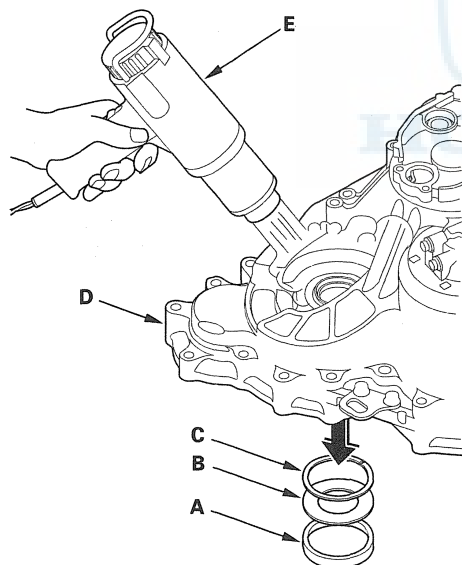
- Driver 07749-0010000
- Attachment, 83 mm 07HAD-SG00100
- Attachment, 78 x 90 mm 07GAD-SD40101

NOTE:

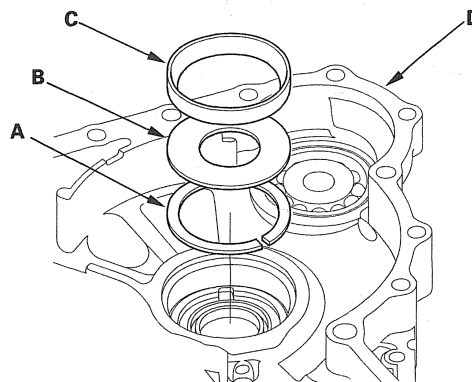
- Replace the bearing with a new one whenever the outer race is replaced.
- Do not use shim(s) on the torque converter housing side.
- Adjust the preload after replacing the bearing and the outer race.
- Coat all parts with ATF during installation.

1. Remove the bearing outer race (A), spacer (B), and 85 mm thrust shim (C) from the transmission housing (D) by heating the housing to about 212 °F (100 °C) with a heat gun (E). Do not heat the housing more than 212 °F (100 °C).

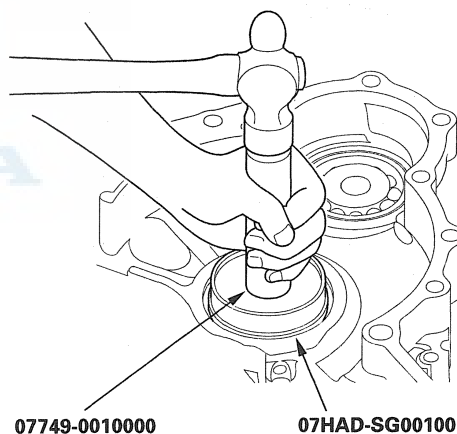
NOTE: Let the transmission housing cool to room temperature before installing the bearing outer race.



2. Install the 85 mm thrust shim (A), spacer (B), and outer race (C) in the transmission housing (D).



3. Using the driver and attachment (83 mm), install the outer race securely in the housing so there is no clearance between the outer race, spacer, shim, and housing.



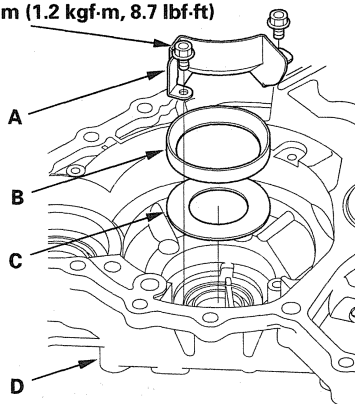
(cont'd)

A/T Differential

Carrier Bearing Outer Race Replacement (cont'd)

4. 4WD: Remove the plate (A), and remove the bearing outer race (B) and spacer (C) from the torque converter housing (D).

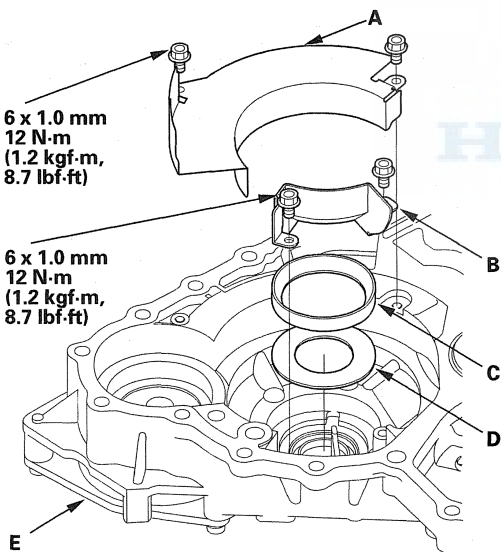
6 x 1.0 mm
12 N·m (1.2 kgf·m, 8.7 lbf·ft)



5. 2WD: Remove the plates (A) (B), and remove the bearing outer race (C) and spacer (D) from the torque converter housing (E).

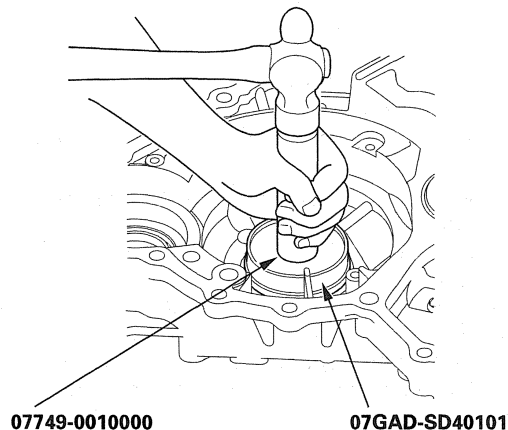
6 x 1.0 mm
12 N·m
(1.2 kgf·m,
8.7 lbf·ft)

6 x 1.0 mm
12 N·m
(1.2 kgf·m,
8.7 lbf·ft)

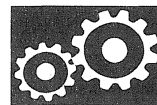


6. Install the spacer and the new outer race in the torque converter housing.

7. Install the bearing outer race securely in the housing using the driver and attachment (78 x 80 mm).



8. Install the plates over the outer race in the torque converter housing.



Carrier Bearing Preload Inspection

Special Tools Required

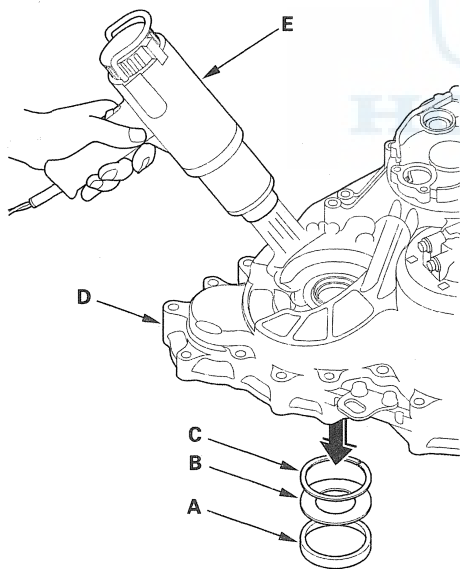
- Driver 07749-0010000
- Attachment, 83 mm 07HAD-SG00100
- Preload inspection tool 070AJ-0020101

NOTE:

- If the transmission housing, torque converter housing, differential carrier, tapered roller bearing, bearing outer race, or thrust shim were replaced, the bearing preload must be adjusted.
- Replace the bearing with a new one whenever the outer race is replaced.
- Do not use the thrust shim on the torque converter housing.
- Coat all parts ATF during installation.

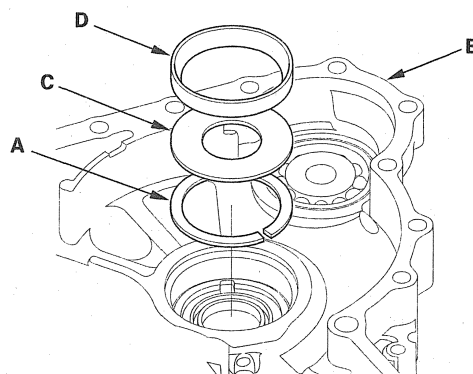
1. Remove the bearing outer race (A), spacer (B), and 85 mm thrust shim (C) from the transmission housing (D) by heating the housing to about 212 °F (100 °C) with a heat gun (E). Do not heat the housing more than 212 °F (100 °C).

NOTE: Let the transmission housing cool to room temperature before adjusting the bearing preload.



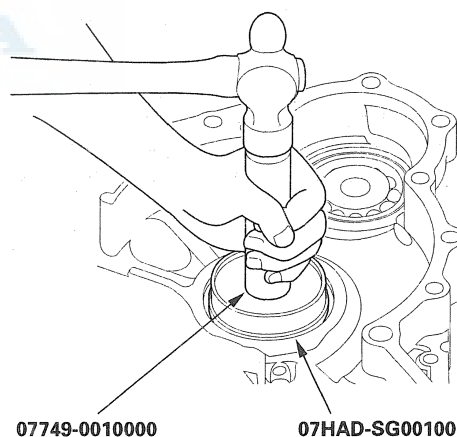
2. Replace the tapered roller bearing when the outer race is to be replaced.
3. Do not use a shim on the torque converter housing side.

4. Install the 85 mm thrust shim (A) in the transmission housing (B). If you replace the 85 mm thrust shim with a new one, use the same thickness shim as the old one.



5. Install the spacer (C), and the bearing outer race (D) in the transmission housing.

6. Install the outer race securely in the housing using the driver and the attachment (83 mm) so there is no clearance between the outer race, spacer, shim, and housing.

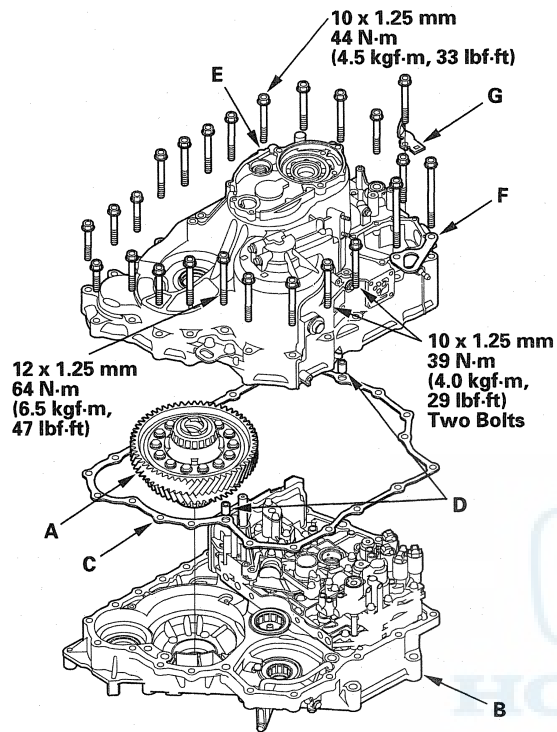


(cont'd)

A/T Differential

Carrier Bearing Preload Inspection (cont'd)

7. Install the differential assembly (A) in the torque converter housing (B), and install the gasket (C) and the two dowel pins (D) on the housing.



8. Install the transmission housing (E), and install the mounting bolts (24 bolts) with the transmission hanger (F) and the ground terminal bracket (G), then tighten the bolts.

9. Rotate the differential assembly in both directions to seat the bearings.

10. Measure the starting torque of the differential assembly using the preload inspection tool, a torque wrench (A), and a socket (B). Measure the starting torque at normal room temperature in both directions.

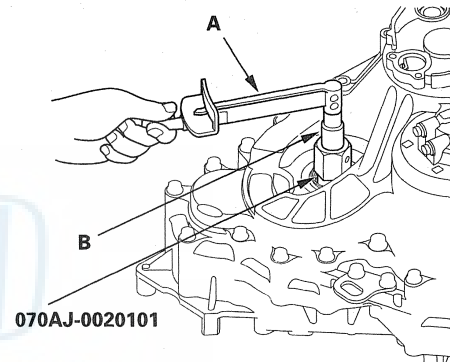
Standard

New bearings:

3.9–5.1 N·m (40–52 kgf·cm, 35–45 lbf·in.)

Reused bearings:

3.6–4.8 N·m (37–49 kgf·cm, 32–43 lbf·in.)



11. If the measurement is out of standard, remove the thrust shim and measure its thickness.



12. Select a new thrust shim. To increase the starting torque, increase thickness of the thrust shim. To decrease the starting torque, decrease the thickness of the thrust shim. Changing the shim to the next size will increase or decrease the starting torque about 0.5—0.6 N·m (5—6 kgf·cm, 5—5 lbf·in.).

THRUST SHIM, 85 mm

No.	Part Number	Thickness
A	41440-RGR-000	1.350 mm (0.0531 in.)
B	41441-RGR-000	1.375 mm (0.0541 in.)
C	41442-RGR-000	1.400 mm (0.0551 in.)
D	41443-RGR-000	1.425 mm (0.0561 in.)
E	41444-RGR-000	1.450 mm (0.0571 in.)
F	41445-RGR-000	1.475 mm (0.0581 in.)
G	41446-RGR-000	1.500 mm (0.0591 in.)
H	41447-RGR-000	1.525 mm (0.0600 in.)
I	41448-RGR-000	1.550 mm (0.0610 in.)
J	41449-RGR-000	1.575 mm (0.0620 in.)
K	41450-RGR-000	1.600 mm (0.0630 in.)
L	41451-RGR-000	1.625 mm (0.0640 in.)
M	41452-RGR-000	1.650 mm (0.0650 in.)
N	41453-RGR-000	1.675 mm (0.0659 in.)
O	41454-RGR-000	1.700 mm (0.0669 in.)
P	41455-RGR-000	1.725 mm (0.0679 in.)
Q	41456-RGR-000	1.750 mm (0.0689 in.)
R	41457-RGR-000	1.775 mm (0.0699 in.)
S	41458-RGR-000	1.800 mm (0.0709 in.)
T	41459-RGR-000	1.825 mm (0.0719 in.)
U	41460-RGR-000	1.850 mm (0.0728 in.)
V	41461-RGR-000	1.875 mm (0.0738 in.)
W	41462-RGR-000	1.900 mm (0.0748 in.)
X	41463-RGR-000	1.925 mm (0.0758 in.)
Y	41464-RGR-000	1.950 mm (0.0768 in.)
Z	41465-RGR-000	1.975 mm (0.0778 in.)

(cont'd)

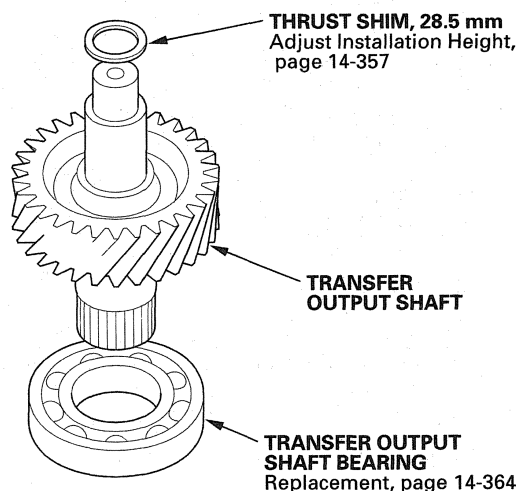
THRUST SHIM, 85 mm (cont'd)

No.	Part Number	Thickness
AA	41466-RGR-000	2.000 mm (0.0787 in.)
AB	41467-RGR-000	2.025 mm (0.0797 in.)
AC	41468-RGR-000	2.050 mm (0.0807 in.)
AD	41469-RGR-000	2.075 mm (0.0817 in.)
AE	41470-RGR-000	2.100 mm (0.0827 in.)
AF	41471-RGR-000	2.125 mm (0.0837 in.)
AG	41472-RGR-000	2.150 mm (0.0846 in.)
AH	41473-RGR-000	2.175 mm (0.0856 in.)
AI	41474-RGR-000	2.200 mm (0.0866 in.)
AJ	41475-RGR-000	2.225 mm (0.0876 in.)
AK	41476-RGR-000	2.250 mm (0.0886 in.)
AL	41477-RGR-000	2.275 mm (0.0896 in.)
AM	41478-RGR-000	2.300 mm (0.0906 in.)
AN	41479-RGR-000	2.325 mm (0.0915 in.)
AO	41480-RGR-000	2.350 mm (0.0925 in.)

13. Install the new thrust shim, then recheck the starting torque.

Transfer Output Shaft

Component Location Index

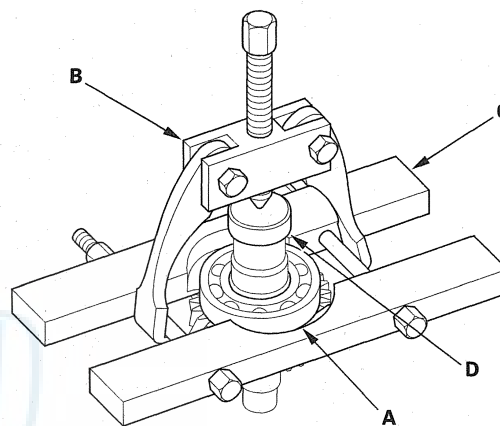


Transfer Output Shaft Bearing Replacement

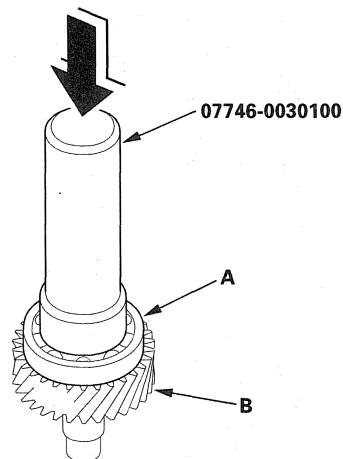
Special Tools Required

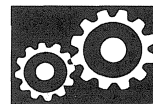
Driver, 40 mm I.D. 07746-0030100

1. Remove the transfer output shaft bearing (A) with a commercially available puller (B), bearing separator (C), and shaft protector (D). Place a shaft protector between the transfer output shaft and a puller to prevent damaging the shaft.



2. Install the new bearing (A) on the transfer output shaft (B) using the driver (40 mm I.D.) and a press.



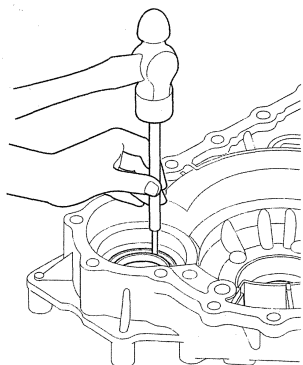


Oil Seal Replacement

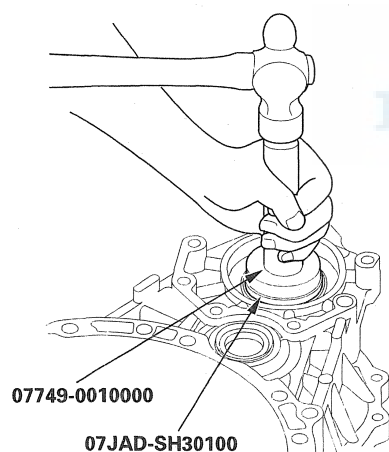
Special Tools Required

- Driver 07749-0010000
- Attachment, 65 mm 07JAD-SH30100

1. Remove the oil seal from the torque converter housing.



2. Install the new oil seal flush to the torque converter housing using the driver and the attachment (65 mm).



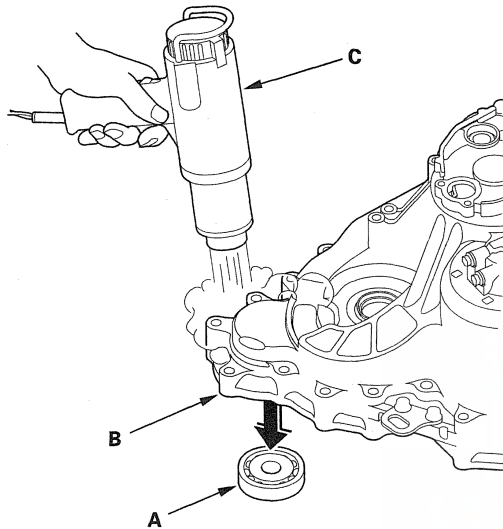
Transfer Output Shaft

Transmission Housing Bearing Replacement

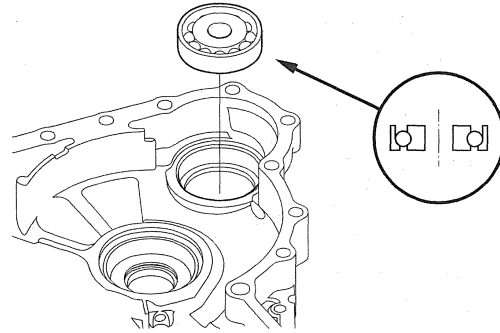
Special Tools Required

- Driver 07749-0010000
- Attachment, 72 x 75 mm 07746-0010600

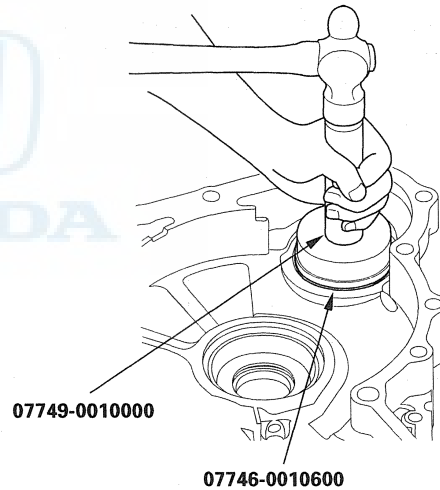
1. Remove the transfer output shaft bearing (A) from the transmission housing (B) by heating the housing to about 212 °F (100 °C) with a heat gun (C). Do not heat the housing more than 212 °F (100 °C).



2. Install the new bearing in the housing in the direction shown.



3. Install the new bearing until it bottoms in the housing using the driver and attachment (72 x 75 mm).



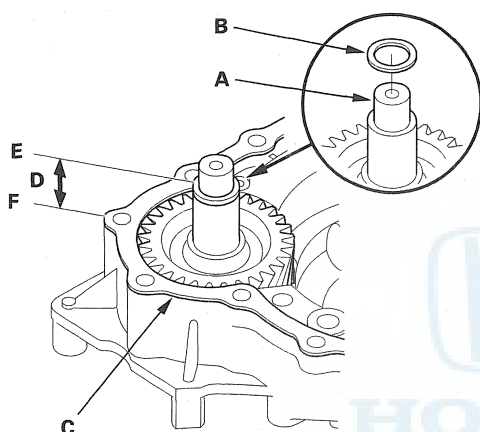


Transfer Output Shaft Installation Height Inspection/Adjustment

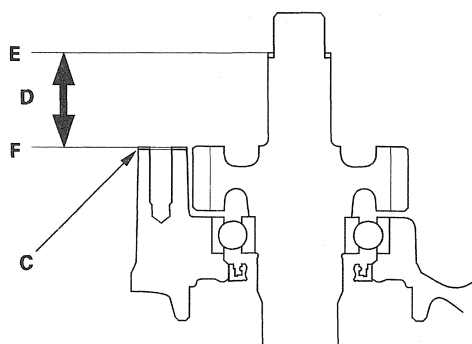
NOTE: If the transfer output shaft, transfer output shaft bearing, transfer output shaft transmission housing bearing, transmission housing, or torque converter housing were replaced, adjust the transfer output shaft installation height with the 28.5 mm thrust shim.

1. Install the transfer output shaft (A) in the torque converter housing, and install the 28.5 mm thrust shim (B) on the top of the shaft. If you replace the 28.5 mm thrust shim with a new one, use the same thickness shim as the old one.

Standard: 46.31—46.35 mm (1.823—1.825 in.)



Transfer Output Shaft Cutaway View



2. Install the new gasket (C) on the torque converter housing.
3. Measure the height (D) of the transfer output shaft installation between the surface (E) of the gasket and the top (F) of the 28.5 mm thrust shim in at least three places. Use the average as the actual height.

4. If the measurement is out of standard, remove the 28.5 mm thrust shim and measure its thickness.
5. Select and install a new thrust shim, then recheck the installation height.

THRUST SHIM, 28.5 mm

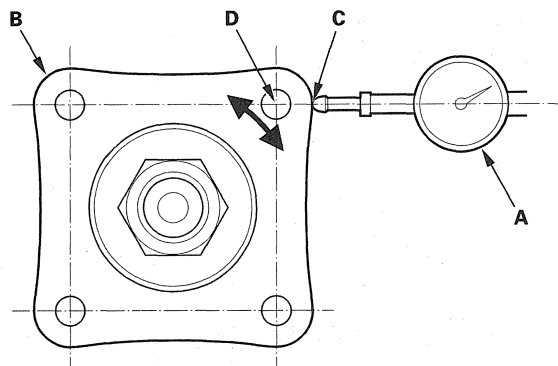
No.	Part Number	Thickness
A	29031-RDK-000	1.82 mm (0.0717 in.)
B	29032-RDK-000	1.84 mm (0.0724 in.)
C	29033-RDK-000	1.86 mm (0.0732 in.)
D	29034-RDK-000	1.88 mm (0.0740 in.)
E	29035-RDK-000	1.90 mm (0.0748 in.)
F	29036-RDK-000	1.92 mm (0.0756 in.)
G	29037-RDK-000	1.94 mm (0.0764 in.)
H	29038-RDK-000	1.96 mm (0.0772 in.)
I	29039-RDK-000	1.98 mm (0.0780 in.)
J	29040-RDK-000	2.00 mm (0.0787 in.)
K	29041-RDK-000	2.02 mm (0.0795 in.)
L	29042-RDK-000	2.04 mm (0.0803 in.)
M	29043-RDK-000	2.06 mm (0.0811 in.)
N	29044-RDK-000	2.08 mm (0.0819 in.)
O	29045-RDK-000	2.10 mm (0.0827 in.)
P	29046-RDK-000	2.12 mm (0.0835 in.)
Q	29047-RDK-000	2.14 mm (0.0843 in.)
R	29048-RDK-000	2.16 mm (0.0850 in.)
S	29049-RDK-000	2.18 mm (0.0858 in.)
T	29050-RDK-000	2.20 mm (0.0866 in.)
U	29051-RDK-000	2.22 mm (0.0874 in.)
V	29052-RDK-000	2.24 mm (0.0882 in.)
W	29053-RDK-000	2.26 mm (0.0890 in.)
X	29054-RDK-000	2.28 mm (0.0898 in.)
Y	29055-RDK-000	2.30 mm (0.0906 in.)
Z	29056-RDK-000	2.32 mm (0.0913 in.)
AA	29057-RDK-000	2.34 mm (0.0921 in.)

Transfer Assembly

Inspection

Transfer Gear Backlash Measurement

1. Set a dial indicator (A) on the transfer companion flange (B); position dial indicator tip (C) on the direct extension of the bolt hole center (D).

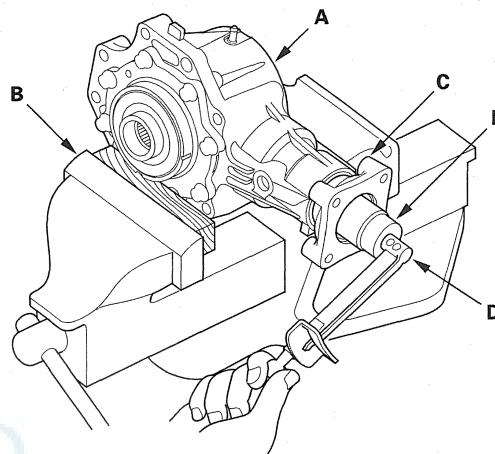


2. Measure the transfer gear backlash.

Standard: 0.06—0.17 mm (0.002—0.007 in.)

Total Starting Torque Measurement

3. Secure the transfer housing (A) in a bench vise (B) with soft jaws. To prevent damaging the transfer housing, always use soft jaws or equivalent materials between the transfer housing and a vise.



4. Rotate the companion flange several turns to seat the tapered roller bearings.
5. Measure the starting torque at the companion flange (C) using a torque wrench (D) and a socket (E).

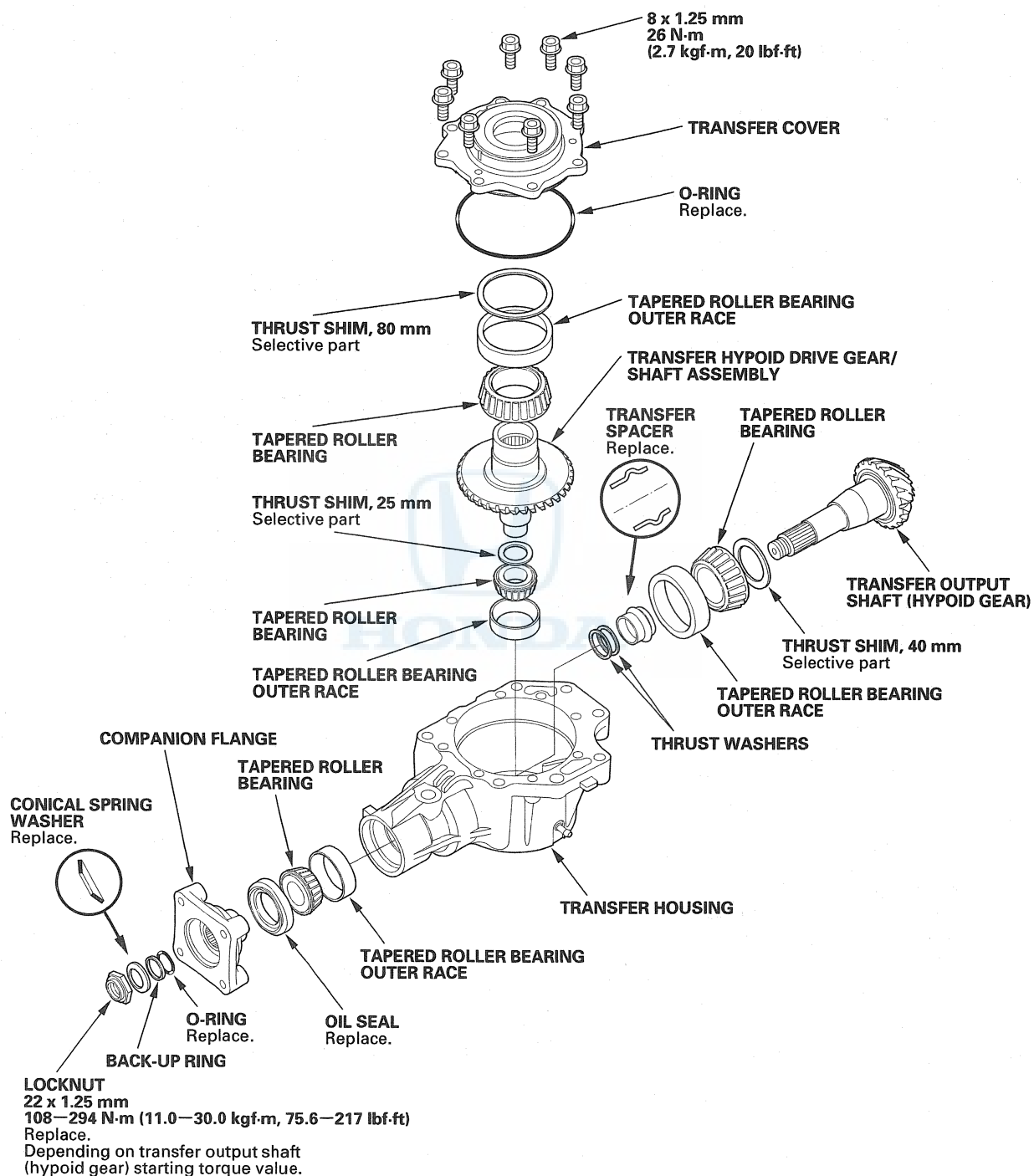
**Standard: 3.20—4.16 N·m
(32.6—42.4 kgf·cm, 28.3—36.8 lbf·in.)**

6. If the measurements are out of standard, disassemble the transfer assembly and repair it.



Disassembly

Exploded View



(cont'd)

Transfer Assembly

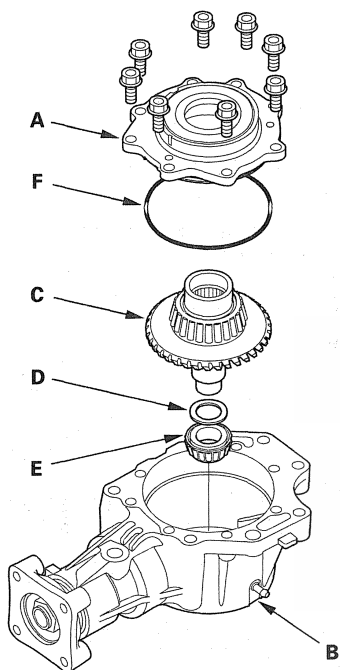
Disassembly (cont'd)

Special Tools Required

Companion flange holder 07XAB-0020100

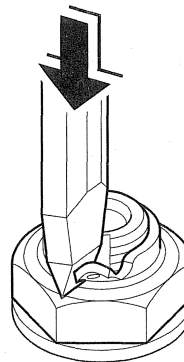
NOTE: Refer to the Exploded View as needed during the following procedure.

1. Remove the transfer cover (A) from the transfer housing (B).

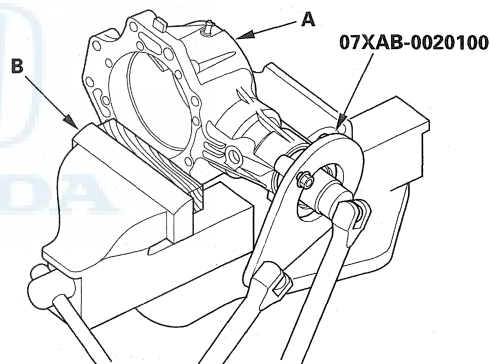


2. Remove the transfer hypoid drive gear/shaft assembly (C), 25 mm thrust shim (D), and tapered roller bearing (E).
3. Remove the O-ring (F) from the cover.
4. Drain the transfer fluid (hypoid gear oil) from the transfer housing.

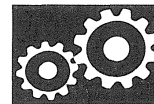
5. Cut the lock tab on the locknut using a chisel.



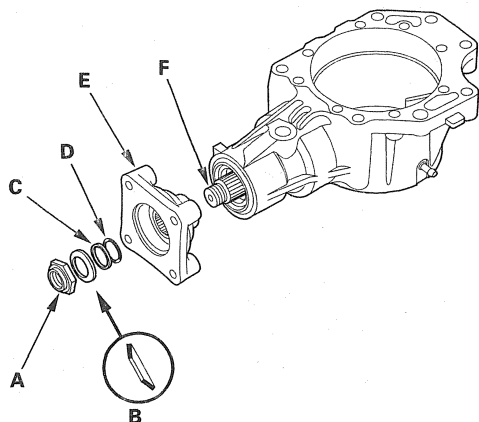
6. Secure the transfer housing (A) in a bench vise (B) with soft jaws. To prevent damaging the transfer housing, always use soft jaws or equivalent materials between the transfer housing and the vise.



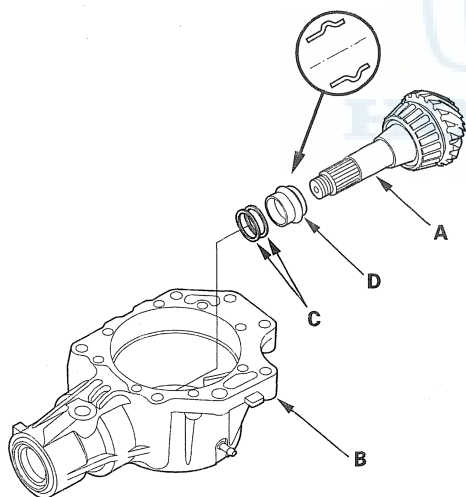
7. Install the companion flange holder on the companion flange, then loosen the locknut.
8. Remove the companion flange holder.



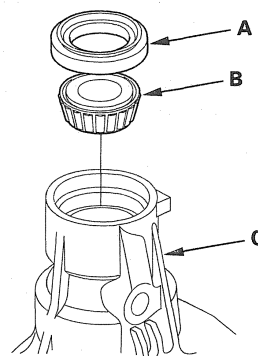
9. Remove the locknut (A), conical spring washer (B), back-up ring (C), O-ring (D), and companion flange (E) from the transfer output shaft (hypoid gear) (F).



10. Remove the transfer output shaft (hypoid gear) (A) from the transfer housing (B), then remove the thrust washers (C) and transfer spacer (D) from the transfer output shaft (hypoid gear).



11. Remove the oil seal (A) and tapered roller bearing (B) from the transfer housing (C).



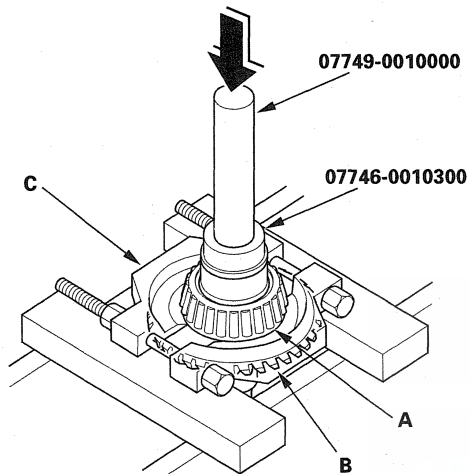
Transfer Assembly

Transfer Hypoid Drive Gear Bearing Replacement

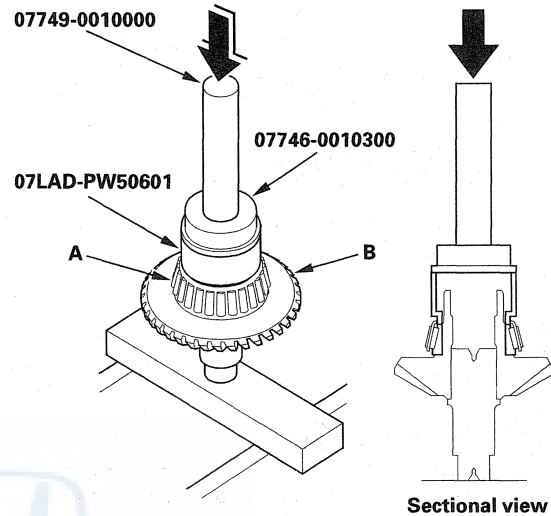
Special Tools Required

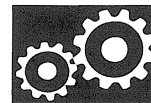
- Driver 07749-0010000
- Attachment, 42 x 47 mm 07746-0010300
- Attachment, 40 x 50 mm 07LAD-PW50601

1. Remove the tapered roller bearing (A) from the transfer hypoid drive gear (B) using the driver, the attachment (42 x 47 mm), bearing separator (C) and a press.



2. Install the new tapered roller bearing (A) on the transfer hypoid drive gear (B) using the driver, the attachment (42 x 47 mm), the attachment (40 x 50 mm), and a press.



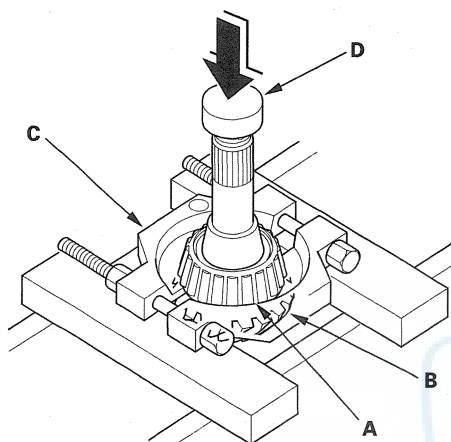


Transfer Output Shaft (Hypoid Gear) Bearing Removal/Installation

Special Tools Required

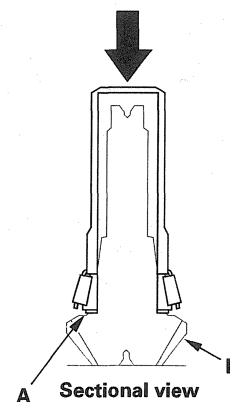
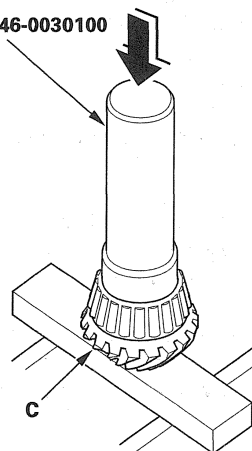
Driver, 40 mm I.D. 07746-0030100

1. Remove the tapered roller bearing (A) from the transfer output shaft (hypoid gear) (B) with a bearing separator (C) and a press. Place a shaft protector (D) between the transfer output shaft (hypoid gear) and a press to prevent damaging the shaft (hypoid gear).

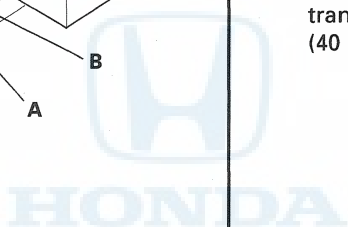


2. Install the 40 mm thrust shim (A) over the transfer output shaft (hypoid gear) (B).

07746-0030100



3. Install the tapered roller bearing (C) over the transfer output shaft (hypoid gear) using the driver (40 mm I.D.) and a press.



Transfer Assembly

Transfer Housing Tapered Roller Bearing Outer Race Replacement

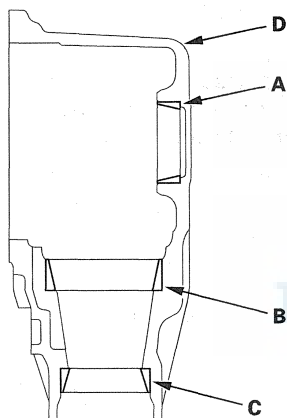
Special Tools Required

- Driver 07749-0010000
- Attachment, 52 x 55 mm 07746-0010400
- Oil seal driver attachment 07JAD-PH80101
- Tapered bearing race installer A 07MAF-SP0011A
- Installer shaft 07MAF-SP0013A

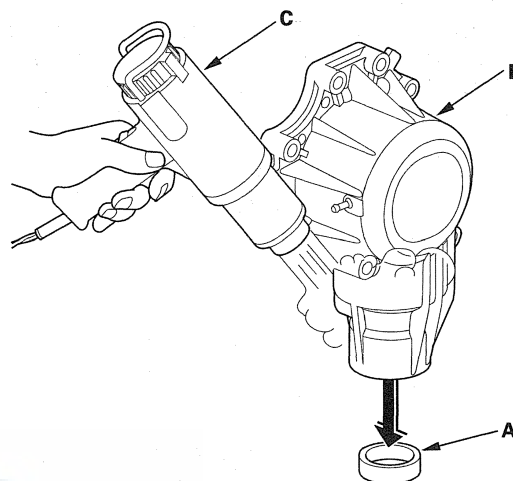
NOTE: Replace the bearing with a new one whenever the outer race is replaced.

1. Remove the 52 mm bearing outer race (A), 75 mm bearing outer race (B) and 58 mm bearing outer race (C) from the transfer housing (D).

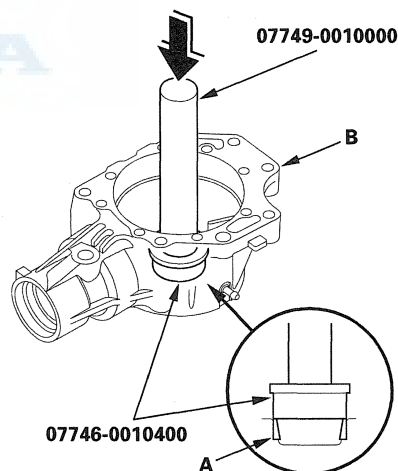
NOTE: Some bearing outer races (52 mm, 58 mm, and 75 mm) are press-fitted in the housing and remove must be removed by heating the housing.

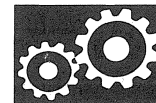


2. Remove the press-fitted bearing outer race (A) from the transfer housing (B) by heating the housing to about 212 °F (100 °C) with a heat gun (C). Do not heat the housing more than 212 °F (100 °C).

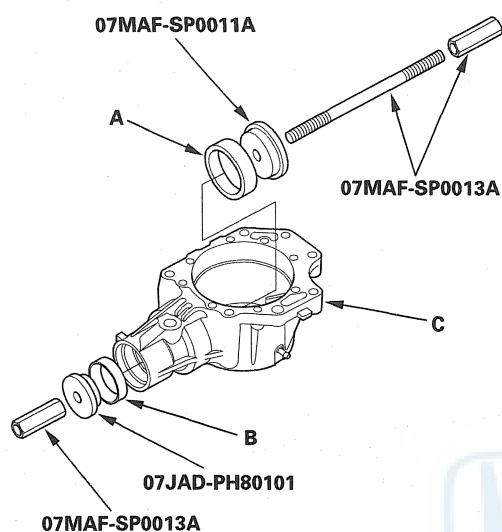


3. Install the 52 mm bearing outer race (A) until it bottoms in the transfer housing (B) using the driver (07749-0010000) and the attachment (52 x 55 mm).

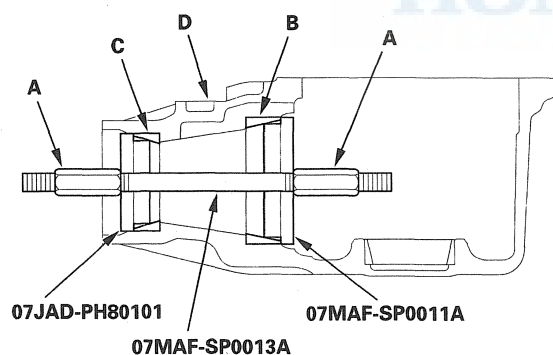




4. Install the 75 mm bearing outer race (A) and 58 mm bearing outer race (B) in the transfer housing (C), set the oil seal driver attachment and the tapered bearing race installer over the races, and install the installer shaft through the attachments and installer.



5. Tighten the installer shaft nut (A) to install the races (B) (C) into the transfer housing (D) securely.



Transfer Assembly

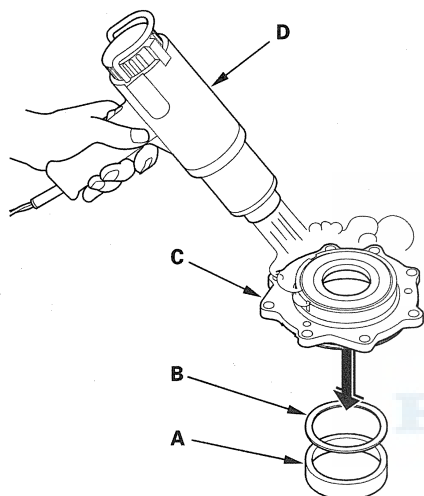
Transfer Cover Tapered Roller Bearing Outer Race Removal/Installation

Special Tools Required

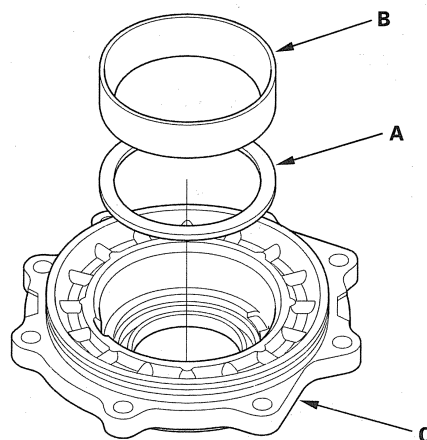
- Driver 07749-0010000
- Attachment, 78 x 80 mm 07NAD-PX40100

NOTE: Replace the bearing with a new one whenever the outer race is replaced.

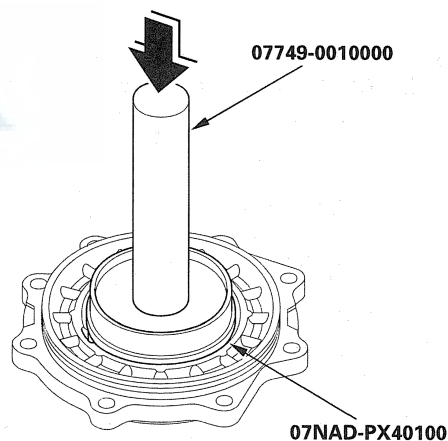
1. Remove the bearing outer race (A) and 80 mm thrust shim (B) from the transfer cover (C). If the bearing outer race is press-fitted, remove the outer race by heating the cover to about 212 °F (100 °C) with a heat gun (D). Do not heat the cover more than 212 °F (100 °C).

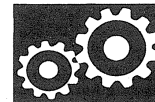


2. Install the 80 mm thrust shim (A) and bearing outer race (B) in the transfer cover (C).



3. Install the outer race securely in the cover using the driver and the attachment (78 x 80 mm) so there is no clearance between the outer race, thrust shim, and cover.



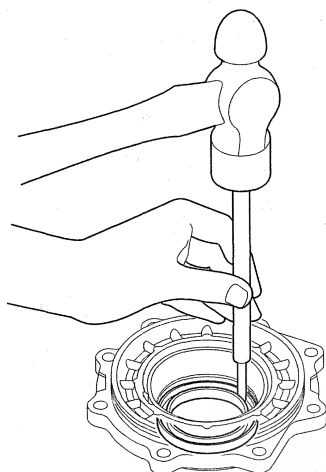


Transfer Cover Oil Seal Replacement

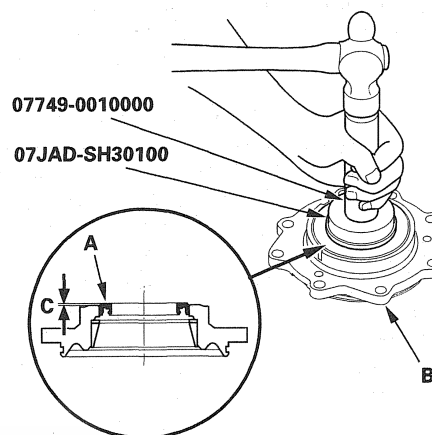
Special Tools Required

- Driver 07749-0010000
- Attachment, 65 mm 07JAD-SH30100

1. Remove the oil seal from the transfer cover.



2. Install the new oil seal (A) in the transfer cover (B) in height (C) of 0—1 mm (0—0.04 in.) above the cover surface using the driver and the attachment (65 mm).



Transfer Assembly

Reassembly

Special Tools Required

- Driver, 40 mm I.D. 07746-0030100
- Attachment, 78 x 80 mm 07NAD-PX40100
- Driver 07749-0010000
- Oil seal driver attachment 07GAD-PG40100
- Companion flange holder 07XAB-0020100

NOTE:

- While reassembling the transfer assembly:
 - Check and adjust the transfer gear tooth contact.
 - Measure the and adjust the transfer gear backlash.
 - Check and adjust the tapered roller bearing starting torque.
- Coat all parts with ATF during reassembly.
- Replace the tapered roller bearing and the bearing outer race as a set if either part is replaced.
- Replace the transfer hypoid drive gear and the transfer output shaft (hypoid gear) as a set if either part is replaced.

1. Select the 40 mm thrust shim if the transfer output shaft (hypoid gear) is replaced. Calculate the thickness of the 40 mm thrust shim using the formula follow, and select the shim from the following table.

FORMULA: $A/100 - B/100 + C = X$

- A:** Number on the existing transfer output shaft (hypoid gear)
B: Number on the replacement transfer output shaft (hypoid gear)
C: Thickness of the existing 40 mm thrust shim
X: Thickness needed for the replacement 40 mm thrust shim

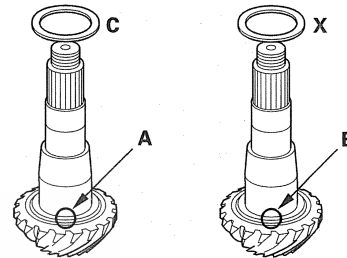
NOTE: The number on the transfer output shaft (hypoid gear) is shown in 1/100 mm.

EXAMPLE

- A:** Existing transfer output shaft (hypoid gear)
Number = +2
B: Replacement transfer output shaft (hypoid gear)
Number = -1
C: Existing 40 mm thrust shim
thickness = 1.05 mm
X: Replacement 40 mm thrust shim thickness

$$\begin{aligned} X &= A/100 - B/100 + C \\ &= 2/100 - (-1)/100 + 1.05 \\ &= 0.02 + 0.01 + 1.05 = 1.08 \text{ (mm)} \end{aligned}$$

Select No. M 40 mm thrust shim of 1.08 mm (0.043 in.)



THRUST SHIM, 40 mm

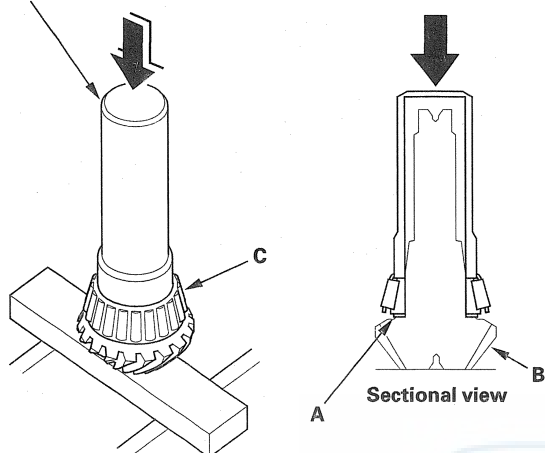
Shim No.	Part Number	Thickness
A	29361-RDK-000	0.72 mm (0.028 in.)
B	29362-RDK-000	0.75 mm (0.030 in.)
C	29363-RDK-000	0.78 mm (0.031 in.)
D	29364-RDK-000	0.81 mm (0.032 in.)
E	29365-RDK-000	0.84 mm (0.033 in.)
F	29366-RDK-000	0.87 mm (0.034 in.)
G	29367-RDK-000	0.90 mm (0.035 in.)
H	29368-RDK-000	0.93 mm (0.037 in.)
I	29369-RDK-000	0.96 mm (0.038 in.)
J	29370-RDK-000	0.99 mm (0.039 in.)
K	29371-RDK-000	1.02 mm (0.040 in.)
L	29372-RDK-000	1.05 mm (0.041 in.)
M	29373-RDK-000	1.08 mm (0.043 in.)
N	29374-RDK-000	1.11 mm (0.044 in.)
O	29375-RDK-000	1.14 mm (0.045 in.)

2. Select the 40 mm thrust shim if the tapered roller bearing on the transfer output shaft (hypoid gear) is replaced. Measure the thickness of the replacement bearing and the existing bearing, and calculate the difference of the bearing thickness. Adjust the thickness of the existing 40 mm thrust shim by the amount of difference in bearing thickness, and select the replacement 40 mm thrust shim.

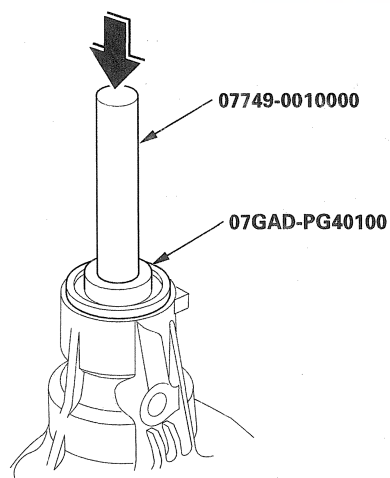


3. Install the 40 mm thrust shim (A) on the transfer output shaft (hypoid gear) (B), then install the tapered roller bearing (C) using the driver (40 mm I.D.) and a press.

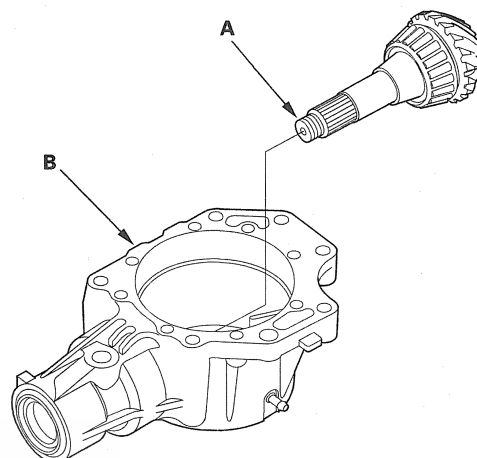
07746-0030100



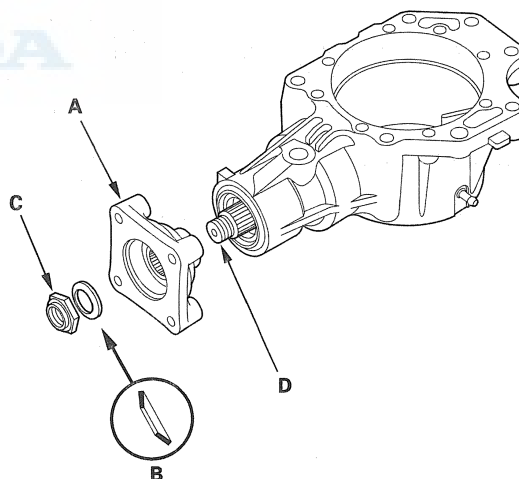
4. Place the tapered roller bearing on the bearing outer race of the companion flange side of the transfer housing.
5. Install the new oil seal securely in the transfer housing using the driver and seal driver attachment and a press.



6. Install the transfer output shaft (hypoid gear) (A) in the transfer housing (B). Do not install the thrust washers and transfer spacer on the transfer output shaft (hypoid gear).



7. Install the companion flange (A), conical spring washer (B) in the direction shown, and locknut (C) on the transfer output shaft (hypoid gear) (D). Do not install the O-ring and back-up ring.

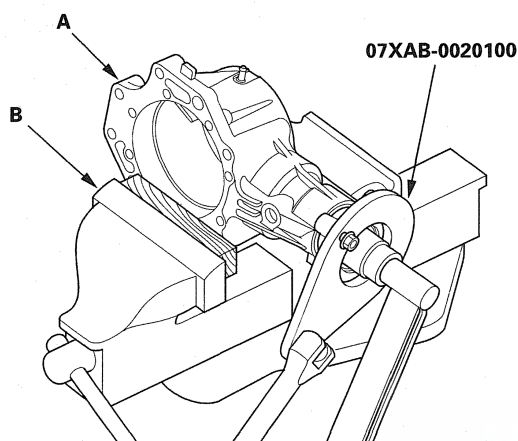


(cont'd)

Transfer Assembly

Reassembly (cont'd)

8. Secure the transfer housing (A) in a bench vise (B) with soft jaws. To prevent damaging to the transfer housing, always use soft jaws or equivalent materials between the transfer housing and the vise.



9. Install the companion flange holder on the companion flange.
10. Tighten the locknut while measuring the starting torque of the transfer output shaft (hypoid gear) so the starting torque is within 1.15–1.71 N·m (11.7–17.4 kgf·cm, 10.2–15.1 lbf·in.). Do not stake the locknut in this step.

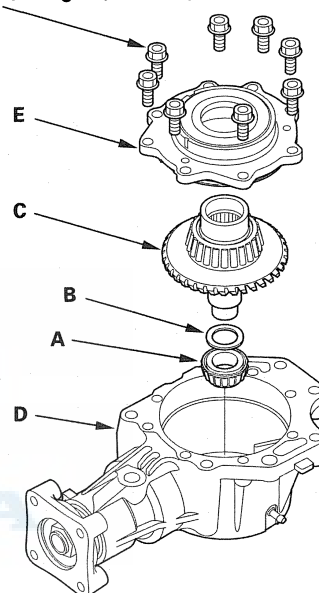
Starting Torque:

1.15–1.71 N·m

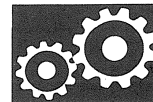
(11.7–17.4 kgf·cm, 10.2–15.1 lbf·in.)

11. Remove the companion flange holder.
12. Apply Prussian Blue to both side of the transfer hypoid drive gear teeth lightly and evenly.
13. Install the tapered roller bearing (A), 25 mm thrust shim (B), and transfer hypoid drive gear/shaft assembly (C) in the transfer housing (D).

8 x 1.25 mm
26 N·m (2.7 kgf·m, 20 lbf·ft)

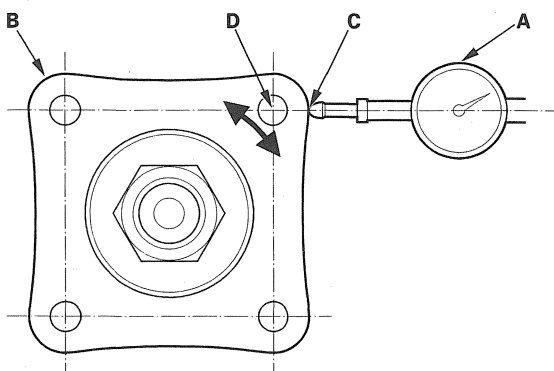


14. Install the transfer cover (E) and secure the cover with the bolts. Do not install the O-ring on the transfer cover.



15. Rotate the companion flange several times to seat the tapered roller bearings.

16. Set a dial indicator (A) on the transfer companion flange (B); position dial indicator tip (C) on the direct extension of the bolt hole center (D).

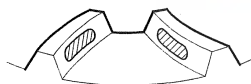


17. Measure the transfer gear backlash.

Standard: 0.06—0.17 mm (0.002—0.007 in.)

18. Remove the transfer cover, transfer hypoid drive gear/shaft assembly, and check the transfer hypoid drive gear tooth contact pattern.

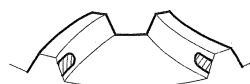
CORRECT TOOTH CONTACT PATTERN



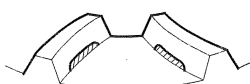
INCORRECT TOOTH CONTACT PATTERN



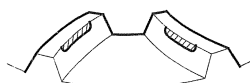
TOE CONTACT



HEEL CONTACT



FLANK CONTACT



FACE CONTACT

19. If the backlash is out of the standard, adjust the backlash with the 40 mm thrust shim and recheck. Do not use more than two 40 mm thrust shims to adjust the backlash.

20. If the transfer gear tooth contact is incorrect, adjust the transfer gear tooth contact with the 25 mm or 40 mm thrust shim. Do not use more than two shims of each thrust shim to adjust the tooth contact.

• **Toe Contact**

Use a thinner 40 mm thrust shim to move the transfer output shaft (hypoid gear) away from the transfer hypoid drive gear. Because this movement causes the transfer gear backlash to change, move the transfer hypoid drive gear toward the transfer output shaft (hypoid gear) to adjust the transfer gear backlash as follows:

- Reduce the thickness of the 25 mm thrust shim.
- Increase the thickness of the 80 mm thrust shim by amount of reduce thickness of the 25 mm thrust shim.

• **Heel Contact**

Use a thicker 40 mm thrust shim to move the transfer output shaft (hypoid gear) toward the transfer hypoid drive gear. Because this movement causes the transfer backlash to change, move the transfer hypoid drive gear away from the transfer output shaft (hypoid gear) to adjust the transfer gear backlash as follows:

- Increase the thickness of the 25 mm thrust shim.
- Reduce the thickness of the 80 mm thrust shim by the amount of increase thickness of the 25 mm thrust shim.

• **Flank Contact**

Use a thicker 25 mm thrust shim to move the transfer hypoid drive gear away from the transfer output shaft (hypoid gear).

Flank contact must be adjusted within the limits of the transfer gear backlash. If the backlash exceeds the limits, adjust as described under Heel Contact.

• **Face Contact**

Use a thinner 25 mm thrust shim to move the transfer hypoid drive gear toward the transfer output shaft (hypoid gear).

Face contact must be adjusted within the limits of the transfer gear backlash. If the backlash exceeds the limits, adjust as described under Toe Contact.

(cont'd)

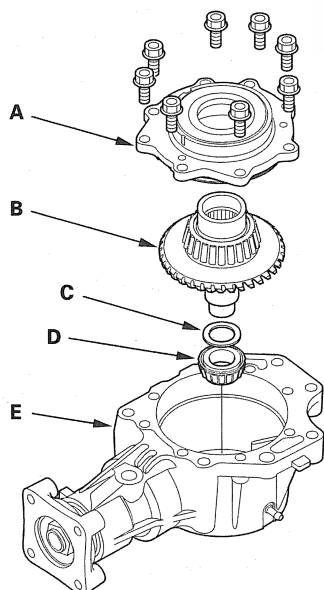
Transfer Assembly

Reassembly (cont'd)

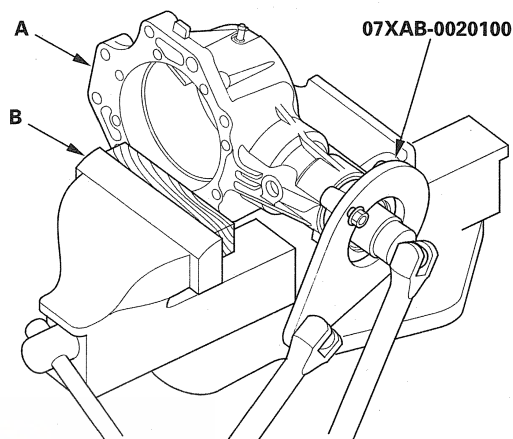
THRUST SHIM, 25 mm

Shim No.	Part Number	Thickness
1.70	29411-P1C-000	1.70 mm (0.067 in.)
1.73	29412-P1C-000	1.73 mm (0.068 in.)
1.76	29413-P1C-000	1.76 mm (0.069 in.)
1.79	29414-P1C-000	1.79 mm (0.070 in.)
1.82	29415-P1C-000	1.82 mm (0.072 in.)
1.85	29416-P1C-000	1.85 mm (0.073 in.)
1.88	29417-P1C-000	1.88 mm (0.074 in.)
1.91	29418-P1C-000	1.91 mm (0.075 in.)
1.94	29419-P1C-000	1.94 mm (0.076 in.)
1.97	29420-P1C-000	1.97 mm (0.078 in.)
2.00	29421-P1C-000	2.00 mm (0.079 in.)
2.03	29422-P1C-000	2.03 mm (0.080 in.)
2.06	29423-P1C-000	2.06 mm (0.081 in.)
2.09	29424-P1C-000	2.09 mm (0.082 in.)
2.12	29425-P1C-000	2.12 mm (0.083 in.)
2.15	29426-P1C-000	2.15 mm (0.085 in.)
2.18	29427-P1C-000	2.18 mm (0.086 in.)
2.21	29428-P1C-000	2.21 mm (0.087 in.)
2.24	29429-P1C-000	2.24 mm (0.088 in.)

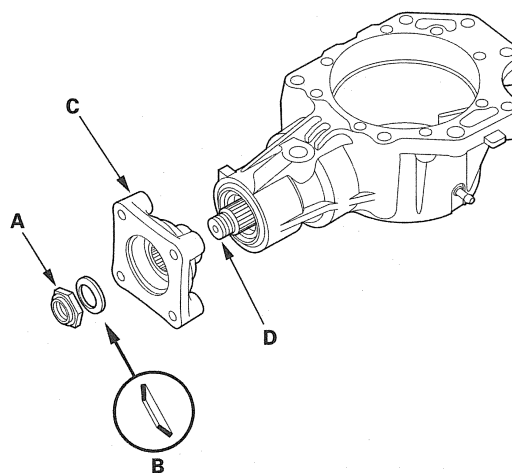
21. Remove the transfer cover (A), transfer hypoid drive gear/shaft assembly (B), 25 mm thrust shim (C), and tapered roller bearing (D) from the transfer housing (E) after adjusting the transfer gear backlash or transfer gear tooth contact.



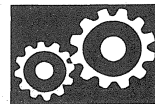
22. Secure the transfer housing (A) in a bench vise (B) with soft jaws. To prevent damaging the transfer housing, always use soft jaws or equivalent materials between the transfer housing and the vise.



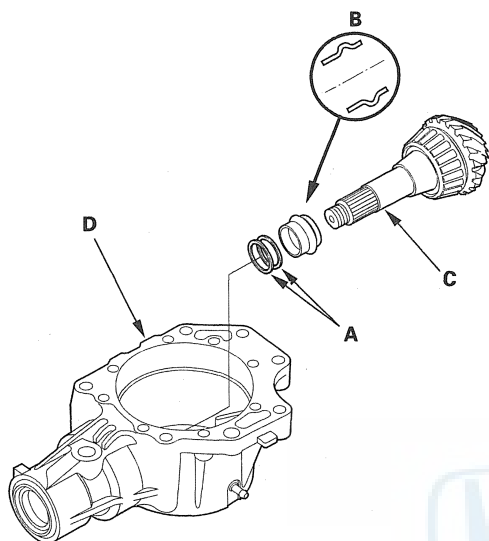
23. Install the companion flange holder on the companion flange, then loose the locknut.
24. Remove the companion flange holder.
25. Remove the locknut (A), conical spring washer (B), and companion flange (C) from the transfer output shaft (hypoid gear) (D).



26. Remove the transfer output shaft (hypoid gear) from the transfer housing.

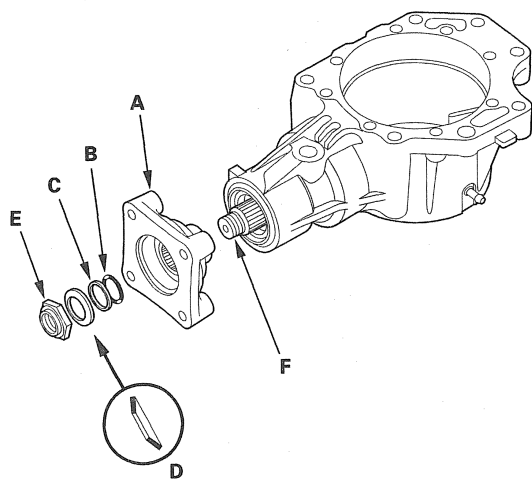


27. Install the two thrust washers (A) and the new transfer spacer (B) on the transfer output shaft (hypoid gear) (C) in the direction shown, and install them in the transfer housing (D).

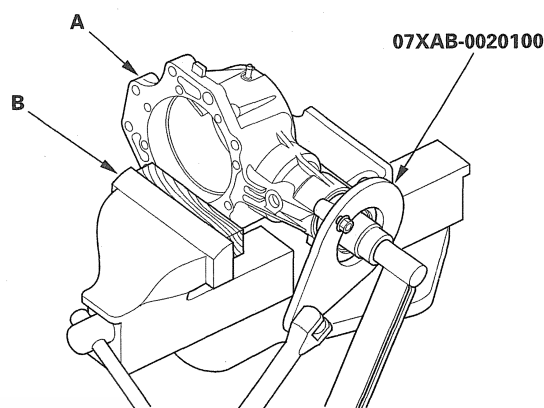


28. Coat the threads of the locknut and transfer output shaft (hypoid gear) with transfer fluid (hypoid gear oil).

29. Install the companion flange (A), new O-ring (B), back-up ring (C), new conical spring washer (D), and new locknut (E) on the transfer output shaft (hypoid gear) (F). Install the conical spring washer in the direction shown.



30. Secure the transfer housing (A) in a bench vise (B) with soft jaws. To prevent damaging the transfer housing, always use soft jaws or equivalent materials between the transfer housing and the vise.



31. Install the companion flange holder on the companion flange.

32. Tighten the locknut while measuring the starting torque of the transfer output shaft (hypoid gear) so the starting torque is within 1.15–1.71 N·m (11.7–17.4 kgf·cm, 10.2–15.1 lbf·in.).

Tightening Torque:

108–294 N·m

(11.0–30.0 kgf·m, 79.6–217 lbf·ft)

Starting Torque:

1.15–1.71 N·m

(11.7–17.4 kgf·cm, 10.2–15.1 lbf·in.)

NOTE:

- Rotate the companion flange several times to seat the tapered roller bearings, then measure the starting torque.
- If the starting torque exceeds 1.71 N·m (17.4 kgf·cm, 15.1 lbf·in), replace the transfer spacer and reassemble the parts. Do not adjust the torque with the locknut loose.
- If the tightening torque exceeds 294 N·m (30.0 kgf·m, 217 lbf·ft), replace the transfer spacer and reassemble the parts.

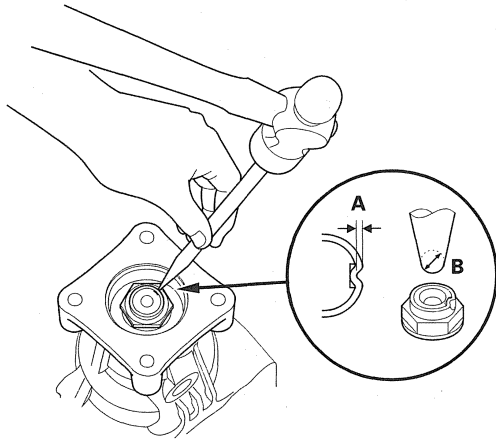
33. Remove the companion flange holder.

(cont'd)

Transfer Assembly

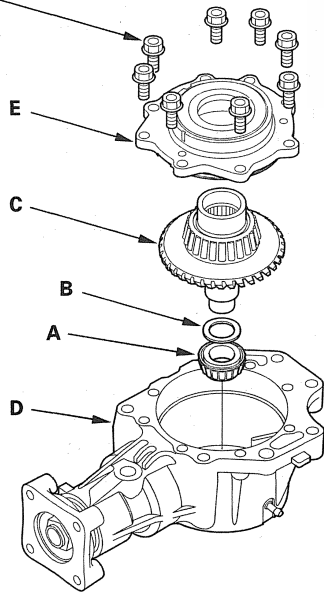
Reassembly (cont'd)

34. Stake the locknut into the transfer output shaft (hypoid gear) in depth (A) of 0.7—1.2 mm (0.03—0.05 in.) using a 3.5 mm punch (B).



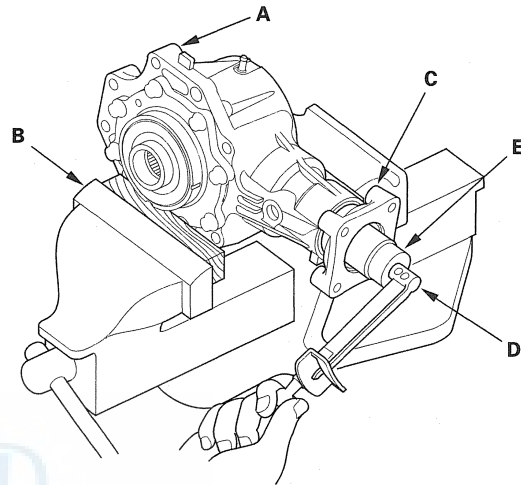
35. Install the tapered roller bearing (A), 25 mm thrust shim (B), and transfer hypoid drive gear/shaft assembly (C) in the transfer housing (D).

8 x 1.25 mm
26 N·m (2.7 kgf·m, 20 lbf·ft)



36. Temporally install the transfer cover (E) without the O-ring, and secure the cover with the bolts.

37. Secure the transfer housing (A) in a bench vise (B) with soft jaws. To prevent damaging the transfer housing, always use soft jaws or equivalent materials between the transfer housing and the vise.



38. Rotate the companion flange (C) several times to seat the tapered roller bearings.

39. Measure the starting torque at the companion flange using a torque wrench (D) and a socket (E).

Total Starting Torque:

3.20—4.16 N·m

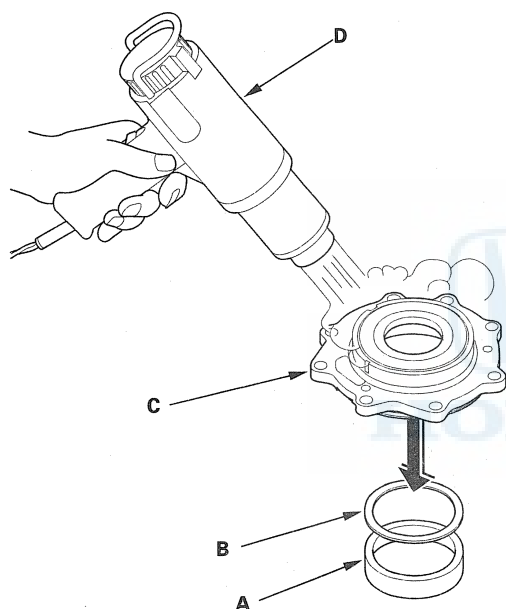
(32.6—42.4 kgf·cm, 28.3—36.8 lbf·in.)



40. Remove the transfer cover from the transfer housing.

41. If the measurement is within the standard, go to step 47.

42. If the measurement is out of standard, remove the bearing outer race (A) and 80 mm thrust shim (B) from the transfer cover (C). If the bearing outer race is press-fitted, remove the bearing outer race by heating the cover to about 212 °F (100 °C) with a heat gun (D). Do not heat the cover more than 212 °F (100 °C).



43. Measure the thickness of removed 80 mm thrust shim, and select the new 80 mm shim.

THRUST SHIM, 80 mm

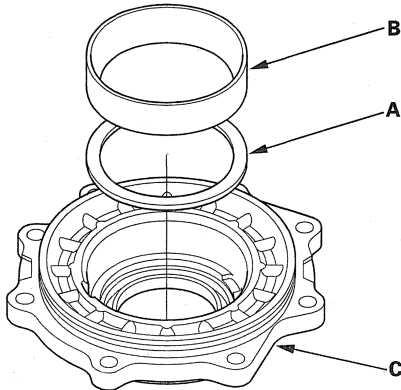
Shim No.	Part Number	Thickness
A	41401-RDK-000	1.52 mm (0.060 in.)
B	41402-RDK-000	1.55 mm (0.061 in.)
C	41403-RDK-000	1.58 mm (0.062 in.)
D	41404-RDK-000	1.61 mm (0.063 in.)
E	41405-RDK-000	1.64 mm (0.065 in.)
F	41406-RDK-000	1.67 mm (0.066 in.)
G	41407-RDK-000	1.70 mm (0.067 in.)
H	41408-RDK-000	1.73 mm (0.068 in.)
I	41409-RDK-000	1.76 mm (0.069 in.)
J	41410-RDK-000	1.79 mm (0.070 in.)
K	41411-RDK-000	1.82 mm (0.072 in.)
L	41412-RDK-000	1.85 mm (0.073 in.)
M	41413-RDK-000	1.88 mm (0.074 in.)
N	41414-RDK-000	1.91 mm (0.075 in.)
O	41415-RDK-000	1.94 mm (0.076 in.)
P	41416-RDK-000	1.97 mm (0.078 in.)
Q	41417-RDK-000	2.00 mm (0.079 in.)
R	41418-RDK-000	2.03 mm (0.080 in.)
S	41419-RDK-000	2.06 mm (0.081 in.)
T	41420-RDK-000	2.09 mm (0.082 in.)
U	41421-RDK-000	2.12 mm (0.083 in.)
V	41422-RDK-000	2.15 mm (0.085 in.)
W	41423-RDK-000	2.18 mm (0.086 in.)
X	41424-RDK-000	2.21 mm (0.087 in.)
Y	41425-RDK-000	2.24 mm (0.088 in.)
Z	41426-RDK-000	2.27 mm (0.089 in.)
AA	41427-RDK-000	2.30 mm (0.091 in.)
AB	41428-RDK-000	2.33 mm (0.092 in.)
AC	41429-RDK-000	2.36 mm (0.093 in.)
AD	41430-RDK-000	2.39 mm (0.094 in.)
AE	41431-RDK-000	2.42 mm (0.095 in.)
AF	41432-RDK-000	2.45 mm (0.096 in.)
AG	41433-RDK-000	2.48 mm (0.098 in.)
AH	41434-RDK-000	2.51 mm (0.099 in.)
AI	41435-RDK-000	2.54 mm (0.100 in.)
AJ	41436-RDK-000	2.57 mm (0.101 in.)
AK	41437-RDK-000	2.60 mm (0.102 in.)
AL	41438-RDK-000	2.63 mm (0.104 in.)
AM	41439-RDK-000	2.66 mm (0.105 in.)

(cont'd)

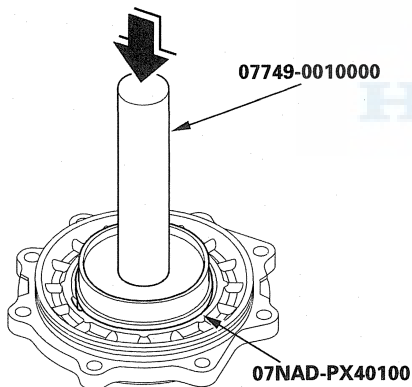
Transfer Assembly

Reassembly (cont'd)

44. Install the 80 mm thrust shim (A) and bearing outer race (B) in the transfer cover (C). If you heated the cover, let it cool to room temperature before installing the thrust shim.

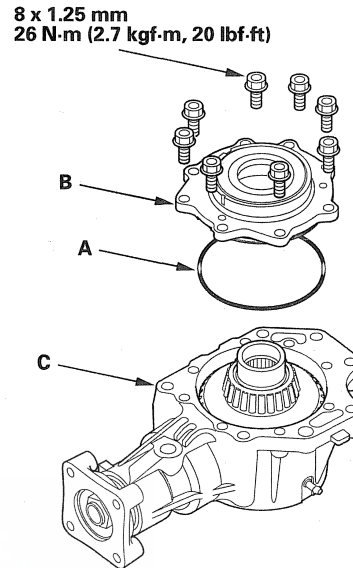


45. Drive the outer race securely in the cover using the driver and the attachment (78 x 80 mm) so there is no clearance between the outer race, thrust shim, and cover.



46. After replacing the 80 mm thrust shim, recheck and make sure that the total starting torque is within the specification.

47. Install the new O-ring (A) on the transfer cover (B), then install the cover on the transfer housing (C).



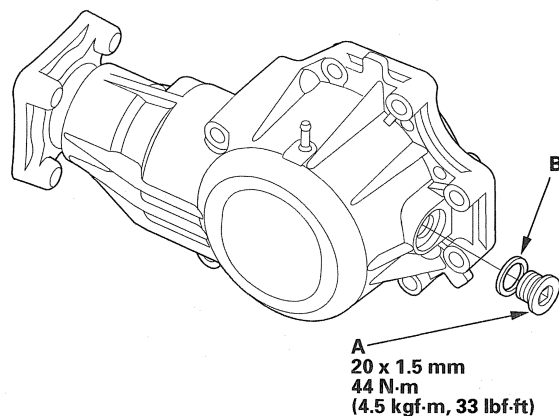
48. Remove the filler plug (A), then refill the transfer assembly with transfer fluid (hypoid gear oil). Use a SAE 90 or SAE 80W-90 viscosity hypoid gear oil, API classified GL4 or GL5 only.

Viscosity:

SAE 90: Above 0 °F (−18 °C)

SAE 80W-90: Below 0 °F (−18 °C)

Hypoid Gear Oil Capacity: 0.45 L (0.48 US qt)

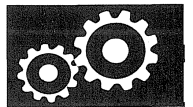


49. Install the filler plug with a new sealing washer (B).

Rear Differential

Rear Differential

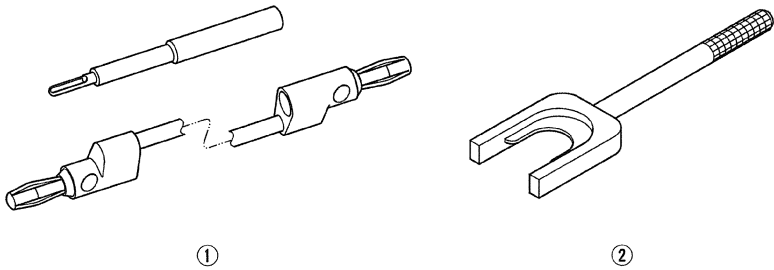
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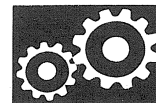


Rear Differential

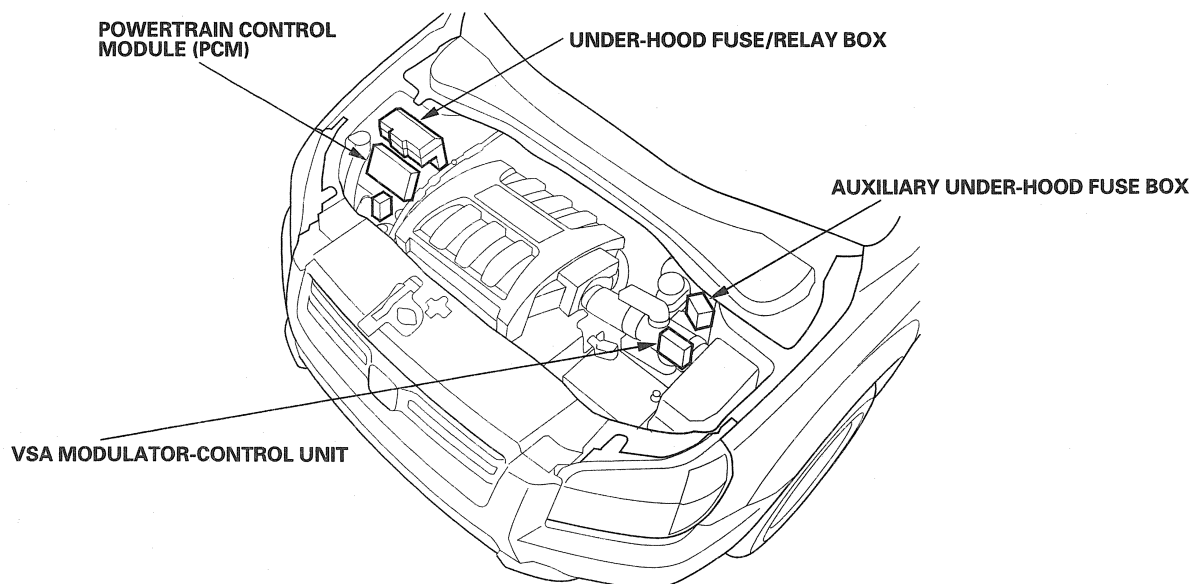
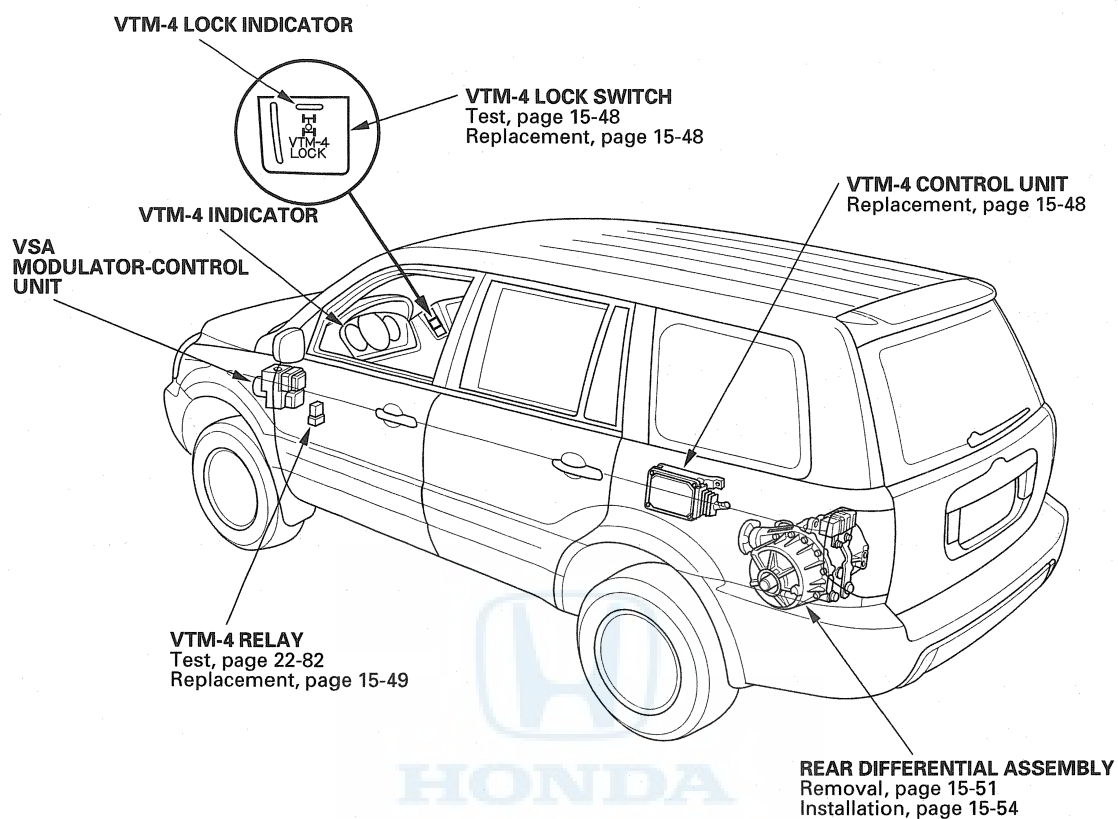
Special Tools

Ref. No.	Tool Number	Description	Qty
①	07SAZ-001000A	Backprobe Set	2
②	07AAD-S9VA000	Driveshaft Remover	1





Component Location Index



Rear Differential

General Troubleshooting Information

VTM-4 Indicator

The VTM-4 indicator comes on under certain conditions even if the 4WD system is working normally. Here are some examples:

- When you use high-powered wireless equipment such as a CB or Ham radio in the vehicle.
- When you keep spinning the front wheels while the vehicle is stuck in sand, mud, snow, etc.
- When the battery voltage suddenly drops below 8 volts or rises above 16 volts.

After the VTM-4 indicator comes on, it stays on until you turn the ignition switch OFF.

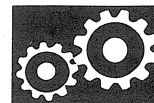
Diagnostic Trouble Code (DTC)

- The VTM-4 control unit can memorize up to seven different DTCs. The system displays the DTCs by blinking the VTM-4 indicator. Multiple DTCs are displayed in the order they occurred, beginning with the most recent.
- If the same DTC is detected more than once, the most recent DTC is written over the earlier one. Therefore, when the same problem is detected more than once, it is memorized as a single DTC.
- The DTCs are memorized in the EEPROM (non-volatile memory). Therefore, the memorized DTCs are not cleared when the battery or the VTM-4 control unit is disconnected.
- If there is a problem in the central processing unit (CPU) of the VTM-4 control unit, the VTM-4 indicator comes on, but no DTC is memorized.

Self-diagnosis

When a problem is detected by self-diagnosis, the system does the following:

- Turns on the VTM-4 indicator.
- Memorizes the DTC.
- Stops 4WD control and puts the vehicle back in 2WD (FWD).
- Reduces engine torque to suit the driving conditions when the abnormality was detected.



Initialization of the VTM-4 Control Unit

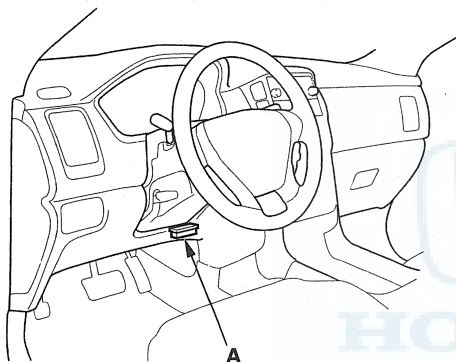
Whenever the VTM-4 control unit is replaced, it must be initialized to make the 4WD system function. There are two methods used to initialize the VTM-4 control unit.

The recommended method is to use the Honda Diagnostic System (HDS) with the appropriate software plugged into the data link connector (DLC).

The other method is to initialize the VTM-4 control unit manually.

Initialization with the HDS

1. With the ignition switch OFF, connect the HDS to the DLC (A).

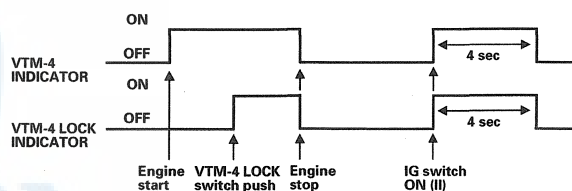


2. Make sure the HDS communicates with the VTM-4 control unit. If it doesn't go to the DLC circuit troubleshooting (see page 11-218).
3. Turn the ignition switch ON (II), and follow the prompts on the HDS screen.

NOTE: See the HDS user's manual for specific instruction.

Manual Initialization

1. Start the engine (the VTM-4 indicator comes on, and the VTM-4 LOCK switch indicator is off).
2. Apply the brakes, and shift to either the R, 1, or 2 position, then push the VTM-4 LOCK switch (the VTM-4 indicator stays on, and the VTM-4 LOCK switch indicator is on). The 4WD system is now in lock mode.
3. Turn the ignition switch OFF.
4. Turn the ignition switch ON (II) (the VTM-4 indicator and the VTM-4 LOCK indicator both come on for 4 seconds, then go off). The VTM-4 control unit is initialized.



(cont'd)

Rear Differential

General Troubleshooting Information (cont'd)

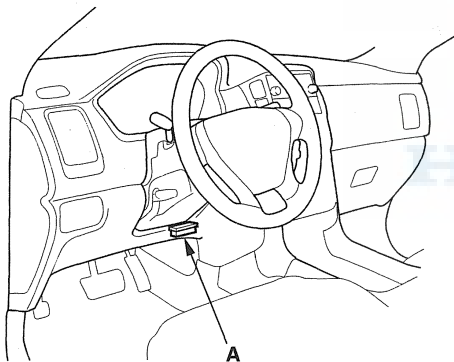
How to Check for DTCs

When the VTM-4 control unit senses an abnormality in the input or output systems, the VTM-4 indicator in the gauge control module will usually come on, and the malfunction indicator lamp (MIL), the D indicator, and/or the VSA indicator may also come on. There are two methods used to check for DTCs. The recommended method is to use the HDS with the appropriate software plugged into the data link connector DLC.

The other method is to connect the service check signal (SCS) circuit with the HDS. When the DLC is connected to the HDS, the VTM-4 indicator will blink the diagnostic trouble code (DTC) when the ignition switch is turned ON (II) and the SCS circuit is connected to body ground.

HDS Method

1. With the ignition switch OFF, connect the HDS to the DLC (A).



2. Make sure the HDS communicates with the VTM-4 control unit. If it doesn't go to the DLC circuit troubleshooting (see page 11-218).
3. Turn the ignition switch ON (II), and follow the prompts on the HDS to display the DTC(s) on the screen. After determining the DTC(s), refer to the DTC Troubleshooting.

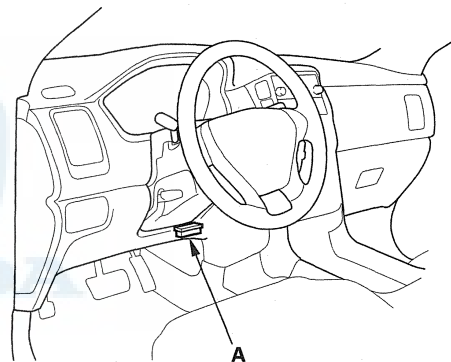
NOTE: See the HDS user's manual for specific instruction.

4. If there are fuel and emissions DTCs, A/T DTCs, or VSA DTCs at the same time, troubleshoot the fuel and emissions DTCs first, A/T DTCs second, VSA DTCs third, and VTM-4 DTCs last.

5. After recording the DTCs, clear all DTCs.
6. Test-drive the vehicle for several minutes in 4WD mode, and check for DTCs. If the DTC returns, refer to the DTC Troubleshooting. If the DTC does not return, there was an intermittent problem within the circuit. Make sure all connectors and terminals in the circuit are tight.

Service Check Signal Circuit (SCS) Method

1. Park the vehicle on level ground. Shift to the P position, then turn off the engine.
2. Release the parking brake pedal.
3. With the ignition switch OFF, connect the HDS to the DLC (A).

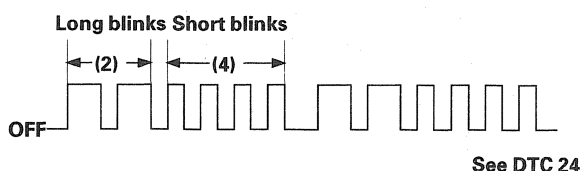


4. Short the SCS circuit to body ground using the HDS.



5. Turn the ignition switch ON (II), and watch the VTM-4 indicator.

NOTE: Codes above 10 are indicated by a series of long and short blinks. One long blink equals 10 short blinks. Add the long and short blinks together to determine the code. After determining the code, refer to the DTC Troubleshooting.



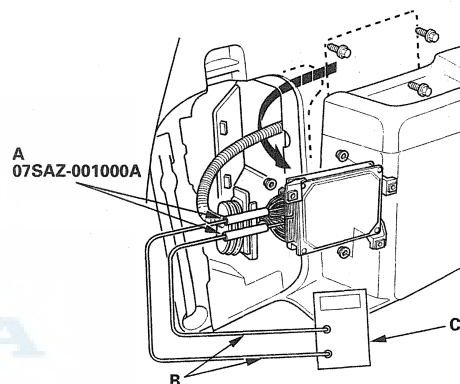
6. Record all the DTC(s), then refer to the DTC Troubleshooting to determine the meaning of each DTC.
7. Clear the DTCs from the VTM-4 control unit memory.
8. If the MIL, the D indicator, the VSA indicator, and the VTM-4 indicator all come on at the same time, troubleshoot the cause of the MIL first, then troubleshoot the A/T DTCs second, the VSA DTCs third, and the VTM-4 DTCs last.
9. Test-drive the vehicle for several minutes in 4WD mode, and check for DTCs.
If the DTC returns, refer to the DTC Troubleshooting.
If the DTC does not return, there was an intermittent problem within the circuit. Make sure all connectors and terminals in the circuit are tight.

How to Troubleshoot Circuits at the VTM-4 Control Unit

Special Tools Required

- Digital multimeter KS-AHM-32-003 (1) or a commercially available digital multimeter
- Backprobe set 07SAZ-001000A (2)

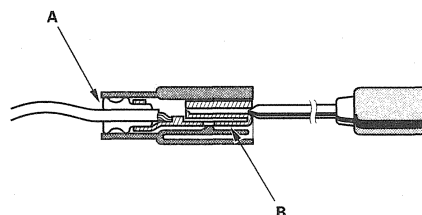
1. Remove the VTM-4 control unit (see page 15-48).
2. Connect the backprobe adapters (A) to the stacking patch cords (B), and connect the cords to a digital multimeter (C). Using the wire insulator as a guide for the contoured tip of the backprobe adapter, gently slide the tip into the connector from the wire side until it touches the end of the wire terminal.



3. If you can not get to the wire side of the connector or the wire side is sealed (A), disconnect the connector and probe the terminals (B) from the terminal side. Do not force the probe into the connector.

NOTICE

Do not puncture the insulation on a wire. Punctures can cause poor or intermittent electrical connections.



(cont'd)

Rear Differential

General Troubleshooting Information (cont'd)

How to Clear the VTM-4 Control Unit Memory

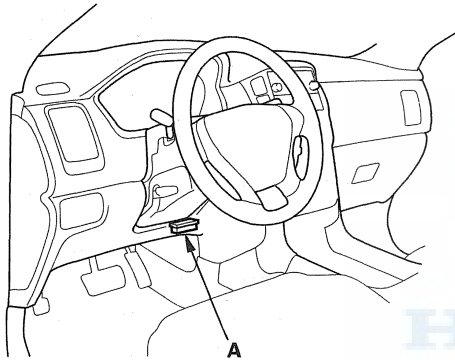
There are two methods used to clear DTCs from the VTM-4 control unit memory.

The recommended method is to use the HDS with the appropriate software plugged into the data link connector (DLC).

The other method is to connect the service check signal (SCS) connector with the HDS, and manually clear the memory.

HDS method

1. With the ignition switch OFF, connect the HDS to the DLC (A).

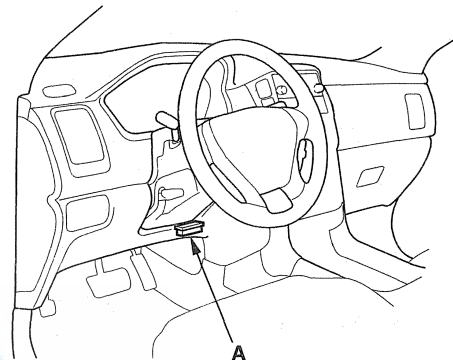


2. Make sure the HDS communicates with the VTM-4 control unit. If it doesn't go to the DLC circuit troubleshooting (see page 11-218).
3. Turn the ignition switch ON (II), and follow the prompts on the HDS screen to clear the DTC(s).

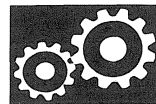
NOTE: See the HDS user's manual for specific instruction.

Service Check Signal Circuit (SCS) Method

1. Park the vehicle on level ground. Shift to the P position, then turn the ignition switch OFF.
2. Release the parking brake pedal.
3. With the ignition switch OFF, connect the HDS to the DLC (A).

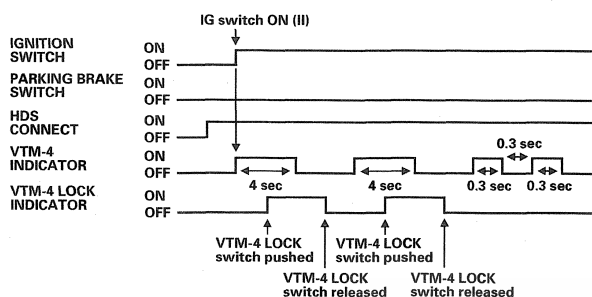


4. Short the SCS circuit to body ground using the HDS.
5. Turn the ignition switch ON (II).
6. The VTM-4 indicator comes on and stays on for 4 seconds. Press and hold the VTM-4 LOCK switch while the VTM-4 indicator is on.
7. When the VTM-4 indicator goes off, release the VTM-4 LOCK switch.
8. The VTM-4 indicator comes on and stays on for 4 seconds. Push the VTM-4 LOCK switch while the VTM-4 indicator is on.



9. When the VTM-4 indicator goes off, release the VTM-4 LOCK switch. The VTM-4 indicator will blink twice quickly to confirm that the DTCs have been cleared from the VTM-4 control unit memory.

NOTE: If the VTM-4 indicator does not blink twice quickly, the memory has not been cleared. Turn the ignition switch OFF, then repeat steps 5 through 9.



10. Turn the ignition switch OFF, then disconnect the HDS from the DLC.

How to End a Troubleshooting Session (required after any troubleshooting)

1. Clear the DTCs from the VTM-4 control unit memory.
2. Turn the ignition switch OFF, and disconnect the HDS from the DLC.
3. Verify that the problem has been repaired; test-drive the vehicle for several minutes in 4WD mode.



Rear Differential

DTC Troubleshooting Index

DTC	VTM-4 Indicator	Detection Item	Probable Cause(s)	Note
21-1	ON	Left-front wheel sensor	<ul style="list-style-type: none"> • Sensor is defective • Open or short in the wire harness • VTM-4 control unit is defective • VSA modulator-control unit is defective 	(see page 15-20)
22-1	ON	Right-front wheel sensor		(see page 15-21)
23-1	ON	Left-rear wheel sensor		
24-1	ON	Right-rear wheel sensor		
26-1	ON	VSA modulator-control unit or wire harness	<ul style="list-style-type: none"> • Open or short in the wire harness from the VTM-4 control unit to VSA modulator-control unit • VSA modulator-control unit is defective 	(see page 15-23)
37-1	ON	Engine RPM signal circuit	<ul style="list-style-type: none"> • Open or short in the wire harness • VTM-4 control unit or PCM is defective 	(see page 15-24)
38-1	ON			
41-1	ON	CAN communication (PCM/VSA system)	<ul style="list-style-type: none"> • Open or short in the wire harness between the VTM-4 control unit and the PCM/VSA • VTM-4 control unit or PCM is defective or VSA is defective 	(see page 15-27)
42-1	ON	Rear differential fluid temperature sensor	<ul style="list-style-type: none"> • Sensor is defective • Open or short in the wire harness • VTM-4 control unit is defective 	(see page 15-28)
43-1	ON			
44-1	ON	VTM-4 relay	<ul style="list-style-type: none"> • Relay is defective • Open or short in the wire harness • VTM-4 control unit is defective 	(see page 15-30)
51-1	ON	Left clutch electromagnetic coil	<ul style="list-style-type: none"> • Electromagnetic coil is defective • Open or short in the wire harness • VTM-4 control unit is defective 	(see page 15-32)
52-1	ON	Left clutch electromagnetic coil		
53-1	ON	Left clutch electromagnetic coil		
54-1	ON	Left clutch electromagnetic coil		
55-1	ON	Right clutch electromagnetic coil	<ul style="list-style-type: none"> • Electromagnetic coil is defective • Open or short in the wire harness • VTM-4 control unit is defective 	(see page 15-34)
56-1	ON	Right clutch electromagnetic coil		
57-1	ON	Right clutch electromagnetic coil		
58-1	ON	Right clutch electromagnetic coil		
59-1	ON	Right/left clutch electromagnetic coil power supply	<ul style="list-style-type: none"> • Low battery voltage • Fault in the charging system • VTM-4 control unit is defective 	(see page 15-36)
73-1	ON	MAP (manifold absolute pressure) sensor or PCM	Fault in the PCM system/MAP (manifold absolute pressure) sensor is defective	(see page 15-36)
76-1	ON	Rear differential clutch warning system	<ul style="list-style-type: none"> • Sensor is defective • Open or short in the wire harness • VTM-4 control unit is defective • VSA modulator-control unit is defective 	(see page 15-37)
77-1	ON	PCM	PCM is defective	(see page 15-39)
78-1	ON	VTM-4 control unit	VTM-4 control unit is defective	(see page 15-39)
41-2	ON	CAN communication (PCM/VSA system)	Open or short in the wire harness between the VTM-4 control unit and the PCM/VSA	(see page 15-27)
42-2	ON	Rear differential fluid temperature sensor	<ul style="list-style-type: none"> • Sensor is defective • Open or short in the wire harness • VTM-4 control unit is defective 	(see page 15-28)
21-2	ON	Left-front wheel sensor	<ul style="list-style-type: none"> • Sensor is defective • Open or short in the wire harness • VTM-4 control unit is defective • VSA modulator-control unit is defective 	(see page 15-20)
22-2	ON	Right-front wheel sensor		(see page 15-21)
23-2	ON	Left-rear wheel sensor		
24-2	ON	Right-rear wheel sensor		
53-2	ON	Left or right clutch electromagnetic coil	<ul style="list-style-type: none"> • Electromagnetic coil is defective • Open or short in the wire harness • VTM-4 control unit is defective 	(see page 15-32), (see page 15-34)

* : DTCs are indicated by the VTM-4 indicator when the data link connector (DLC) is connected to the HDS.



Symptom Troubleshooting Index

Symptom	Diagnostic Procedure	Also check for
The VTM-4 indicator comes on, but no DTCs are stored in any system: VTM-4, VSA, or PGM-FI	Symptom troubleshooting (see page 15-40).	
The VTM-4 indicator does not come on	Symptom troubleshooting (see page 15-41).	
The VTM-4 LOCK indicator does not come on when the VTM-4 LOCK switch is pressed	Symptom troubleshooting (see page 15-42).	
The VTM-4 LOCK indicator comes on when the ignition switch is turned ON (II) and does not go off	Symptom troubleshooting (see page 15-44).	
The VTM-4 LOCK indicator does not come on for about 4 seconds when the ignition switch is turned ON (II)	Symptom troubleshooting (see page 15-44).	
Noise and judder when turning at full lock	<ol style="list-style-type: none">1. Drain and refill the rear differential with new VTM-4 fluid (see page 15-46).2. Do the Differential Function Test (see page 15-47).3. Repeat steps 1 and 2 until the drained fluid comes out clean.4. Drain the rear differential, then install new drain plug washers, and refill with new VTM-4 fluid (see page 15-46).	
Clunk noise and then a bump when backing and turning	Normal clutch engagement at throttle opening	

Rear Differential

System Description

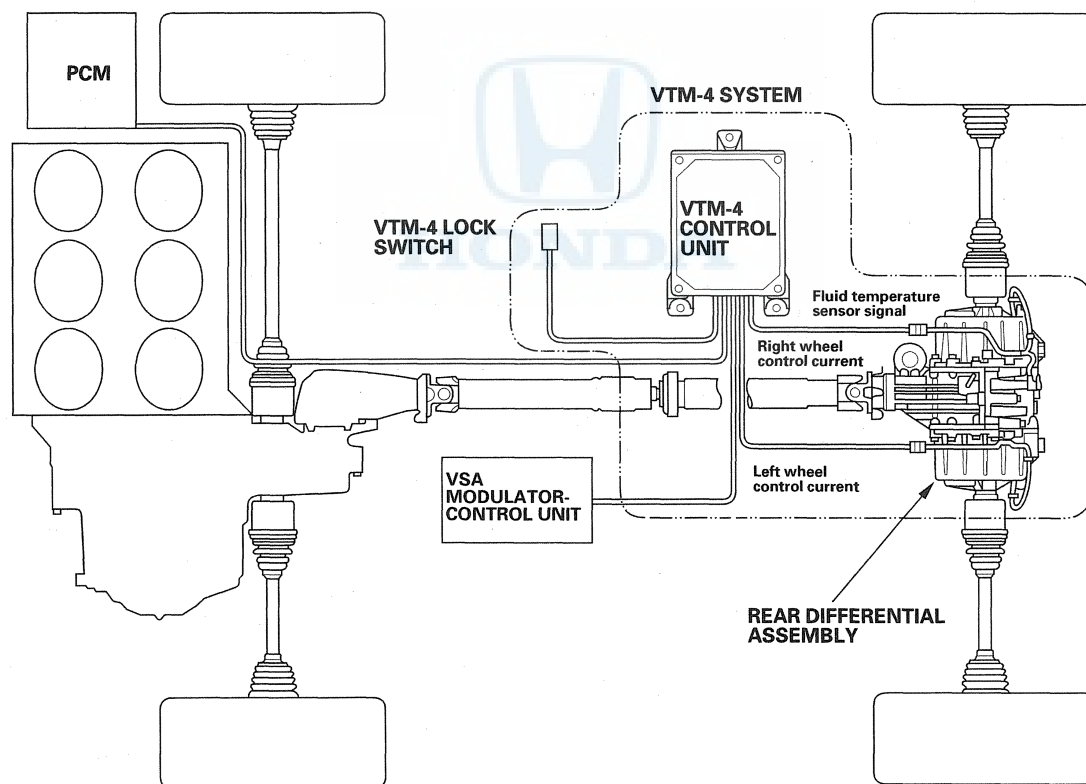
This vehicle is equipped with a rear differential system called the variable torque management 4WD (VTM-4) system. The VTM-4 control unit controls the currents flowing through electromagnetic coils to engage and disengage the right and left clutches in the rear differential assembly.

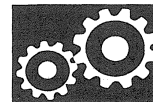
The operation of the VTM-4 system consists of the following functions:

- Vehicle acceleration torque control (VATC)
- Limited slip differential (LSD)
- Lock control

These functions automatically combine to distribute driving torque between the front and rear wheels when the vehicle accelerates or when wheels are slipping. When the vehicle speed is about 18 mph (30 km/h) or below, and the shift lever is in the R, 2, or 1 position, the system will manually engage the rear differential clutches when the VTM-4 LOCK switch is pressed. By design, in lock mode, the torque is gradually reduced at speeds above 6 mph (10 km/h) to minimize the load on the 4WD system.

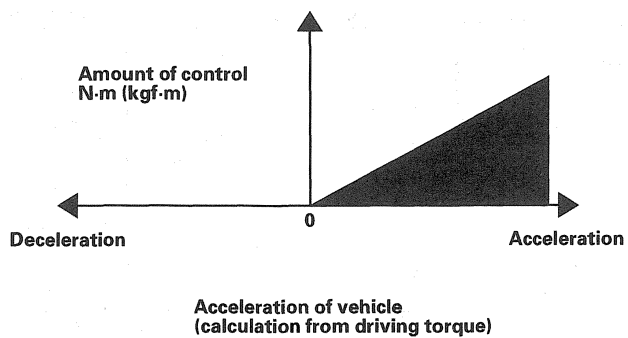
The VTM-4 control unit has a fail-safe function, a self-diagnosis function, and a provision to communicate with the HDS.





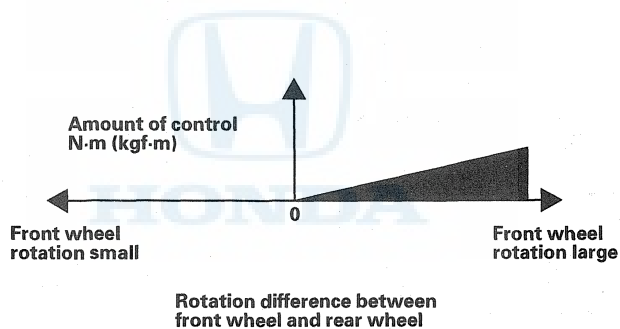
- VATC (Vehicle Acceleration Torque Control)

The torque to be delivered to the rear wheels is calculated based on the acceleration of the vehicle calculated in the VTM-4 control unit.



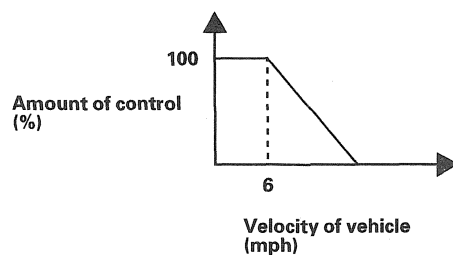
- LSD (Limited Slip Differential) Control

The torque to be delivered to the rear wheels is calculated based on the differences in speed and acceleration between the front and rear wheels.



- LOCK Control

Rear differential clutch lock control is done by pushing the VTM-4 LOCK switch manually when the shift lever is in the R, 1, or 2 position.



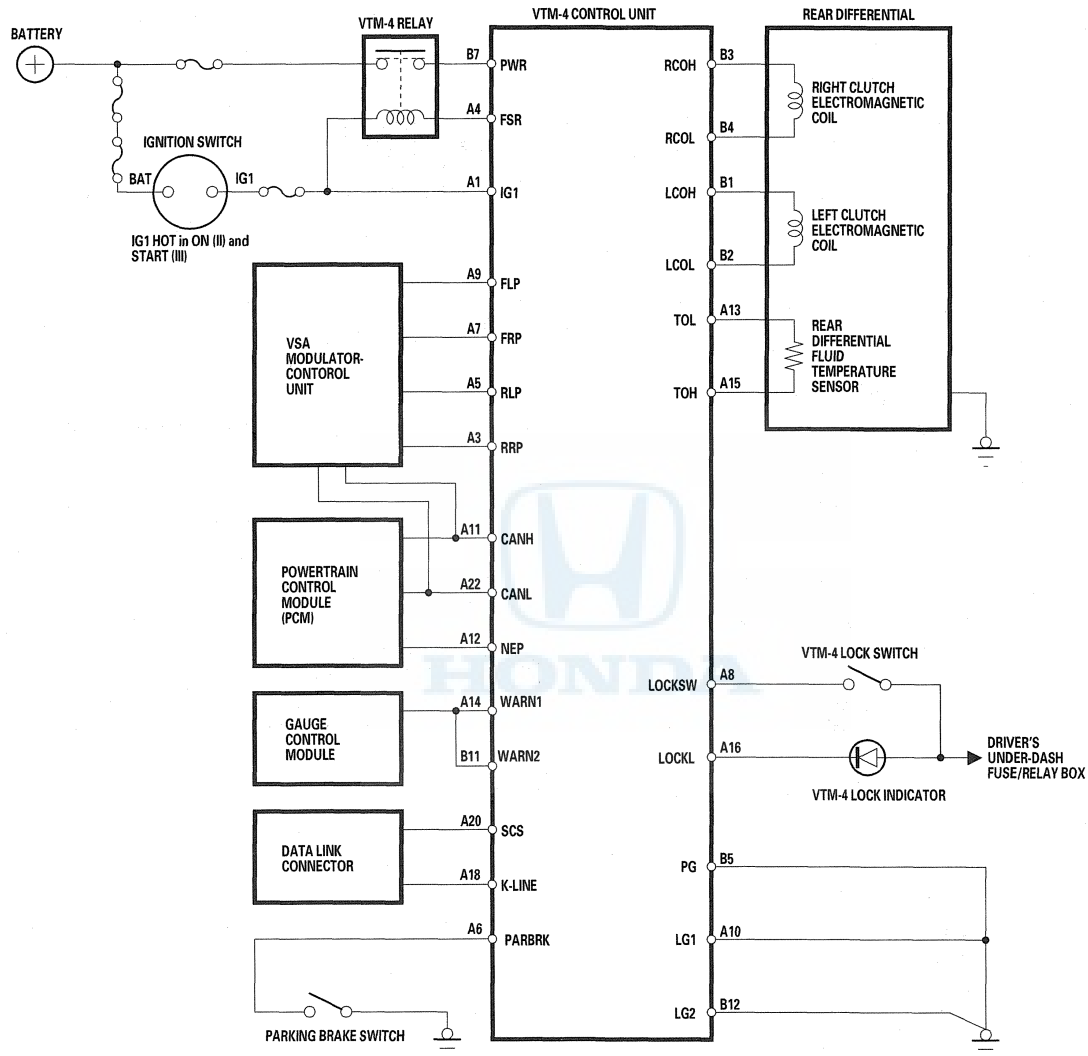
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Rear Differential

System Description (cont'd)

Electronic Control System

VTM-4 Control Unit Electrical Connections



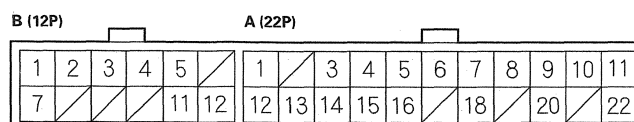


VTM-4 Control Unit Inputs and Outputs

The VTM-4 control unit terminal voltage and measuring conditions for the 4WD system are shown.

NOTE: Measure voltage with the connectors connected.

VTM-4 Control Unit Connector Terminal Locations



Wire side of female terminals

Terminal number	Wire color	Terminal name	Description	Measurement	
				Conditions	Voltage
A1	YEL	IG1 (Ignition 1)	Power supply for activating the system	Ignition switch ON (II)	Battery Voltage
A3	GRY/RED	RRP (Rear right pulse)	Detect right-rear wheel sensor signal	Turn wheel at 1 rotation/second	There should be 0 to about 5 V repeatedly. (A digital voltmeter reads about 2.5 V when the wheel is turning faster.)
A4	ORN/GRN	FSR (Fail-safe relay)	Drives VTM-4 relay	Ignition switch ON (II)	Battery Voltage
				Engine running	Less than 1 V
A5	GRY/YEL	RLP (Rear left pulse)	Detects left-rear wheel sensor signal	Turn wheel at 1 rotation/second	There should be 0 to about 5 V repeatedly. (A digital voltmeter reads about 2.5 V when the wheel is turning faster.)
A6	GRN/RED	PARBRK (Parking brake)	Detects parking brake signal	Parking brake on	Less than 2 V
				Parking brake off	Battery Voltage
A7	LT GRN	FRP (Front right pulse)	Detects right-front wheel sensor signal	Turn wheel at 1 rotation/second	There should be 0 to about 5 V repeatedly. (A digital voltmeter reads about 2.5 V when the wheel is turning faster.)
A8	BRN/WHT	LOCKSW (LOCK switch)	Detects VTM-4 LOCK switch signal	Ignition switch ON (II)	Less than 1 V
				VTM-4 LOCK switch ON (pushed in)	Battery Voltage
A9	WHT/RED	FLP (Front left pulse)	Detects left-front wheel sensor signal	Turn wheel at 1 rotation/second	There should be 0 to about 5 V repeatedly. (A digital voltmeter reads about 2.5 V when the wheel is turning faster.)

(cont'd)

Rear Differential

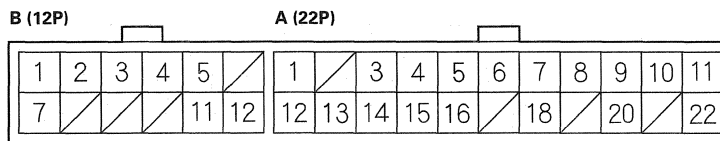
System Description (cont'd)

VTM-4 Control Unit Inputs and Outputs

The VTM-4 control unit terminal voltage and measuring conditions for the 4WD system are shown.

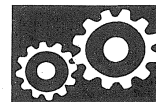
NOTE: Measure voltage with the connectors connected.

VTM-4 Control Unit Connector Terminal Locations



Wire side of female terminals

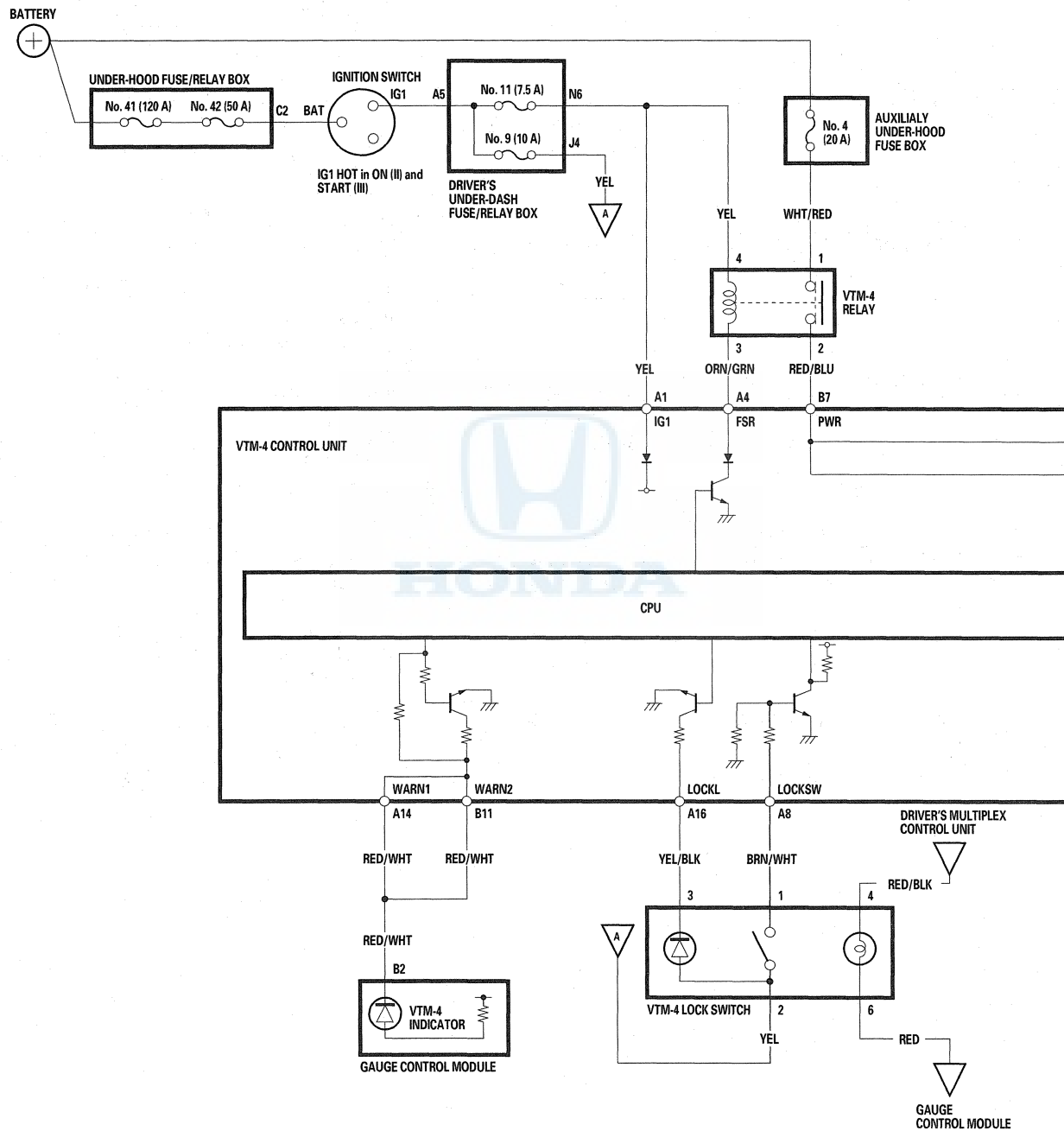
Terminal number	Wire color	Terminal name	Description	Measurement	
				Conditions	Voltage
A10	BRN/YEL	LG1 (Logic ground)	Ground		Less than 1 V
A11	WHT	CANH (CAN communication signal high)	CAN communication signal	Ignition switch ON (II)	About 2.5 V (pluses)
A12	BLU	NEP (Engine speed pulse)	Detects engine speed pulse	Ignition switch ON (II)	Above 8 V
				Engine running at 1,000 rpm	5—8 V
A13	BLK	TOL (Temperature oil low)	Detects rear differential fluid temperature sensor signal	Check at normal temperature with the ignition switch ON (II)	1—3.6 V
A14	RED/WHT	WARN1 (Warning 1)	Drives VTM-4 indicator	VTM-4 indicator on	Less than 4 V
				VTM-4 indicator off	Battery Voltage
A15	WHT	TOH (Temperature oil high)	Power supply for rear differential fluid temperature sensor	Ignition switch ON (II)	4—5 V
A16	YEL/BLK	LOCKL (Lock lamp)	Drives VTM-4 LOCK indicator	VTM-4 LOCK indicator on	Less than 4 V
				VTM-4 LOCK indicator off	Battery Voltage
A18	GRY	K-LINE	Communication signal to HDS	Ignition switch ON (II) (Not connected to HDS)	About 9.0 V
A20	BRN	SCS (Service check signal)	Detects service check signal	SCS circuit shorted	Less than 2 V
				SCS circuit opened	About 5 V
A22	RED	CANL (CAN communication signal low)	CAN communication signal	Ignition switch ON (II)	About 2.5 V (pluses)

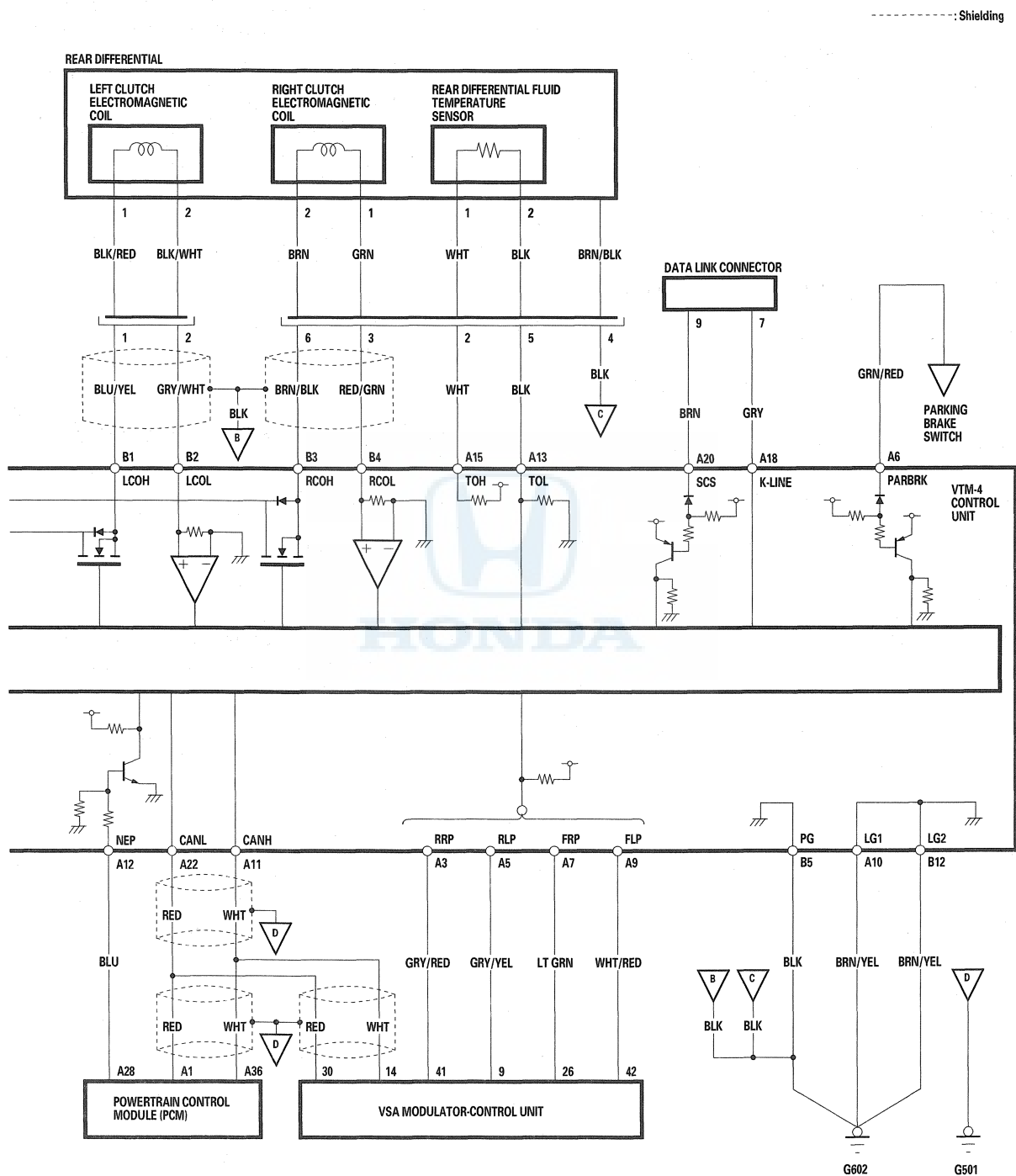


Terminal number	Wire color	Terminal name	Description	Measurement	
				Conditions	Voltage
B1	BLU/YEL	LCOH (Left coil high)	Drives left clutch electromagnetic coil (positive)	Ignition switch ON (II)	Less than 1 V
				Engine running	Less than 1 V
				VTM-4 LOCK switch ON (pushed in)	Above 3 V
B2	GRY/WHT	LCOL (Left coil low)	Drives left clutch electromagnetic coil (negative)	Ignition switch ON (II)	Less than 1 V
				Engine running	Less than 1 V
				VTM-4 LOCK switch ON (pushed in)	Less than 1 V
B3	BRN/BRK	RCOH (Right coil high)	Drives right clutch electromagnetic coil (positive)	Ignition switch ON (II)	Less than 1 V
				Engine running	Less than 1 V
				VTM-4 LOCK switch ON (pushed in)	Above 3 V
B4	RED/GRN	RCOL (Right coil low)	Drives right clutch electromagnetic coil (negative)	Ignition switch ON (II)	Less than 1 V
				Engine running	Less than 1 V
				VTM-4 LOCK switch ON (pushed in)	Less than 1 V
B5	BLK	PG (Power ground)	Ground		Less than 0.5 V
B7	RED/BLU	PWR (Power)	Power supply for VTM-4 control unit	10 seconds after ignition switch ON (II)	Less than 3 V
				Engine running	Battery Voltage
				VTM-4 LOCK switch ON (pushed in)	Battery Voltage
B11	RED/WHT	WARN2 (Warning 2)	Drives VTM-4 indicator	VTM-4 indicator on	Less than 4 V
				VTM-4 indicator off	Battery Voltage
B12	BRN/YEL	LG2 (Logic ground)	Ground		Less than 1 V

Rear Differential

Circuit Diagram





Rear Differential

DTC Troubleshooting

DTC 21-1, 21-2, 22-1, 22-2: Front Wheel Sensors

NOTE: Before you troubleshoot, review the general troubleshooting information (see page 15-4).

1. Turn the ignition switch ON (II).
2. Clear the DTCs with the HDS (see page 15-8).
3. Test-drive the vehicle, and check for DTCs with the HDS.

Is DTC 21-1, 21-2, 22-1, and/or 21-2 indicated?

YES—Go to step 4.

NO—Intermittent failure, the system is OK at this time. ■

4. Check for DTCs in the VSA system with the HDS.

Are there any VSA DTCs indicated?

YES—Go to the indicated DTC's troubleshooting. ■

NO—Go to step 5.

5. Turn the ignition switch OFF.
6. Raise the vehicle on the lift.
7. Spin the rear wheels by hand, and check for rear brake drag.

Are the rear brakes dragging?

YES—Repair cause of rear brake drag, and retest. ■

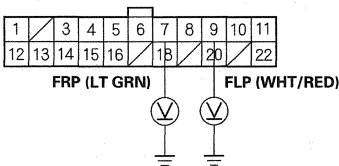
NO—Go to step 8.

8. Turn the ignition switch ON (II).

9. Measure voltage between the A7 and A9 terminals of the VTM-4 control unit and body ground while rotating the appropriate wheel (1 rotation/second).

DTC	Appropriate Terminal
21 (Left-front)	A9
22 (Right-front)	A7

VTM-4 CONTROL UNIT CONNECTOR A (22P)



Wire side of female terminals

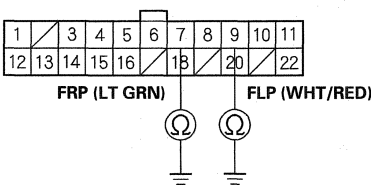
Does the voltage change from 0 V to about 5 V repeatedly?

YES—Go to step 15.

NO—Go to step 10.

10. Turn the ignition switch OFF.
11. Disconnect the VTM-4 control unit connector A (22P) and the VSA modulator-control unit 47P connectors.
12. Check the same terminal of VTM-4 control unit connector A (22P) for continuity to body ground.

VTM-4 CONTROL UNIT CONNECTOR A (22P)

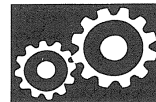


Wire side of female terminals

Is there continuity?

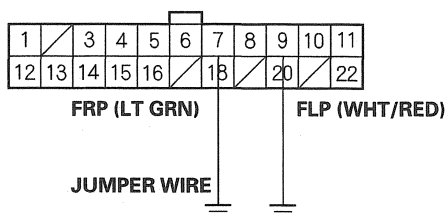
YES—Repair short to ground in the wire between the A7 and/or A9 terminals of the VTM-4 control unit and the VSA modulator-control unit. ■

NO—Go to step 13.



13. Connect the same terminals of VTM-4 control unit connector A (22P) to body ground with the jumper wires.

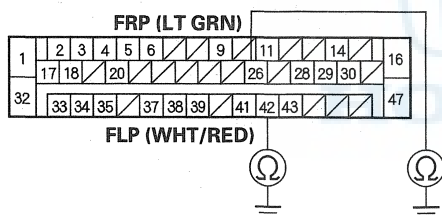
VTM-4 CONTROL UNIT CONNECTOR A (22P)



Wire side of female terminals

14. Check for continuity between the VSA modulator-control unit connector terminals No. 26 and No. 42 to body ground.

VSA MODULATOR-CONTROL UNIT CONNECTOR (47P)



Wire side of female terminals

Is there continuity?

YES—Go to step 15.

NO—Repair open in the wire between the A7 and/or A9 terminals of the VTM-4 control unit and the VSA modulator-control unit. ■

15. Check for loose terminal fit in the VTM-4 control unit and the VSA modulator-control unit connectors. If it is normal, replace the VTM-4 control unit. Test-drive the vehicle, and check for DTCs with the HDS.

Is DTC 21-1, 21-2, 22-1, and/or 21-2 indicated?

YES—Replace the VSA modulator-control unit (see page 19-100). ■

NO—The system is OK at this time. ■

DTC 23-1, 23-2, 24-1, 24-2: Rear Wheel Sensors

NOTE: Before you troubleshoot, review the general troubleshooting information (see page 15-4).

1. Turn the ignition switch ON (II).
2. Clear the DTCs with the HDS (see page 15-8).
3. Start the engine, and shift to the D position. Drive the vehicle at speeds over 25 mph (40 km/h), while keeping the engine speed below 2,500 rpm for at least 30 seconds.

NOTE: Be careful not to overheat the rear differential clutch system.

4. Check for DTCs with the HDS.

Is DTC 23-1, 23-2, 24-1, and/or 24-2 indicated?

YES—Go to step 5.

NO—Intermittent failure, the system is OK at this time. ■

5. Check for DTCs in the VSA system with the HDS.

Are there any VSA DTCs indicated?

YES—Go to the indicated DTC's troubleshooting. ■

NO—Go to step 6.

6. Turn the ignition switch OFF.
7. Raise the vehicle on the lift.
8. Spin the rear wheels by hand, and check for rear brake drag.

Are the rear brakes dragging?

YES—Repair cause of rear brake drag, and retest. ■

NO—Go to step 9.

9. Turn the ignition switch ON (II).

(cont'd)

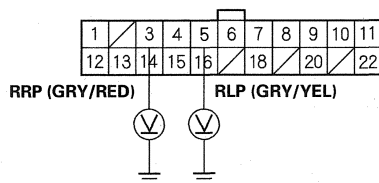
Rear Differential

DTC Troubleshooting (cont'd)

10. Measure voltage between the A3 and A5 terminals of the VTM-4 control unit and body ground while rotating the appropriate wheel (1 rotation/second).

DTC	Appropriate Terminal
23 (Left-rear)	A5
24 (Right-rear)	A3

VTM-4 CONTROL UNIT CONNECTOR A (22P)



Wire side of female terminals

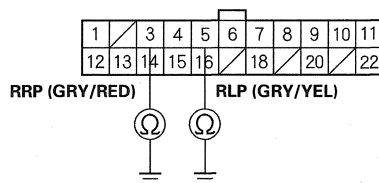
Does the voltage change from 0 V to about 5 V repeatedly?

YES—Go to step 17.

NO—Go to step 11.

11. Turn the ignition switch OFF.
12. Disconnect the VTM-4 control unit connector A (22P) and the VSA modulator-control unit 47P connectors.
13. Check the same terminal of VTM-4 control unit connector A (22P) for continuity to body ground.

VTM-4 CONTROL UNIT CONNECTOR A (22P)



Wire side of female terminals

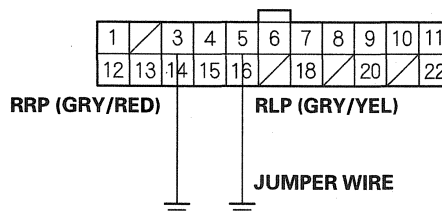
Is there continuity?

YES—Repair short to ground in the wire between the A3 and/or A5 terminals of the VTM-4 control unit and the VSA modulator-control unit. ■

NO—Go to step 14.

14. Connect the same terminals of VTM-4 control unit connector A (22P) to body ground with the jumper wires.

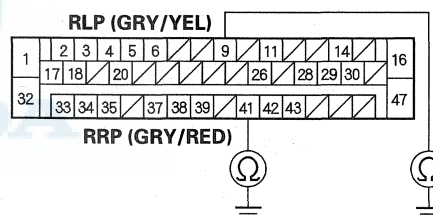
VTM-4 CONTROL UNIT CONNECTOR A (22P)



Wire side of female terminals

15. Check for continuity between the VSA modulator-control unit connector terminals No. 9 and No. 41 to body ground.

VSA MODULATOR-CONTROL UNIT CONNECTOR (47P)

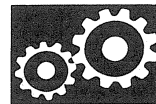


Wire side of female terminals

Is there continuity?

YES—Go to step 16.

NO—Repair open in the wire between the A3 and/or A5 terminals of the VTM-4 control unit and the VSA modulator-control unit. ■



16. Check for loose terminal fit in the VTM-4 control unit and the VSA modulator-control unit connectors. If it is normal, replace the VTM-4 control unit, then go to step 15.

17. Start the engine and shift to the D position. Drive the vehicle at speeds over 25 mph (40 km/h), while keeping the engine speed below 2,500 rpm for at least 30 seconds.

NOTE: Be careful not to overheat the rear differential clutch system.

18. Check for DTCs with the HDS.

Is DTC 23-1, 23-2, 24-1, and/or 24-2 indicated?

YES—Replace the VSA modulator-control unit (see page 19-100). ■

NO—The system is OK at this time. ■

DTC 26-1: VSA Modulator-Control Unit or Wire Harness

NOTE: Before you troubleshoot, review the general troubleshooting information (see page 15-4).

1. Turn the ignition switch ON (II).
2. Clear the DTCs with the HDS (see page 15-8).
3. Test-drive the vehicle, and check for DTCs with the HDS.

Is DTC 26-1 indicated?

YES—Go to step 4.

NO—Intermittent failure, the system is OK at this time. ■

4. Check for DTCs in the VSA system with the HDS.

Are there any VSA DTCs indicated?

YES—Go to the indicated DTC's troubleshooting. ■

NO—Go to step 5.

5. Turn the ignition switch OFF.
6. Raise the vehicle on the lift.
7. Turn the ignition switch ON (II).

(cont'd)

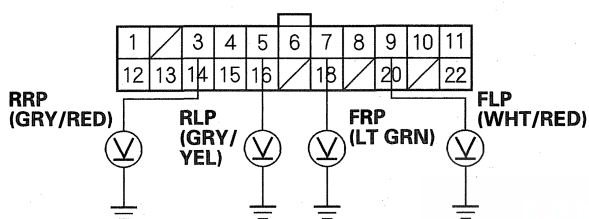
Rear Differential

DTC Troubleshooting (cont'd)

8. Measure voltage between the A3, A5, A7, and A9 terminals of the VTM-4 control unit and body ground while rotating the appropriate wheel (1 rotation/ second).

Appropriate wheel	Appropriate Terminal
Left-front	A9
Right-front	A7
Left-rear	A5
Right-rear	A3

VTM-4 CONTROL UNIT CONNECTOR A (22P)



Wire side of female terminals

Do all four readings change from 0 V to about 5 V repeatedly?

YES—Check for loose terminal fit in the VTM-4 control unit. If it is normal, replace the VTM-4 control unit (see page 15-48). ■

NO—Check for loose wires or poor connections between the VTM-4 control unit and the VSA modulator-control unit. If it is normal, replace the VSA modulator-control unit (see page 19-100). ■

DTC 37-1, 38-1: Engine RPM Signal Circuit

NOTE: Before you troubleshoot, review the general troubleshooting information (see page 15-4).

1. Turn the ignition switch ON (II).
2. Clear the DTCs with the HDS (see page 15-8).
3. Test-drive the vehicle, and check for DTCs with the HDS.

Is DTC 37-1 and/or 38-1 indicated?

YES—Go to step 4.

NO—Intermittent failure, the system is OK at this time. ■

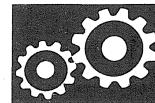
4. Check for DTCs in the PGM-FI system with the HDS.

Are there any PGM-FI DTC's indicated?

YES—Go to the indicated DTC's troubleshooting. ■

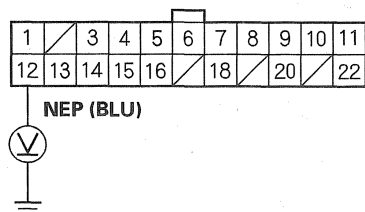
NO—Go to step 5.

5. Turn the ignition switch OFF.
6. Disconnect the VTM-4 control unit connector A (22P) from the VTM-4 control unit.
7. Turn the ignition switch OFF.



8. Measure voltage between the A12 terminal of the VTM-4 control unit and body ground.

VTM-4 CONTROL UNIT CONNECTOR A (22P)



Wire side of female terminals

Condition	Voltage
Ignition switch ON (II)	Above 8 V
Engine running at 1,000 rpm	5–8 V

Is the voltage correct?

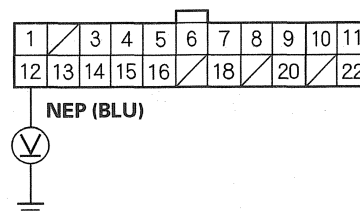
YES—Go to step 18.

NO—Go to step 9.

9. Turn the ignition switch OFF.
10. Jump the SCS line with the HDS.
11. Disconnect PCM connector A (44P).
12. Turn the ignition switch ON (II).

13. Measure voltage between the A12 terminal of the VTM-4 control unit and body ground.

VTM-4 CONTROL UNIT CONNECTOR A (22P)



Wire side of female terminals

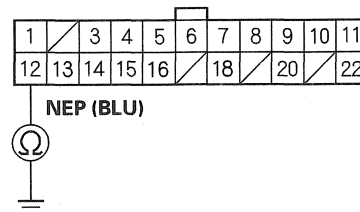
Is there voltage?

YES—Repair short to power in the wire between the A12 terminal of the VTM-4 control unit and the A28 terminal of the PCM. ■

NO—Go to step 14.

14. Turn the ignition switch OFF.
15. Check for continuity between the A12 terminal of the VTM-4 control unit and body ground.

VTM-4 CONTROL UNIT CONNECTOR A (22P)



Wire side of female terminals

Is there continuity?

YES—Repair short to ground in the wire between the A12 terminal of the VTM-4 control unit, the A28 terminal of the PCM. ■

NO—Go to step 16.

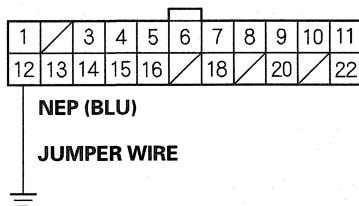
(cont'd)

Rear Differential

DTC Troubleshooting (cont'd)

16. Connect the A12 terminal of the VTM-4 control unit connector A (22P) to body ground with the jumper wire.

VTM-4 CONTROL UNIT CONNECTOR A (22P)

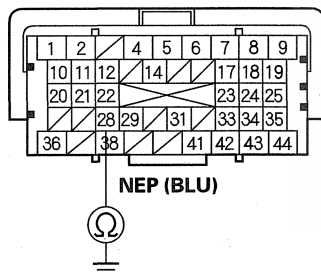


JUMPER WIRE

Wire side of female terminals

17. Check for continuity between PCM connector terminal A28 and body ground.

PCM CONNECTOR A (44P)



Terminal side of female terminals

Is there continuity?

YES—Go to step 18.

NO—Repair open in the wire between the A12 terminal of the VTM-4 control unit and the A28 terminal of the PCM. ■

18. Check for loose terminal fit in the VTM-4 control unit, PCM connectors. If it is normal, replace the VTM-4 control unit. Test-drive the vehicle, and check for DTCs with the HDS.

Is DTC 37-1 and/or 38-1 indicated?

YES—Replace the PCM (see page 11-230). ■

NO—The system is OK at this time. ■



DTC 41-1, 41-2: CAN Communication (PCM/VSA System)

NOTE: Before you troubleshoot, review the general troubleshooting information (see page 15-4).

1. Turn the ignition switch ON (II).
2. Clear the DTCs with the HDS (see page 15-8).
3. Test-drive the vehicle, and check for DTCs with the HDS.

Is DTC 41-1 and/or 38-1 indicated?

YES—Go to step 4.

NO—Intermittent failure, the system is OK at this time. ■

4. Check for DTCs in the PGM-FI system and VSA system with the HDS.

Are there any DTCs indicated?

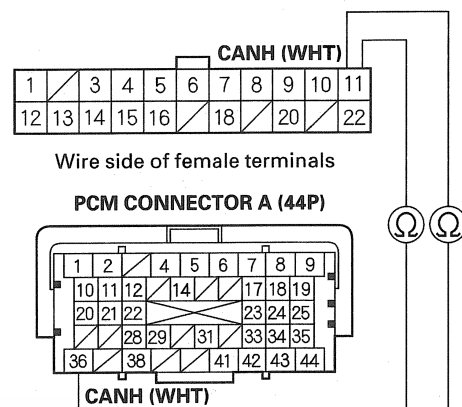
YES—Go to the indicated DTC's troubleshooting. ■

NO—Go to step 5.

5. Turn the ignition switch OFF.
6. Jump the SCS line with the HDS.
7. Disconnect VTM-4 control unit connector A (22P), PCM connector A (44P), and the VSA modulator-control unit 47P connector.

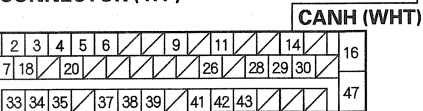
8. Check for continuity between the A11 terminal of the VTM-4 control unit connector A (22P), the A36 terminal of the PCM, and the 14 terminal of the VSA modulator-control unit.

VTM-4 CONTROL UNIT CONNECTOR A (22P)



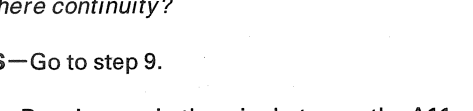
Terminal side of female terminals

PCM CONNECTOR A (44P)



Wire side of female terminals

VSA MODULATOR-CONTROL UNIT CONNECTOR (47P)



Wire side of female terminals

Is there continuity?

YES—Go to step 9.

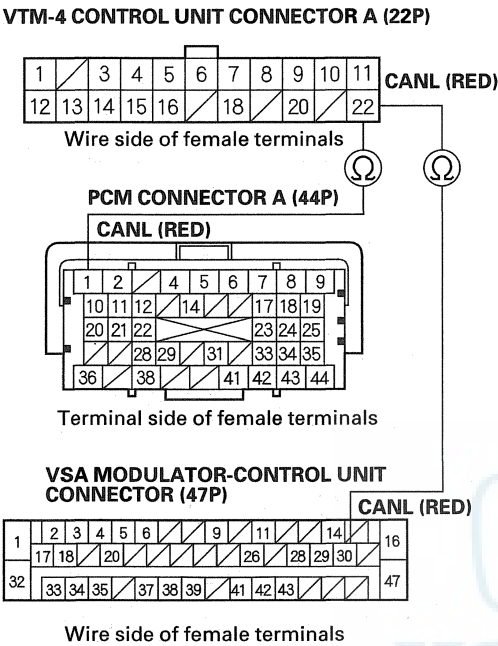
NO—Repair open in the wire between the A11 terminal of the VTM-4 control unit, A36 terminal of the PCM, and the 14 terminal of the VSA modulator-control unit. ■

(cont'd)

Rear Differential

DTC Troubleshooting (cont'd)

9. Check for continuity between the A22 terminal of the VTM-4 control unit connector A (22P), the A1 terminal of the PCM, and the 30 terminal of the VSA modulator-control unit.



Is there continuity?

YES—Check for loose terminal fit in the VTM-4 control unit, PCM, VSA modulator-control unit connectors. If it is normal, replace the VTM-4 control unit (see page 15-48). ■

NO—Repair open in the wire between the A22 terminal of the VTM-4 control unit, A1 terminal of the PCM, and the 12 terminal of the VSA modulator-control unit. ■

DTC 42-1, 42-2, 43-1: Rear Differential Fluid Temperature Sensor

NOTE: Before you troubleshoot, review the general troubleshooting information (see page 15-4).

1. Turn the ignition switch ON (II).
2. Clear the DTCs with the HDS (see page 15-8).
3. Test-drive the vehicle, and check for DTCs with the HDS.

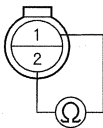
Is DTC 42-1, 42-2, and/or 43-1 indicated?

YES—Go to step 4.

NO—Intermittent failure, the system is OK at this time. ■

4. Turn the ignition switch OFF.
5. Remove the wire harness cover from the rear differential (see step 2 on page 15-47).
6. Disconnect the 2P connector from the rear differential fluid temperature sensor, then measure resistance of the rear differential fluid temperature sensor.

REAR DIFFERENTIAL FLUID TEMPERATURE SENSOR CONNECTOR



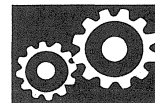
Terminal side of male terminals

fluid temperature	Resistance
32 °F (0 °C)	5.82 k Ω to 7.26 k Ω
86 °F (30 °C)	1.53 k Ω to 1.83 k Ω
212 °F (100 °C)	148 Ω to 162 Ω
284 °F (140 °C)	52 Ω to 61 Ω

Is the resistance correct?

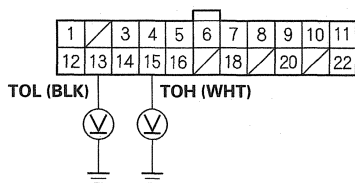
YES—Go to step 7.

NO—Replace the rear differential fluid temperature sensor (see page 15-46). ■



7. Disconnect the VTM-4 control unit connector A (22P) from the VTM-4 control unit.
8. Turn the ignition switch ON (II).
9. Measure voltage between the A13 and A15 terminals of the VTM-4 control unit and body ground.

VTM-4 CONTROL UNIT CONNECTOR A (22P)



Wire side of female terminals

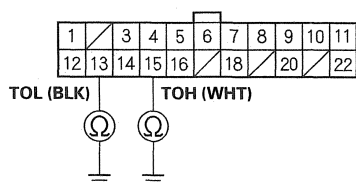
Is there battery voltage?

YES—Repair short to power in the wire between the A13 or A15 terminals of the VTM-4 control unit and the rear differential fluid temperature sensor. ■

NO—Go to step 10.

10. Turn the ignition switch OFF.
11. Check for continuity between the A13 and A15 terminals of the VTM-4 control unit and body ground.

VTM-4 CONTROL UNIT CONNECTOR A (22P)



Wire side of female terminals

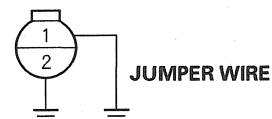
Is there continuity?

YES—Repair short to ground in the wire between the A13 or A15 terminals of the VTM-4 control unit and the rear differential fluid temperature sensor. ■

NO—Go to step 12.

12. Connect the rear differential fluid temperature sensor connector terminals No. 1 and No. 2 to body ground with jumper wires.

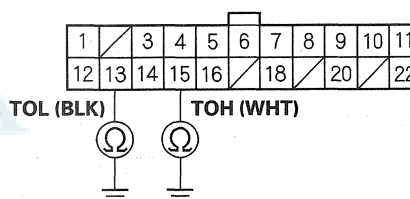
REAR DIFFERENTIAL FLUID
TEMPERATURE SENSOR CONNECTOR



Terminal side of female terminals

13. Check for continuity between the A13 and A15 terminals of the VTM-4 control unit connector A (22P) and body ground.

VTM-4 CONTROL UNIT CONNECTOR A (22P)



Wire side of female terminals

Is there continuity?

YES—Check for loose terminal fit in the VTM-4 control unit and the rear differential fluid temperature sensor connectors. If it is normal, replace the VTM-4 control unit (see page 15-48). ■

NO—Repair open in the wire between the A13 or A15 terminals of the VTM-4 control unit and the rear differential fluid temperature sensor. ■

Rear Differential

DTC Troubleshooting (cont'd)

DTC 44-1: VTM-4 Relay

NOTE: Before you troubleshoot, review the general troubleshooting information (see page 15-4).

1. Turn the ignition switch ON (II).
2. Clear the DTCs with the HDS (see page 15-8).
3. Test-drive the vehicle, and check for DTCs with the HDS.

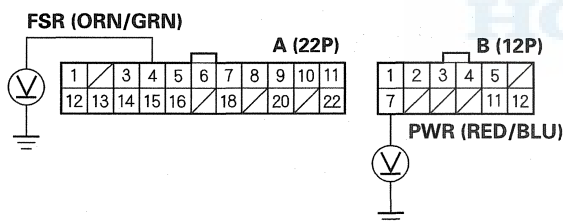
Is DTC 44-1 indicated?

YES—Go to step 4.

NO—Intermittent failure, the system is OK at this time. ■

4. Turn the ignition switch OFF with the VTM-4 control unit still connected, measure voltage between the A4 and B7 terminals of the VTM-4 control unit and body ground with the ignition switch ON (II), and after the engine starts.

VTM-4 CONTROL UNIT CONNECTORS



Wire side of female terminals

Condition	B7 (PWR)	A4 (FSR)
Ignition switch ON (II)	Less than 3 V	Battery voltage
Engine start	Battery voltage	Less than 1 V

Is the voltage correct?

YES—Go to step 16.

NO—Go to step 5.

5. Turn the ignition switch OFF.

6. Remove the VTM-4 relay, and test it (see page 22-82).

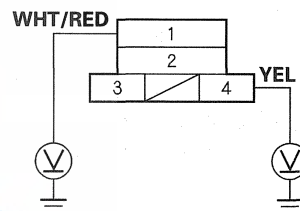
Is the VTM-4 relay OK?

YES—Go to step 7.

NO—Replace the VTM-4 relay (see page 15-49). ■

7. Turn the ignition switch ON (II) with the VTM-4 relay removed.
8. Measure voltage between the No. 1 and No. 4 terminals of the VTM-4 relay 4P connector and body ground.

VTM-4 RELAY CONNECTOR (4P)



Wire side of female terminals

Is there battery voltage?

YES—Go to step 9.

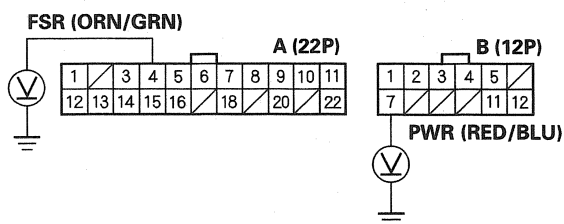
NO—Check for a blown No. 4 (20 A) fuse in the auxiliary under-hood fuse box or No. 11 (7.5 A) fuse in the driver's under-dash fuse/relay box. If the fuses are OK, repair open in the wire between the auxiliary under-hood fuse box or the driver's under-dash fuse/relay box and the VTM-4 relay. ■

9. Turn the ignition switch OFF.
10. Disconnect the VTM-4 control unit connector A (22P) and connector B (12P) from the VTM-4 control unit.
11. Turn the ignition switch ON (II).



12. Measure voltage between the A4 and B7 terminals of the VTM-4 control unit and body ground.

VTM-4 CONTROL UNIT CONNECTORS



Wire side of female terminals

Is there battery voltage?

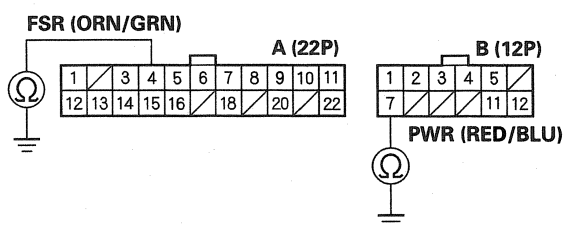
YES—Repair short to power in the wire between the A4 or B7 terminals of the VTM-4 control unit and the VTM-4 relay. ■

NO—Go to step 13.

13. Turn the ignition switch OFF.

14. Check for continuity between the A4 and B7 terminals of the VTM-4 control unit and body ground.

VTM-4 CONTROL UNIT CONNECTORS



Wire side of female terminals

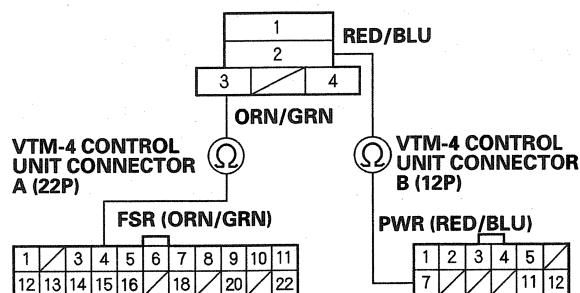
Is there continuity?

YES—Repair short to ground in the wire between the A4 or B7 terminals of the VTM-4 control unit and the VTM-4 relay. ■

NO—Go to step 15.

15. Check for continuity between the B7 terminal of the VTM-4 control unit and the No. 2 terminal of the VTM-4 relay, and between the A4 terminal of the VTM-4 control unit and the No. 3 terminal of the VTM-4 relay.

VTM-4 RELAY CONNECTOR (4P)



Wire side of female terminals

Is there continuity?

YES—Go to step 16.

NO—Repair open in the wire between the A4 or B7 terminals of the VTM-4 control unit and the VTM-4 relay. ■

16. Check for loose terminal fit in the VTM-4 control unit and the VTM-4 relay connectors. If it is normal, test-drive the vehicle, and check for DTCs with the HDS.

Is DTC 44-1 indicated?

YES—Replace the VTM-4 control unit (see page 15-48). ■

NO—The system is OK at this time. ■

Rear Differential

DTC Troubleshooting (cont'd)

DTC 51-1, 52-1, 53-1, 53-2, 54-1: Left Clutch Electromagnetic Coil

NOTE: Before you troubleshoot, review the general troubleshooting information (see page 15-4).

1. Turn the ignition switch ON (II).
2. Clear the DTCs with the HDS (see page 15-8).
3. Test-drive the vehicle, and check for DTCs with the HDS.

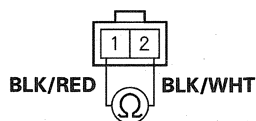
Is DTC 51-1, 52-1, 53-2, and/or 54-1 indicated?

YES—Go to step 4.

NO—Intermittent failure, the system is OK at this time. ■

4. Turn the ignition switch OFF.
5. Disconnect the left clutch electromagnetic coil 2P connector on the differential. Then measure resistance between the No. 1 and No. 2 terminals of the left clutch electromagnetic coil connector.

LEFT CLUTCH ELECTROMAGNETIC COIL CONNECTOR (2P)



Terminal side of male terminals

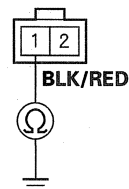
Is there 1 Ω to 3 Ω?

YES—Go to step 6.

NO—Replace the rear differential assembly. ■

6. Measure resistance between the No. 1 terminal of the left clutch electromagnetic coil and body ground.

LEFT CLUTCH ELECTROMAGNETIC COIL CONNECTOR (2P)



Terminal side of male terminals

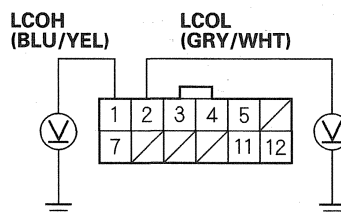
Is there about 50 MΩ or more?

YES—Go to step 7.

NO—Replace the rear differential assembly. ■

7. Disconnect the VTM-4 control unit connector B (12P) from the VTM-4 control unit.
8. Turn the ignition switch ON (II).
9. Measure voltage between the B1 and B2 terminals of the VTM-4 control unit and body ground.

VTM-4 CONTROL UNIT CONNECTOR B (12P)

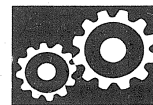


Wire side of female terminals

Is there battery voltage?

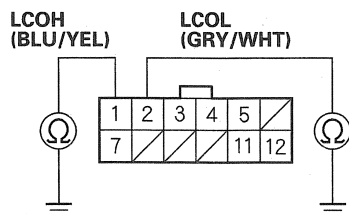
YES—Repair short to power in the wire between the B1 or B2 terminals of the VTM-4 control unit and the left clutch electromagnetic coil. ■

NO—Go to step 10.



10. Turn the ignition switch OFF.
11. Check for continuity between the B1 and B2 terminals of the VTM-4 control unit and body ground.

VTM-4 CONTROL UNIT CONNECTOR B (12P)



Wire side of female terminals

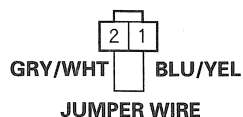
Is there continuity?

YES—Repair short to ground in the wire between the B1 or B2 terminals of the VTM-4 control unit and the left clutch electromagnetic coil. ■

NO—Go to step 12.

12. Connect a jumper wire between the No. 1 and No. 2 terminals of the 2P connector of the left clutch electromagnetic coil.

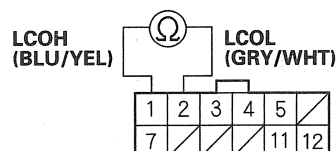
LEFT CLUTCH ELECTROMAGNETIC COIL CONNECTOR (2P)



Terminal side of female terminals

13. Check for continuity between the B1 and B2 terminals of the VTM-4 control unit.

VTM-4 CONTROL UNIT CONNECTOR B (12P)



Wire side of female terminals

Is there continuity?

YES—Do the troubleshooting for the right clutch electromagnetic coil (see page 15-34). If it is normal, replace the VTM-4 control unit (see page 15-48). ■

NO—Repair open in the wire between the B1 or B2 terminals of the VTM-4 control unit and the left clutch electromagnetic coil. ■

Rear Differential

DTC Troubleshooting (cont'd)

DTC 53-2, 55-1, 56-1, 57-1, 58-1: Right Clutch Electromagnetic Coil

NOTE: Before you troubleshoot, review the general troubleshooting information (see page 15-4).

1. Turn the ignition switch ON (II).
2. Clear the DTCs with the HDS (see page 15-8).
3. Test-drive the vehicle, and check for DTCs with the HDS.

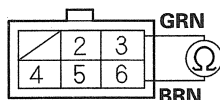
Is DTC 53-2, 55-1, 56-1, 57-1, and/or 58-1 indicated?

YES—Go to step 4.

NO—Intermittent failure, the system is OK at this time. ■

4. Turn the ignition switch OFF.
5. Disconnect the right clutch electromagnetic coil 6P connector on the differential. Then measure resistance between the No. 3 and No. 6 terminals of the right clutch electromagnetic coil 6P connector.

RIGHT CLUTCH ELECTROMAGNETIC COIL/ REAR DIFFERENTIAL FLUID TEMPERATURE SENSOR CONNECTOR (6P)



Terminal side of male terminals

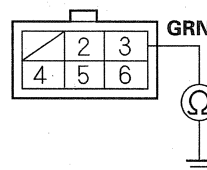
Is there 1 Ω to 3 Ω ?

YES—Go to step 6.

NO—Replace the rear differential assembly. ■

6. Measure resistance between the No. 3 terminal and body ground.

RIGHT CLUTCH ELECTROMAGNETIC COIL/ REAR DIFFERENTIAL FLUID TEMPERATURE SENSOR CONNECTOR (6P)



Terminal side of male terminals

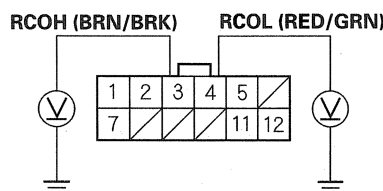
Is there 50 M Ω or more?

YES—Go to step 7.

NO—Replace the rear differential assembly. ■

7. Disconnect the VTM-4 control unit connector B (12P) from the VTM-4 control unit.
8. Turn the ignition switch ON (II).
9. Measure voltage between the B3 and B4 terminals of the VTM-4 control unit and body ground.

VTM-4 CONTROL UNIT CONNECTOR B (12P)



Wire side of female terminals

Is there battery voltage?

YES—Repair short to power in the wire between the B3 or B4 terminals of the VTM-4 control unit and the right clutch electromagnetic coil. ■

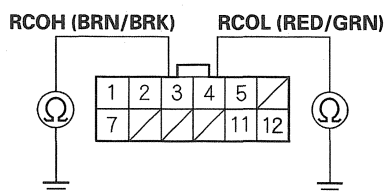
NO—Go to step 10.



10. Turn the ignition switch OFF.

11. Check for continuity between the B3 and B4 terminals of the VTM-4 control unit and body ground.

VTM-4 CONTROL UNIT CONNECTOR B (12P)



Wire side of female terminals

Is there continuity?

YES—Repair short to ground in the wire between the B3 or B4 terminals of the VTM-4 control unit and the right clutch electromagnetic coil. ■

NO—Go to step 12.

12. Connect a jumper wire between the No. 3 and No. 6 terminals of the right clutch electromagnetic coil 6P connector.

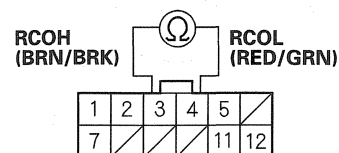
**RIGHT CLUTCH ELECTROMAGNETIC COIL/
REAR DIFFERENTIAL FLUID TEMPERATURE
SENSOR CONNECTOR (6P)**



Terminal side of female terminals

13. Check for continuity between the B3 terminal and B4 terminal of the VTM-4 control unit.

VTM-4 CONTROL UNIT CONNECTOR B (12P)



Wire side of female terminals

Is there continuity?

YES—Do the troubleshooting for the left clutch electromagnetic coil (see page 15-32). If it is normal, replace the VTM-4 control unit (see page 15-48). ■

NO—Repair open in the wire between the B3 or B4 terminals of the VTM-4 control unit and the right clutch electromagnetic coil. ■

Rear Differential

DTC Troubleshooting (cont'd)

DTC 59-1: Right/Left Clutch Electromagnetic Coil Power Supply

NOTE: Before you troubleshoot, review the general troubleshooting information (see page 15-4).

1. Turn the ignition switch ON (II).
2. Clear the DTCs with the HDS (see page 15-8).
3. Test-drive the vehicle, and check for DTCs with the HDS.

Is DTC 59-1 indicated?

YES—Go to step 4.

NO—Intermittent failure, the system is OK at this time. ■

4. Check the battery.

Is the specified battery installed, and is it fully charged?

YES—Go to step 5.

NO—Charge or replace the battery. ■

5. Check the charging system indicator.

Does the charging system indicator come on with the ignition switch ON (II), and after the engine starts, does the indicator go off?

YES—Check for loose terminal fit in the VTM-4 control unit connectors. If it is normal, replace the VTM-4 control unit (see page 15-48). ■

NO—Troubleshoot the charging system. ■

DTC 73-1: MAP (Manifold Absolute Pressure) Sensor or PCM

NOTE: Before you troubleshoot, review the general troubleshooting information (see page 15-4).

1. Turn the ignition switch ON (II).
2. Clear the DTCs with the HDS (see page 15-8).
3. Test-drive the vehicle, and check for DTCs with the HDS.

Is DTC 73-1 indicated?

YES—Go to step 4.

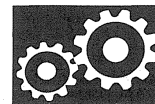
NO—Intermittent failure, the system is OK at this time. ■

4. Check for DTCs in the PGM-FI system with the HDS.

Are there any PGM-FI DTC's indicated?

YES—Go to the indicated DTC's troubleshooting. ■

NO—Check for loose terminal fit in the VTM-4 control unit and the PCM connectors. If it is normal, replace the VTM-4 control unit (see page 15-48). ■



DTC 76-1: Rear Differential Clutch Warning System

NOTE: Before you troubleshoot, review the general troubleshooting information (see page 15-4).

1. Turn the ignition switch ON (II).
2. Clear the DTCs with the HDS (see page 15-8).
3. Start the engine, and shift to the D position. Drive the vehicle at speeds over 25 mph (40 km/h), while keeping the engine speed below 2,500 rpm for at least 30 seconds.

NOTE: Be careful not to overheat the rear differential clutch system.

4. Check for DTCs with the HDS.

Is DTC 76-1 indicated?

YES—Go to step 4.

NO—Intermittent failure, the system is OK at this time. ■

5. Check for DTCs in the VSA system with the HDS.

Are there any VSA DTCs indicated?

YES—Go to the indicated DTC's troubleshooting. ■

NO—Go to step 6.

6. Turn the ignition switch OFF.
7. Raise the vehicle on the lift.
8. Spin the rear wheels by hand, and check for rear brake drag.

Are the rear brakes dragging?

YES—Repair cause of rear brake drag, and retest. ■

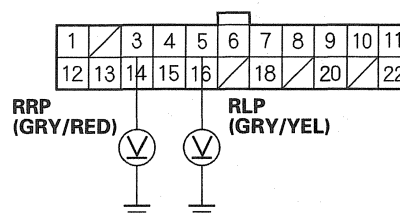
NO—Go to step 9.

9. Turn the ignition switch ON (II).

10. Measure voltage between the A3 and A5 terminals of the VTM-4 control unit and body ground while rotating the appropriate wheel (1 rotation/second).

DTC	Appropriate Terminal
23 (Left-rear)	A5
24 (Right-rear)	A3

VTM-4 CONTROL UNIT CONNECTOR A (22P)



Wire side of female terminals

Does the voltage change from 0 V to about 5 V repeatedly?

YES—Go to step 17.

NO—Go to step 11.

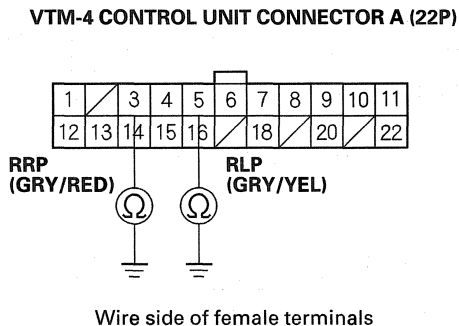
11. Turn the ignition switch OFF.
12. Disconnect the VTM-4 control unit connector A (22P) and the VSA modulator-control unit 47P connectors.

(cont'd)

Rear Differential

DTC Troubleshooting (cont'd)

13. Check the same terminals of VTM-4 control unit connector A (22P) for continuity to body ground.

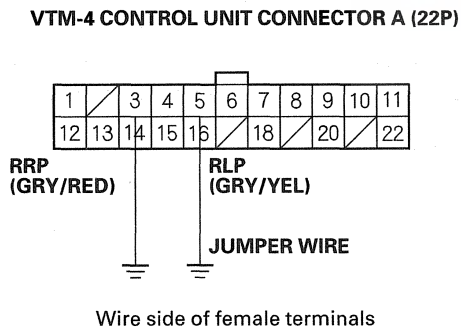


Is there continuity?

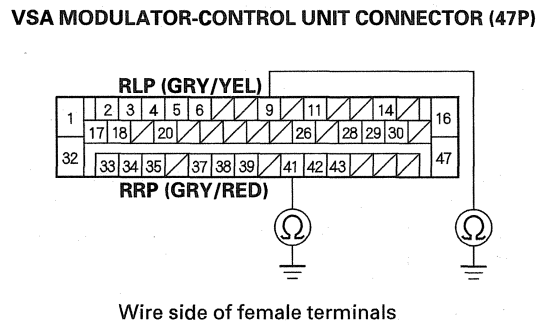
YES—Repair short to ground in the wire between the A3 and/or A5 terminals of the VTM-4 control unit and the VSA modulator-control unit. ■

NO—Go to step 14.

14. Connect the same terminals of VTM-4 control unit connector A (22P) to body ground with the jumper wires.



15. Check for continuity between the VSA modulator-control unit connector terminals No. 9 and No.41 to body ground.



Is there continuity?

YES—Go to step 16.

NO—Repair open in the wire between the A3 and/or A5 terminals of the VTM-4 control unit and the VSA modulator-control unit. ■

16. Check for loose terminal fit in the VTM-4 control unit and the VSA modulator-control unit connectors. If it is normal, replace the VTM-4 control unit (see page 15-48), then go to step 17.

17. Start the engine, shift to the D position. Drive the vehicle at speeds over 25 mph (40 km/h), while keeping the engine speed below 2,500 rpm for at least 30 seconds.

NOTE: Be careful not to overheat the rear differential clutch system.

18. Check for DTCs with the HDS.

Is DTC 76-1 indicated?

YES—Replace the VSA modulator-control unit (see page 15-48). ■

NO—The system is OK at this time. ■



DTC 77-1: PCM

NOTE:

- Before you troubleshoot, review the general troubleshooting information (see page 15-4).
- Check the PCM for DTCs. Diagnose and repair the PCM DTCs before troubleshooting DTC 77.

1. Turn the ignition switch ON (II).
2. Clear the DTCs with the HDS (see page 15-8).
3. Test-drive the vehicle, and check for DTCs with the HDS.

Is DTC 77-1 indicated?

YES—Go to step 4.

NO—Intermittent failure, the system is OK at this time. ■

4. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).
5. Test-drive the vehicle, and check for DTCs with the HDS.

Is DTC 77-1 indicated?

YES—Check for loose terminal fit in the VTM-4 control unit. If it is normal, replace the VTM-4 control unit (see page 15-48). ■

NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-230). ■

DTC 78-1: VTM-4 Control Unit

NOTE: Before you troubleshoot, review the general troubleshooting information (see page 15-4).

1. Turn the ignition switch ON (II).
2. Clear the DTCs with the HDS (see page 15-8).
3. Test-drive the vehicle, and check for DTCs with the HDS.

Is DTC 78-1 indicated?

YES—Go to step 4.

NO—Intermittent failure, the system is OK at this time. ■

4. Check the battery.

Is the specified battery installed, and is it fully charged?

YES—Go to step 5.

NO—Charge or replace the battery. ■

5. Check the charging system indicator.

Does the charging system indicator come on with ignition switch ON (II), and after the engine starts, does the indicator go off?

YES—Go to step 6.

NO—Troubleshoot the charging system. ■

6. Check for installation of any aftermarket CB or Ham radios which may cause an RF signal interference.

Is there an aftermarket radio installed?

YES—Disconnect the aftermarket radio, and retest. ■

NO—Check for loose terminal fit in the VTM-4 control unit connectors. If it is normal, replace the VTM-4 control unit (see page 15-48). ■

Rear Differential

Symptom Troubleshooting

The VTM-4 indicator comes on, but no DTCs are stored in any system: VTM-4, VSA, or PGM-FI

1. Check the No. 11 (7.5 A) fuse in the driver's under-dash fuse/relay box.

Is the fuse OK?

YES—Go to step 2.

NO—Replace the fuse, and recheck. ■

2. Reinitialize the VTM-4 control unit (see page 15-5).
3. Turn the ignition switch ON (II), and check the VTM-4 indicator.

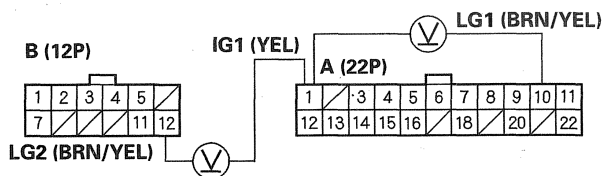
Does the VTM-4 indicator come on and stay on?

YES—Go to step 4.

NO—The system is OK at this time. ■

4. Measure voltage between the A1 and A10 terminals of the VTM-4 control unit, and between the A1 and B12 terminals of the VTM-4 control unit.

VTM-4 CONTROL UNIT CONNECTORS



Wire side of female terminals

Is there battery voltage?

YES—Go to step 5.

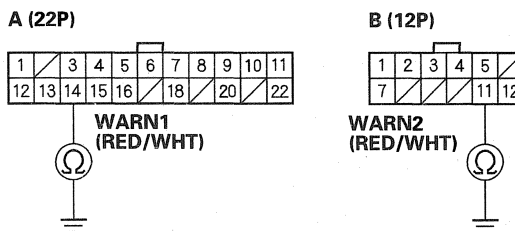
NO—Repair open in the wire between A1 terminal of the VTM-4 control unit and the driver's under-dash fuse/relay box, or repair open in the wire between A10 or B12 terminals of the VTM-4 control unit and body ground. ■

5. Turn the ignition switch OFF.

6. Disconnect the VTM-4 control unit and the gauge control module connectors.

7. Check for continuity between the A14 and B11 terminals of the VTM-4 control unit and body ground.

VTM-4 CONTROL UNIT CONNECTORS



Wire side of female terminals

Is there continuity?

YES—Repair short to ground in the wire between the A14 or B11 terminals of the VTM-4 control unit and the gauge control module. ■

NO—Go to step 8.

8. Reconnect the gauge control module connectors only, then turn the ignition switch ON (II).

Does the VTM-4 indicator come on?

YES—Replace the gauge control module (see page 22-102). ■

NO—Check for loose terminal fit in the VTM-4 control unit connectors. If it is normal, replace the VTM-4 control unit (see page 15-48). ■



The VTM-4 indicator does not come on

1. Disconnect the VTM-4 control unit connector A (22P) and B (12P) from the VTM-4 control unit.
2. Turn the ignition switch ON (II).
3. Connect the A14 and B11 terminals of the VTM-4 control unit individually or B11 terminals of the VTM-4 control unit to body ground with a jumper wire, and check the VTM-4 indicator.

VTM-4 CONTROL UNIT CONNECTORS

A (22P)

1	2	3	4	5	6	7	8	9	10	11
12	13	14	15	16	17	18	19	20	21	22

WARN1
(RED/WHT)

B (12P)

1	2	3	4	5
6	7	8	9	10
11	12	13	14	15

WARN2
(RED/WHT)

JUMPER WIRE

Wire side of female terminals

Does the VTM-4 indicator come on?

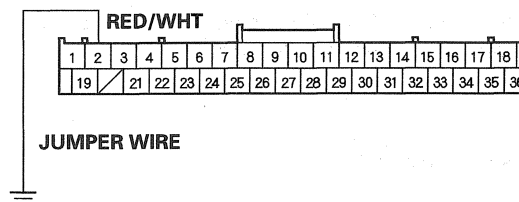
YES—Check for loose terminal fit in the VTM-4 control unit connectors. If it is normal, replace the VTM-4 control unit (see page 15-48). ■

NO—Go to step 4.

4. Turn the ignition switch OFF.

5. Connect the B2 terminal of the gauge control module to body ground with a jumper wire, then turn the ignition switch ON (II).

GAUGE CONTROL MODULE CONNECTOR B (36P)



Wire side of female terminals

Does the VTM-4 indicator come on?

YES—Repair open in the wire between the gauge control module and the VTM-4 control unit. ■

NO—Repair open in the wire between the B2 terminal of the gauge control module and the driver's under-dash fuse/relay box. If the wire is good, replace the gauge control module (see page 22-102). ■

Rear Differential

Symptom Troubleshooting (cont'd)

The VTM-4 LOCK indicator does not come on when the VTM-4 LOCK switch is pressed

NOTE: The VTM-4 LOCK indicator will only come on when the engine is running and the shift lever is in the R, 1, or 2 position before the switch is pressed.

1. Check the No. 11 (7.5 A) and No. 9 (10 A) fuses in the driver's under-dash fuse/relay box.

Are the fuses OK?

YES—Go to step 2.

NO—Replace the fuses, and recheck. ■

2. Turn the ignition switch ON (II), and check the VTM-4 LOCK indicator.

Does the VTM-4 LOCK indicator come on with the ignition switch ON (II), and does it go off 4 seconds later?

YES—Go to step 3.

NO—Go to step 10.

3. Start the engine, and move the shift lever to the R, 1, and 2 positions then check the VTM-4 LOCK indicator.

Does the VTM-4 LOCK indicator come on when the VTM-4 LOCK switch is pushed?

YES—The system is OK at this time. ■

NO—Go to step 4.

4. Check for DTCs in the A/T system with the HDS.

Are there any A/T DTC's indicated?

YES—Go to the indicated DTC's troubleshooting. ■

NO—Go to step 5.

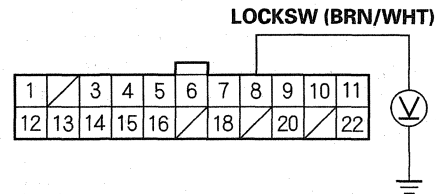
5. Turn the ignition switch OFF.

6. Disconnect VTM-4 control unit connector A (22P) from the VTM-4 control unit.

7. Turn the ignition switch ON (II).

8. Measure voltage between the A8 terminal of the VTM-4 control unit and body ground.

VTM-4 CONTROL UNIT CONNECTOR A (22P)



Wire side of female terminals

Is there battery voltage when the VTM-4 LOCK switch is pushed?

YES—Check for loose terminal fit in the VTM-4 control unit connector. If it is normal, replace the VTM-4 control unit (see page 15-48). ■

NO—Go to step 9.

9. Test the VTM-4 LOCK switch (see page 15-48).

Is the VTM-4 LOCK switch OK?

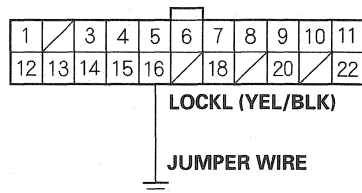
YES—Repair open in the wire between the VTM-4 LOCK switch and the VTM-4 control unit. ■

NO—Replace the VTM-4 LOCK switch (see page 15-48). ■



10. Connect the A16 terminal of the VTM-4 control unit to body ground with a jumper wire, and watch the VTM-4 LOCK indicator.

VTM-4 CONTROL UNIT CONNECTOR A (22P)



Wire side of female terminals

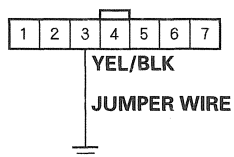
Does the VTM-4 LOCK indicator come on?

YES—Check for loose terminal fit in the VTM-4 control unit connector. If it is normal, replace the VTM-4 control unit (see page 15-48). ■

NO—Go to step 11.

11. Turn the ignition switch OFF.
12. Remove the VTM-4 LOCK switch.
13. Connect the No. 3 terminal of the VTM-4 LOCK switch 7P connector to body ground with a jumper wire.

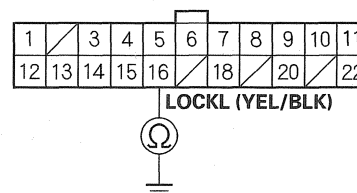
VTM-4 LOCK SWITCH CONNECTOR (7P)



Wire side of female terminals

14. Check for continuity between the A16 terminal of the VTM-4 control unit and body ground.

VTM-4 CONTROL UNIT CONNECTOR A (22P)



Wire side of female terminals

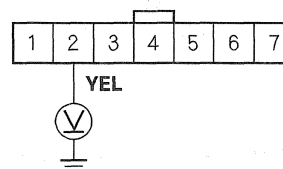
Is there continuity?

YES—Go to step 15.

NO—Repair open in the wire between the A16 terminal and the VTM-4 LOCK switch. ■

15. Turn the ignition switch ON (II).
16. Measure voltage between the No. 2 terminal of the VTM-4 LOCK switch 7P connector and body ground.

VTM-4 LOCK SWITCH CONNECTOR (7P)



Wire side of female terminals

Is there battery voltage?

YES—Replace the VTM-4 LOCK indicator bulb. ■

NO—Repair open in the wire between the No. 2 terminal of the VTM-4 LOCK switch 7P connector and the driver's under-dash fuse/relay box. ■

Rear Differential

Symptom Troubleshooting (cont'd)

The VTM-4 LOCK indicator comes on when the ignition switch is turned ON (II) and does not go off

1. Disconnect VTM-4 control unit connector A (22P) from the VTM-4 control unit.
2. Turn the ignition switch ON (II), and check the VTM-4 LOCK indicator.

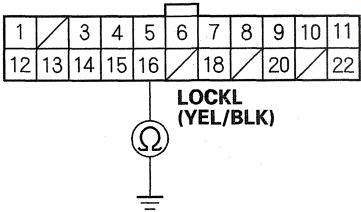
Does the VTM-4 LOCK indicator come on with the ignition switch ON (II)?

YES—Go to step 3.

NO—Check for loose terminal fit in the VTM-4 control unit connectors. If it is normal, replace the VTM-4 control unit (see page 15-48). ■

3. Turn the ignition switch OFF.
4. Disconnect the VTM-4 LOCK switch connector.
5. Check for continuity between the A16 terminal of the VTM-4 control unit and body ground.

VTM-4 CONTROL UNIT CONNECTOR A (22P)



Wire side of female terminals

Is there continuity?

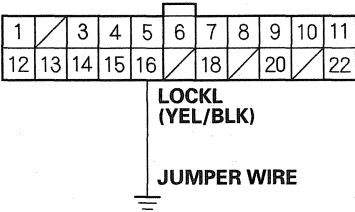
YES—Repair short to ground in the wire between the A16 terminal of the VTM-4 control unit and the VTM-4 LOCK switch. ■

NO—Replace the VTM-4 LOCK switch (see page 15-48). ■

The VTM-4 LOCK indicator does not come on for about 4 seconds when the ignition switch is turned ON (II)

1. Disconnect VTM-4 control unit connector A (22P) from the VTM-4 control unit.
2. Turn the ignition switch ON (II).
3. Connect the A16 terminal of the VTM-4 control unit to body ground with a jumper wire, and check the VTM-4 LOCK indicator.

VTM-4 CONTROL UNIT CONNECTOR A (22P)



Wire side of female terminals

Does the VTM-4 LOCK indicator come on?

YES—Check for loose terminal fit in the VTM-4 control unit connectors. If it is normal, replace the VTM-4 control unit (see page 15-48). ■

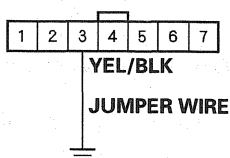
NO—Go to step 4.

4. Turn the ignition switch OFF.
5. Remove the VTM-4 LOCK switch (see page 15-48).



6. Connect the No. 3 terminal of the VTM-4 LOCK switch 7P connector to body ground with a jumper wire.

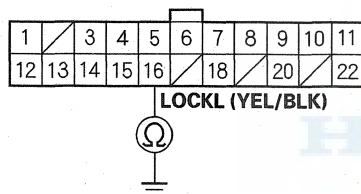
VTM-4 LOCK SWITCH CONNECTOR (7P)



Wire side of female terminals

7. Check for continuity between the A16 terminal and body ground.

VTM-4 CONTROL UNIT CONNECTOR A (22P)



Wire side of female terminals

Is there continuity?

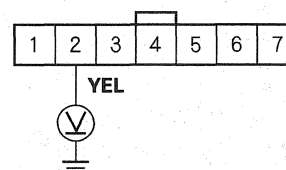
YES—Go to step 8.

NO—Repair open in the wire between the A16 terminal of the VTM-4 control unit and the VTM-4 LOCK switch. ■

8. Turn the ignition switch ON (II).

9. Measure voltage between the No. 2 terminal of the VTM-4 LOCK switch 7P connector and body ground.

VTM-4 LOCK SWITCH CONNECTOR (7P)



Wire side of female terminals

Is there battery voltage?

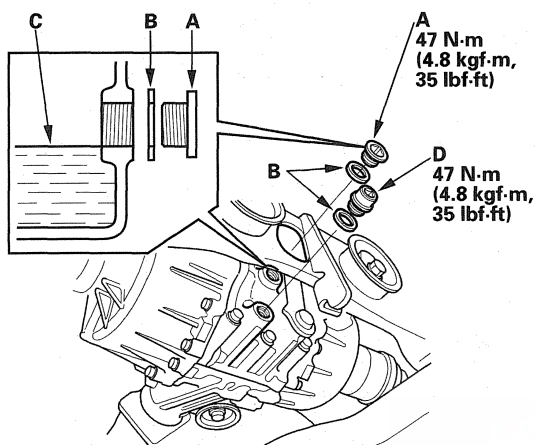
YES—Replace the VTM-4 LOCK indicator bulb. ■

NO—Repair open in the wire between the No. 2 terminal of the VTM-4 LOCK switch 7P connector and the driver's under-dash fuse/relay box. ■

Rear Differential

Rear Differential Fluid Inspection and Replacement

1. Raise the vehicle on the lift.
2. Remove the oil filler plug (A) and sealing washer (B), then check the condition of the fluid, and make sure the fluid is at the proper level (C).



3. The fluid level must be up to the fill hole. If it is below the hole, add the recommended fluid until it runs out, then reinstall the oil filler plug with a new sealing washer.
4. If the differential fluid is dirty, remove the drain plug (D) and sealing washer, then drain the fluid.

5. Clean the drain plug, then reinstall it with a new washer, and refill the differential with the recommended fluid to the proper level.

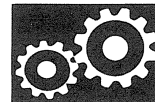
Fluid capacity:

2.64 L (2.79 US.qt) at fluid change
2.85 L (3.01 US.qt) at overhaul

Recommended fluid:

VTM-4 Differential Fluid (P/N 08200-9003)

6. Reinstall the oil filler plug with a new washer.



Rear Differential Function Test

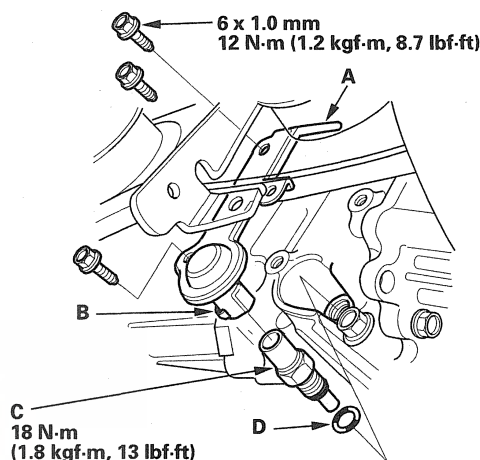
NOTE: Before doing the Differential Function Test, the following conditions must be present.

- No DTCs detected.
- Engine is not running.
- The VTM-4 control unit must be initialized.

1. Connect the HDS to the DLC.
2. Turn the ignition switch ON (II).
3. Make sure the HDS communicates with the VTM-4 control unit. If it doesn't go to the DLC circuit troubleshooting (see page 11-218).
4. Confirm that the temperature of the differential fluid is between 68 °F (20 °C) and 140 °F (60 °C) with the HDS.
5. Turn the ignition switch OFF with the shift lever in the P position.
6. Release the parking brake.
7. Raise the vehicle on the lift so all four wheels are off the ground.
8. Remove the rear wheels.
9. Turn the ignition switch ON (II).
10. Select MISCELLANEOUS TEST, then select the LEFT CLUTCH ELECTROMAGNETIC COIL TEST with the HDS, and follow the screen prompts. If the results are NORMAL, the left clutch is OK, go to step 9. If the results are ABNORMAL, replace the rear differential.
11. Select MISCELLANEOUS TEST, then select the RIGHT CLUTCH ELECTROMAGNETIC COIL TEST with the HDS, and follow the screen prompts. If the results are NORMAL, the right clutch is OK. If the results are ABNORMAL, replace the rear differential.

Rear Differential Fluid Temperature Sensor Replacement

1. Drain the differential-fluid. Reinstall the drain plug with a new washer (see page 15-46).
2. Remove the wire harness cover (A), then disconnect the rear differential fluid temperature sensor 2P connector (B).

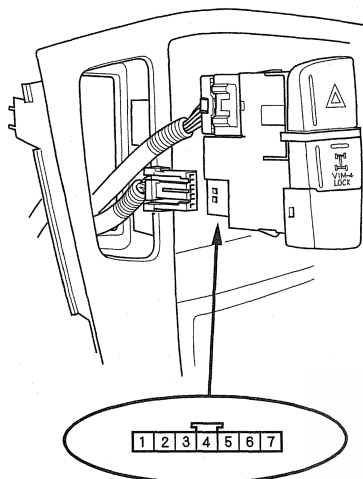


3. Remove the rear differential fluid temperature sensor (C).
4. Install the rear differential fluid temperature sensor in the reverse order of removal, with a new O-ring (D).
5. Refill the differential with the recommended differential fluid (see page 15-46).

Rear Differential

VTM-4 LOCK Switch Test/Replacement

- 1. Remove the center panel (see page 20-93).
- 2. Disconnect the 7P connector from the VTM-4 LOCK switch, then remove the VTM-4 LOCK switch.



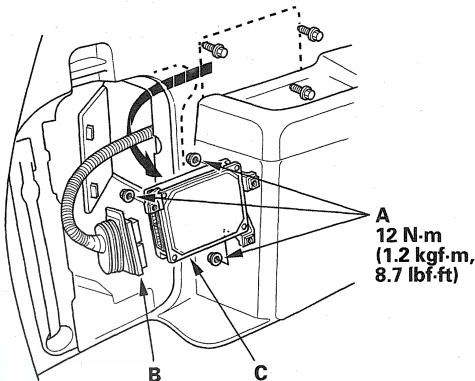
- 3. Check for continuity between the terminals in each switch position according to the table. If the switch fails any continuity check, replace the switch.

Terminal	1	2	3	4	6
Position					
Release the switch		○	○	○	○
Push the switch		○	○	○	○

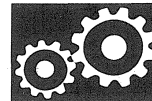
VTM-4 Control Unit Replacement

NOTE: The VTM-4 control unit must be initialized (see page 15-5) after replacement, otherwise the 4WD system will not work.

- 1. Remove the jack cover and jack (see page 20-80).
- 2. Remove the fuel filler door latch from the body by turning it 90 degrees.
- 3. Loosen the three nuts (A).

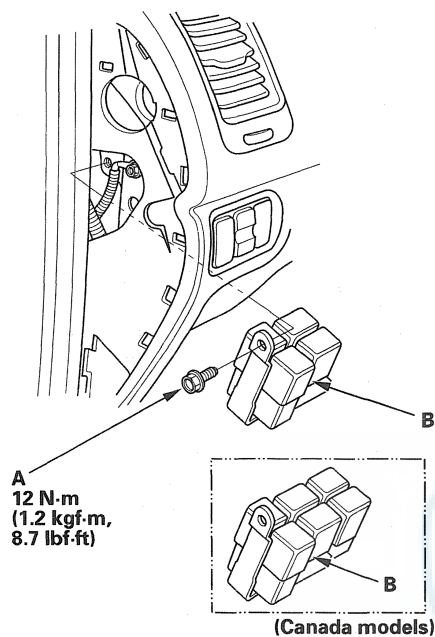


- 4. Disconnect the VTM-4 control unit connectors (B).
- 5. Remove the VTM-4 control unit (C).
- 6. Install the VTM-4 control unit in the reverse order of removal.



VTM-4 Relay Replacement

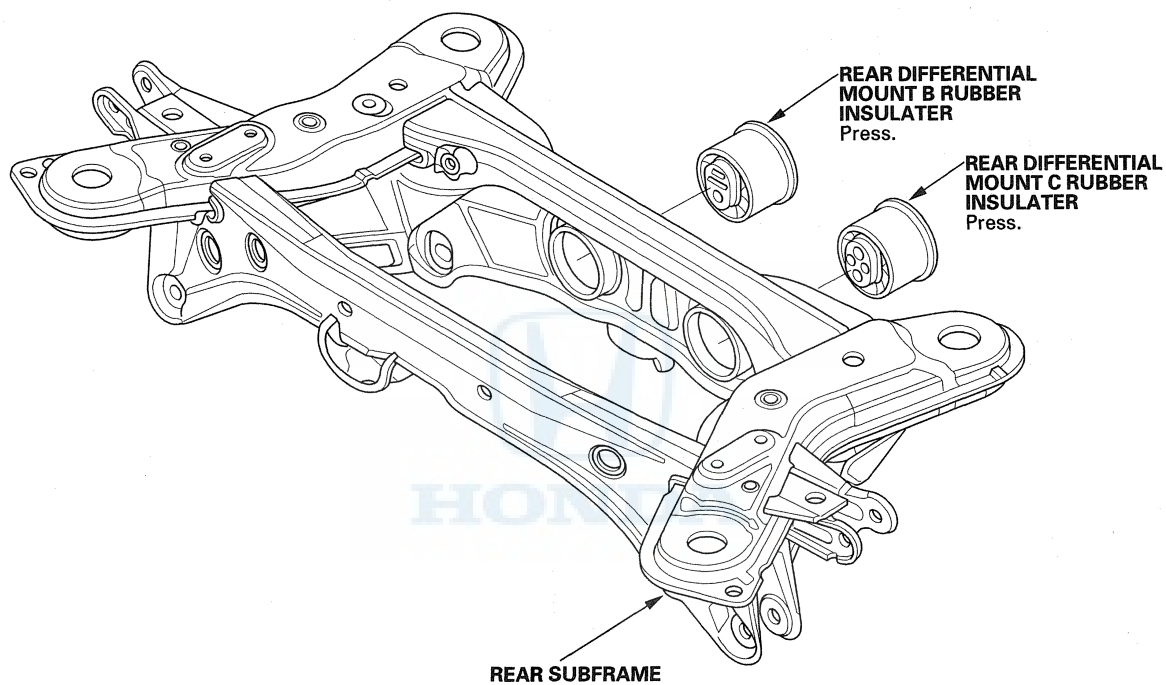
1. On the driver's side, remove the dashboard side lid (see page 20-91).
2. Remove the bolt (A) and VTM-4 relay (B).



3. Install the VTM-4 relay in the reverse order of removal.

Rear Differential

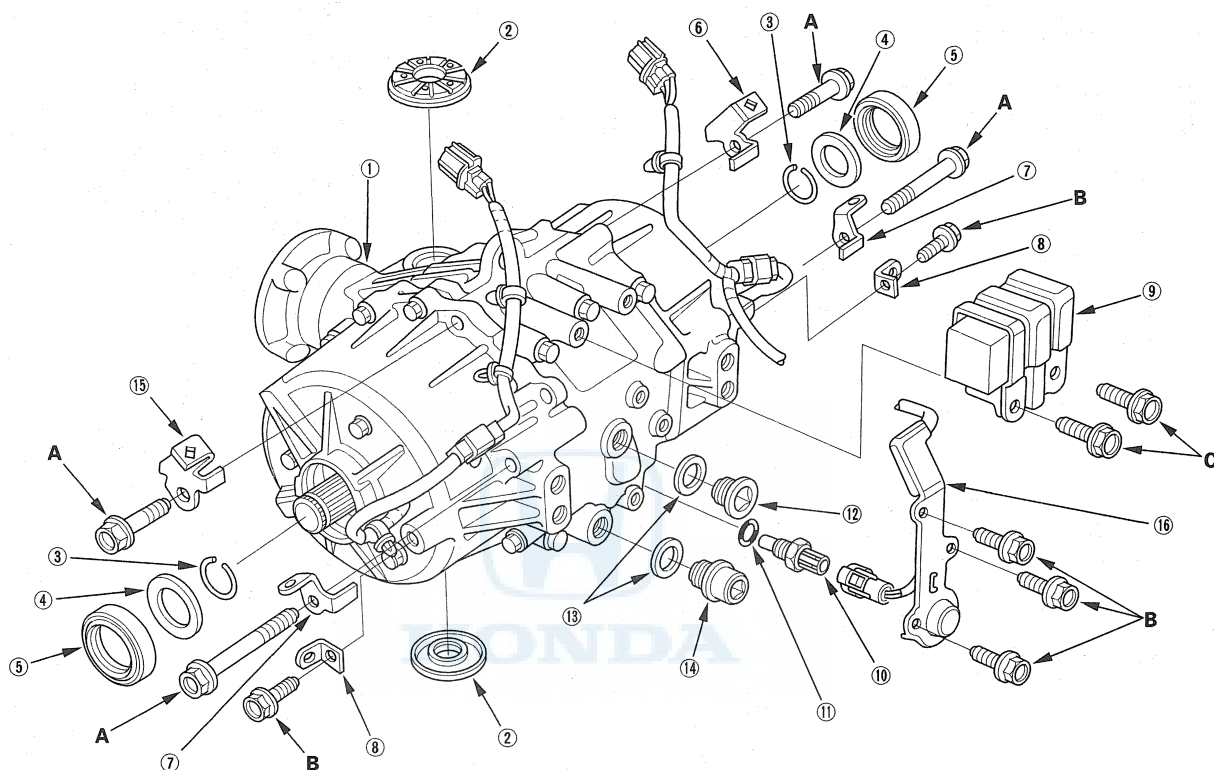
Rear Differential Mount Replacement





Rear Differential Removal

Exploded View



A: 27 N·m (2.8 kgf·m, 20 lbf·ft)
B: 12 N·m (1.2 kgf·m, 9 lbf·ft)
C: 22 N·m (2.2 kgf·m, 16 lbf·ft)

- ① REAR DIFFERENTIAL CARRIER ASSEMBLY
- ② REAR DIFFERENTIAL MOUNT A RUBBER INSULATOR
- ③ SET RING
Replace.
- ④ THRUST WASHER
Replace.
- ⑤ HALF SHAFT OUTER SEAL
Replace.
- ⑥ REAR DIFFERENTIAL HARNESS BRACKET A

- ⑦ REAR DIFFERENTIAL CABLE BRACKET C
- ⑧ REAR DIFFERENTIAL CABLE BRACKET F
- ⑨ REAR DIFFERENTIAL DYNAMIC DAMPER
- ⑩ REAR DIFFERENTIAL FLUID TEMPERATURE SENSOR
- ⑪ O-RING
Replace.
- ⑫ FILLER PLUG
47 N·m (4.8 kgf·m, 35 lbf·ft)

- ⑬ SEALING WASHER
Replace.
- ⑭ DRAIN PLUG
47 N·m (4.8 kgf·m, 35 lbf·ft)
- ⑮ REAR DIFFERENTIAL HARNESS BRACKET B
- ⑯ WIRE HARNESS COVER

(cont'd)

Rear Differential

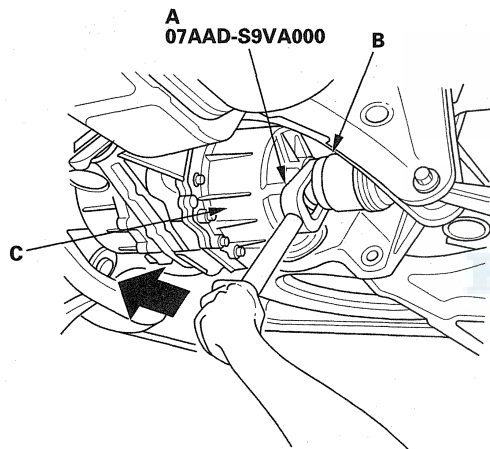
Rear Differential Removal (cont'd)

Special Tools Required

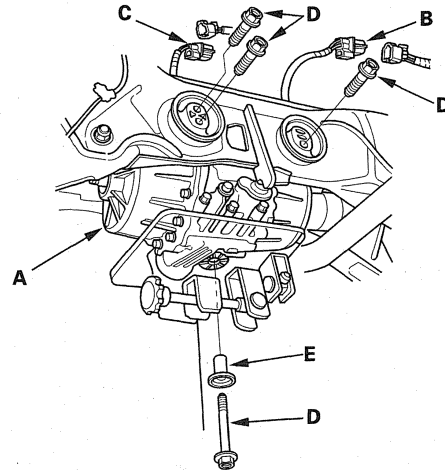
Driveshaft remover 07AAD-S9VA000

1. Drain the differential fluid. Reinstall the drain plug with a new washer (see page 15-46).
2. Remove the propeller shaft (see page 16-41).
3. Remove the left upper arm bolt, then remove the upper arm from the vehicle (see page 18-36).
4. Remove the left rear damper (see page 18-40).
5. Using the driveshaft remover (A), pry out both inboard joints (B) from the differential (C).

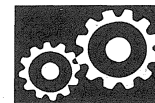
NOTE: This is a prying tool, do not strike it with a hammer.



6. Place a transmission jack under the rear differential (A).

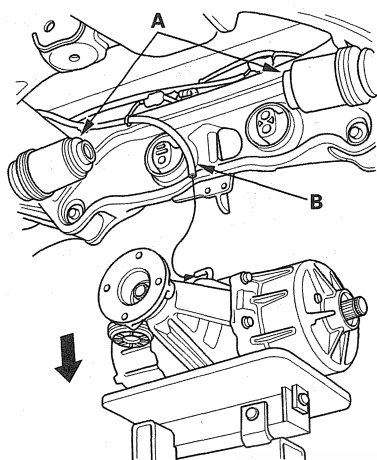


7. Disconnect the 6P (B) and 2P (C) connectors, then remove the mounting bolts (D) and washer (E).



Backlash Inspection

8. Lower the rear differential a little on the transmission jack, then remove the rear driveshafts (A) from the rear differential.

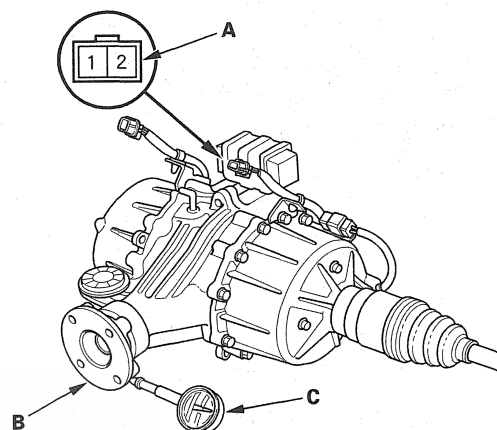


9. Disconnect the breather tube (B) from the rear differential.
10. Lower the rear differential on the transmission jack.

NOTICE

Connecting battery voltage to either the right or left clutch electromagnetic coils for more than 3 minutes will damage the rear differential.

1. Install the left rear driveshaft.



2. At the left clutch electromagnetic coil side, connect the left clutch electromagnetic coil 2P connector (A) terminal No. 1 to the battery positive terminal, and connect the terminal No. 2 to the battery negative terminal.
3. Check the backlash of the companion flange (B) with a dial indicator (C).

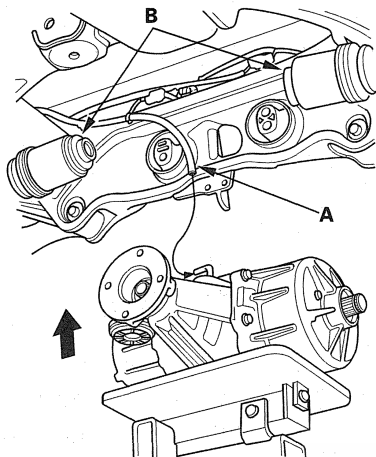
Standard: 1.23—2.38 mm (0.048—0.094 in.)

4. If the backlash is not within the standard, replace the rear differential.

Rear Differential

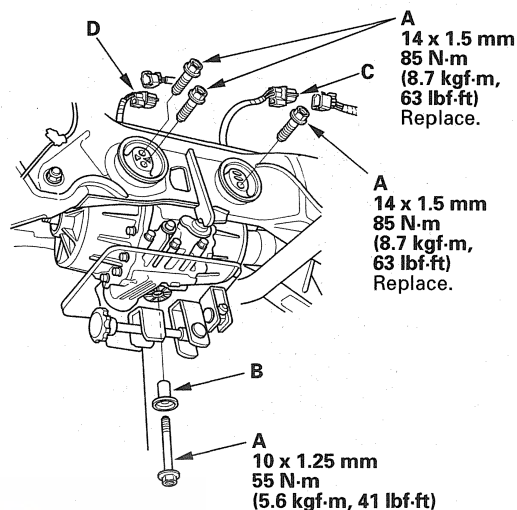
Rear Differential Installation

1. Raise the rear differential a little on the transmission jack, then connect the breather tube (A) to the rear differential.

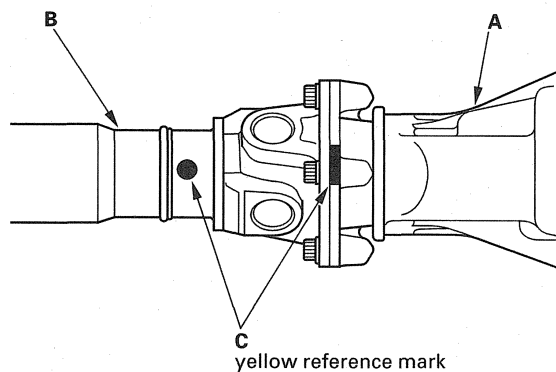


2. Install the rear driveshafts (B) to the rear differential (see page 16-39).

3. Raise the rear differential to the mounting level, then install the mounting bolts (A) and washer (B).



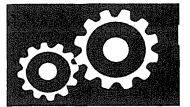
4. Connect the 6P (C) and 2P (D) connectors.
5. Install the rear damper (see page 18-41).
6. Install the upper arm and the upper arm bolt to the vehicle (see page 18-36).
7. Install the new rear differential (A) onto the propeller shaft (B), by aligning the reference marks (C). Make sure you use new mounting bolts.



8. Attach the propeller shaft to the transmission and the rear differential by aligning the reference marks (see page 16-43).
9. Refill the differential with recommended fluid (see page 15-46).

Driveline/Axle

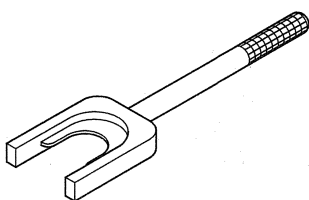
Special Tools	16-2
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Front Driveshaft Disassembly	16-6
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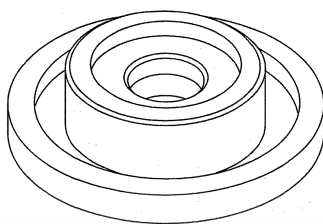
Driveline/Axle

Special Tools

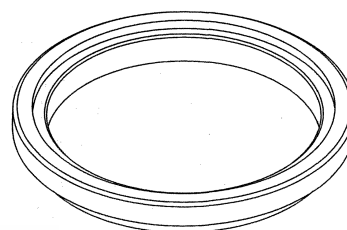
Ref. No.	Tool Number	Description	Qty
①	07AAD-S9VA000	Driveshaft Remover	1
②	07JAD-PH80101	Oil Seal Driver Attachment	1
③	07LAF-SM40300	Support Base Attachment	1
④	07XAC-001020A	Threaded Adapter, 24 x 1.5 mm	1
⑤	07746-0010300	Attachment, 42 x 47 mm	1
⑥	07749-0010000	Driver	1
⑦	07947-4630100	Fork Seal Driver, 39.2 x 49.5 x 15 mm	1
⑧	07965-SD90100	Support Base	1



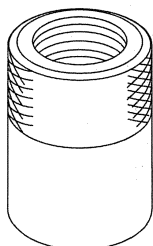
①



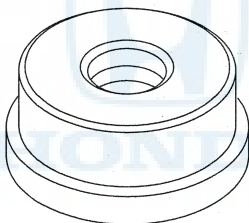
②



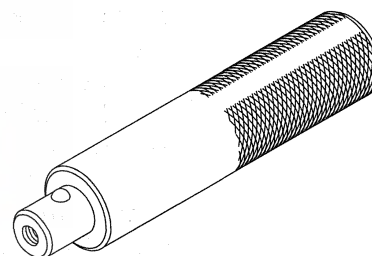
③



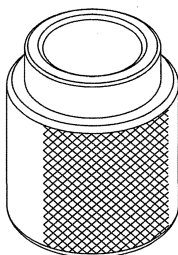
④



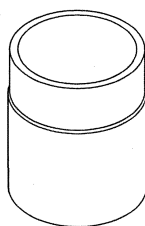
⑤



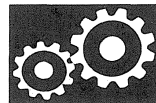
⑥



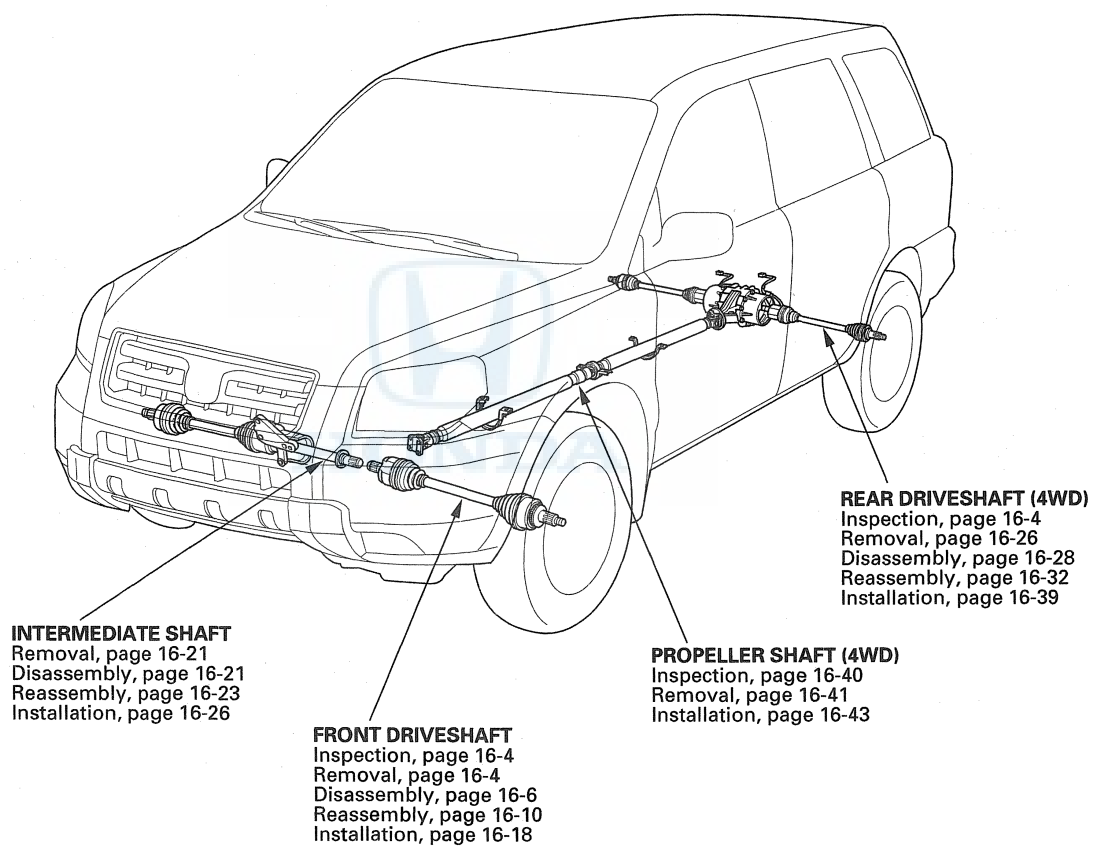
⑦



⑧



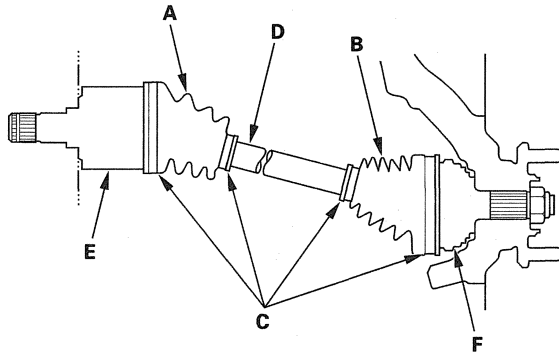
Component Location Index



Driveline/Axle

Driveshaft Inspection

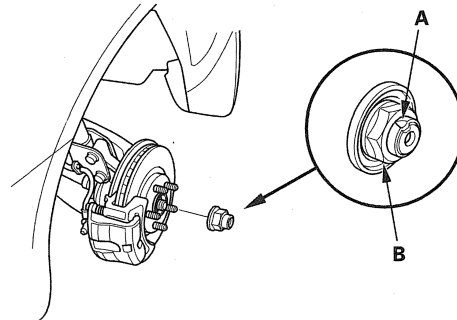
1. Check the inboard boot (A) and the outboard boot (B) for cracks, damage, leaking grease, and loose boot bands (C). If any damage is found, replace the boot and boot bands.



2. Check the driveshaft (D) for cracks and damage. If any damage is found, replace the driveshaft.
3. Check the inboard joint (E) and the outboard joint (F) for cracks and damage. If any damage is found, replace the inboard joint or the outboard joint as an assembly.
4. Hold the inboard joint and turn the front wheel by hand, then make sure the joint is not excessively loose. If necessary, replace the inboard joint or the outboard joint as an assembly.

Front Driveshaft Removal

1. Raise the vehicle on a lift.
2. Remove the front wheels.
3. Lift up the locking tab (A) on the spindle nut (B), then remove and discard the nut.



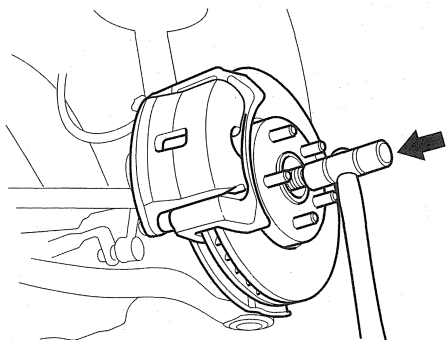
4. If you need to remove the left driveshaft, drain the transmission fluid (see page 14-214). It is not necessary to drain the transmission fluid when the right driveshaft is removed.
5. Separate the front stabilizer link (see step 3 on page 18-19).
6. Remove the lock pin from the lower arm ball joint castle nut and remove the nut, then separate the ball joint from the lower arm using the ball joint thread protector and remover (see step 11 on page 18-14).

NOTE:

- To avoid damaging the ball joint, install ball joint thread protector onto the threads of the ball joint.
- Be careful not to damage the ball joint boot when installing the remover.

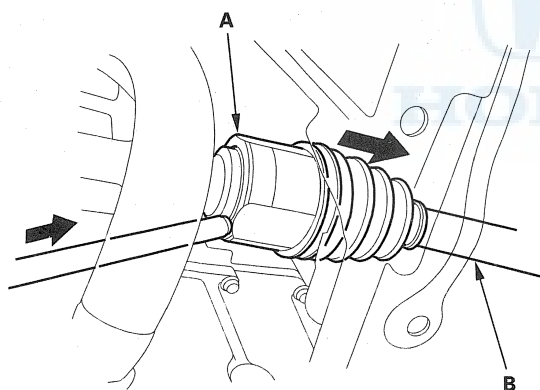


7. Pull the knuckle outward, and separate the driveshaft outboard joint from the front wheel hub using a plastic hammer.



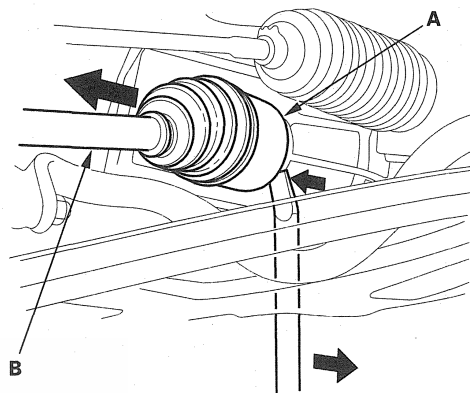
8. Right driveshaft: Drive the inboard joint (A) off of the intermediate shaft using a drift and hammer. Remove the driveshaft as an assembly.

NOTE: Do not pull on the driveshaft (B) or the inboard joint may come apart.



9. Left driveshaft: Pry the inboard joint (A) from the transmission housing with a prybar. Remove the driveshaft as an assembly.

NOTE: Do not pull on the driveshaft (B) or the inboard joint may come apart. Pull the driveshaft straight out to avoid damaging the oil seal.



Driveline/Axle

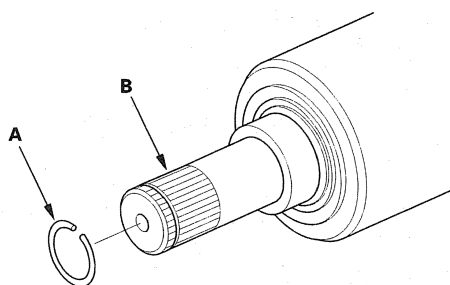
Front Driveshaft Disassembly

Special Tools Required

- Threaded adapter, 24 x 1.5 mm 07XAC-001020A
- Slide hammer, 5/8"-18 UNF, commercially available

Inboard Joint Side

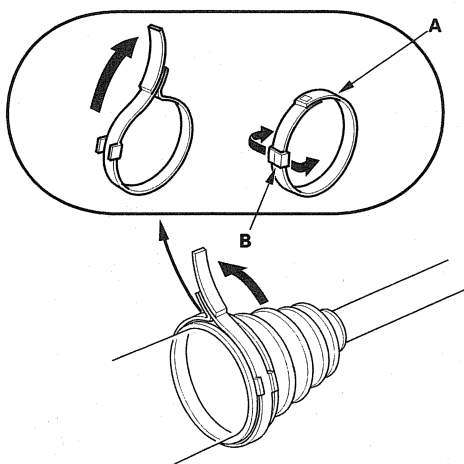
1. Remove the set ring (A) from the inboard joint (B) (left driveshaft).



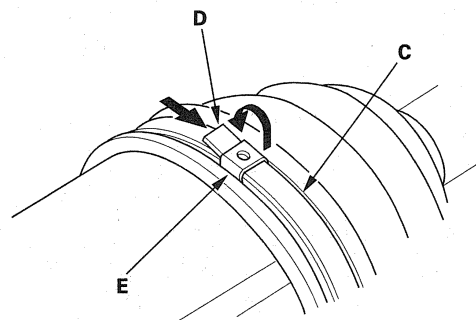
2. Remove the boot bands. Be careful not to damage the boot.

- If the boot band is a locking tab type (A), pry up the locking tab (B) with a screwdriver, and lift up the end of the band.
- If the boot band is a double loop type (C), lift up the band end (D), and push it into the clip (E).
- If the boot band is a low profile type (E), pinch the boot band using commercially available boot band pliers (F).

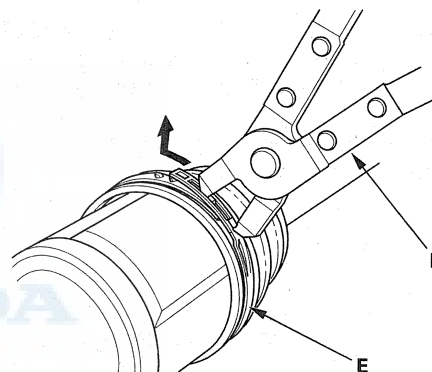
Locking tab type

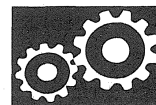


Double loop type



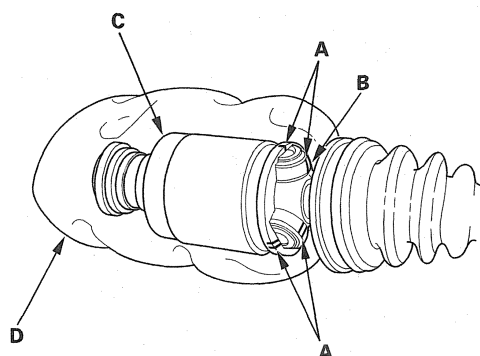
Low profile type



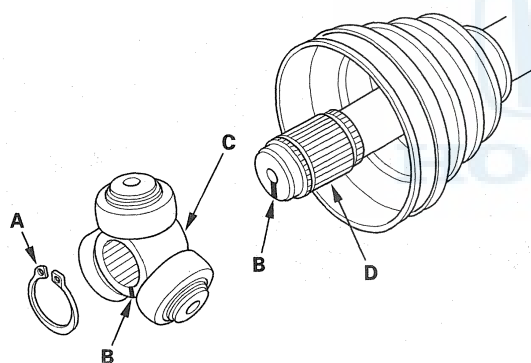


3. Make a marks (A) on each roller (B) and inboard joint (C) to identify the locations of rollers and grooves in the inboard joint. Then remove the inboard joint on the shop towel (D).

Right driveshaft



4. Remove the snap ring (A).

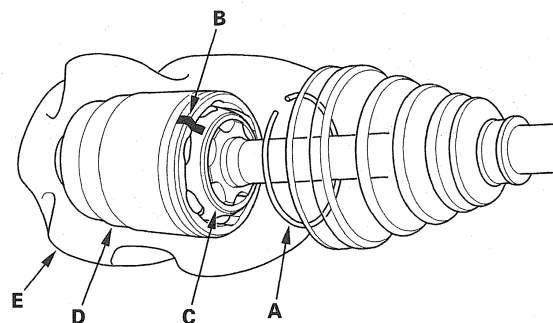


5. Make a marks (B) on the spider (C) and driveshaft (D) to identify the position of the spider on the shaft.

6. Remove the spider.

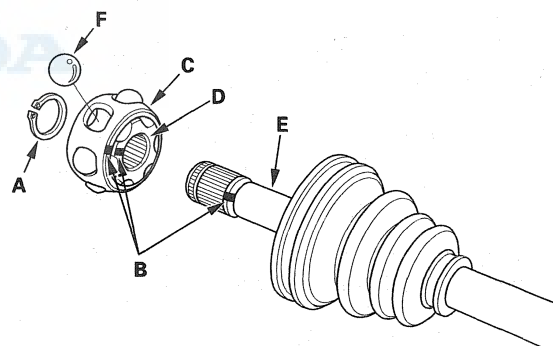
7. Remove the circlip (A).

Left driveshaft



8. Make a mark (B) on the bearing retainer (C) and inboard joint (D) to identify the locations of the ball bearing and grooves in the inboard joint. Then remove the inboard joint on the shop towel (E). Be careful not to drop the ball bearings when separating them from the inboard joint.

9. Remove the snap ring (A).



10. Make marks (B) on the bearing retainer (C), the bearing race (D), and driveshaft (E) to identify the position of the bearing retainer and the bearing race on the shaft.

11. Remove the bearing race and the steel balls (F).

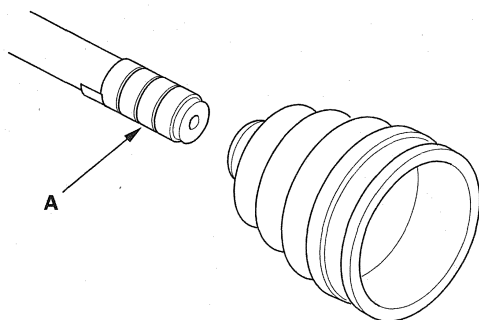
(cont'd)

Driveline/Axle

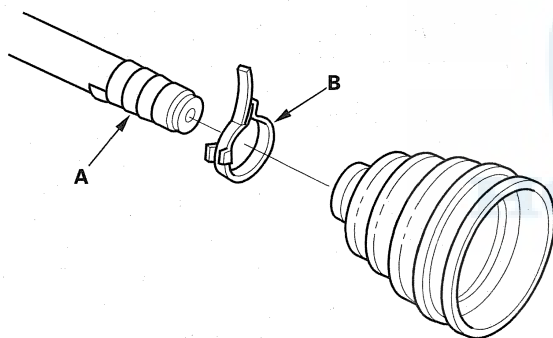
Front Driveshaft Disassembly (cont'd)

12. Wrap the splines on the driveshaft with vinyl tape (A) to prevent damaging the boot.

Double loop type



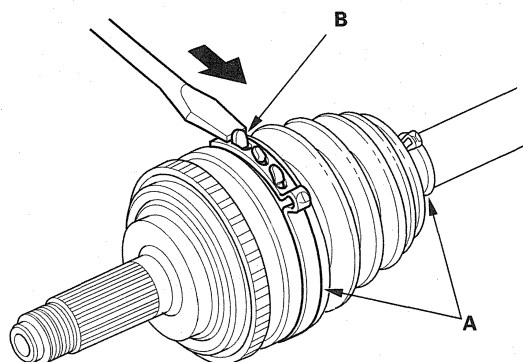
Locking tab type



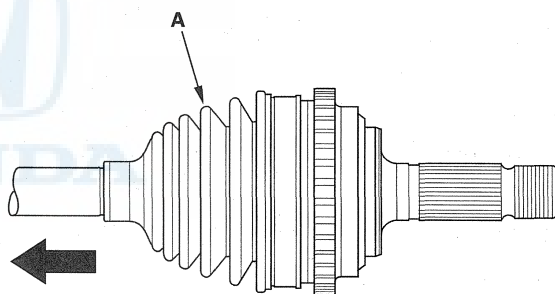
13. Remove the inboard boot and boot band (B). Be careful not to damage the boot.
14. Remove the vinyl tape.

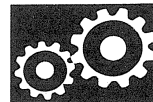
Outboard Joint Side

1. Remove the boot bands (A). Lift up the three tabs (B) with a screwdriver. Be careful not to damage the boot.

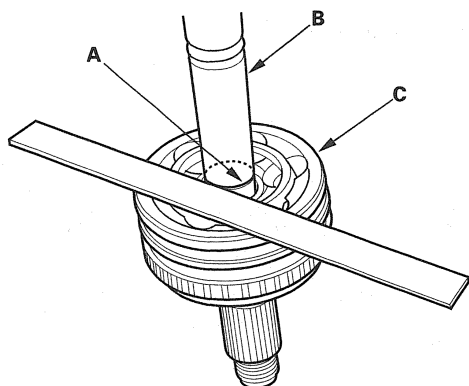


2. Slide the outboard boot (A) partially to the inboard joint side. Be careful not to damage the boot.

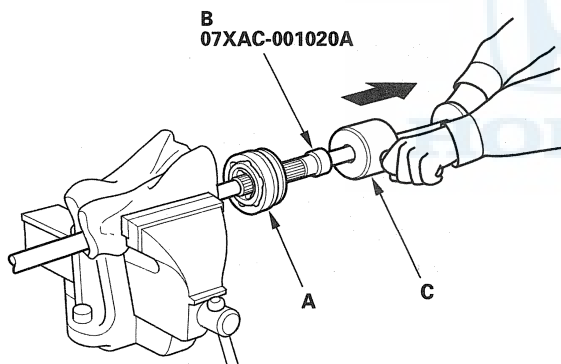




3. Wipe off the grease to expose the driveshaft and the outboard joint inner race.
4. Make a mark (A) on the driveshaft (B) at the same level as the outboard joint rim (C).

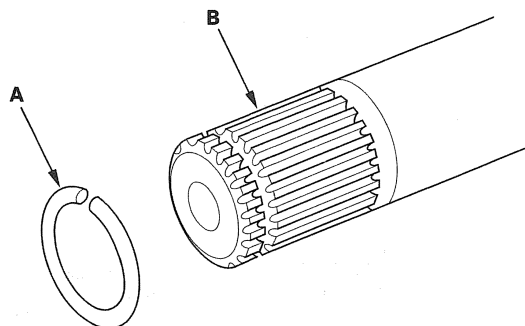


5. Securely clamp the driveshaft in a bench vise with shop towel.

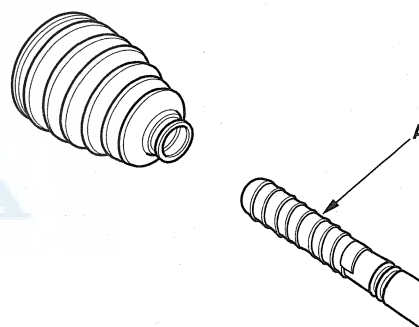


6. Remove the outboard joint (A) using the 24 x 1.5 mm threaded adapter (B) and a commercially available 5/8\"/>

7. Remove the driveshaft from the bench vise.
8. Remove the circlip (A) from the driveshaft (B).



9. Wrap the splines on the driveshaft with vinyl tape (A) to prevent damaging the boot.

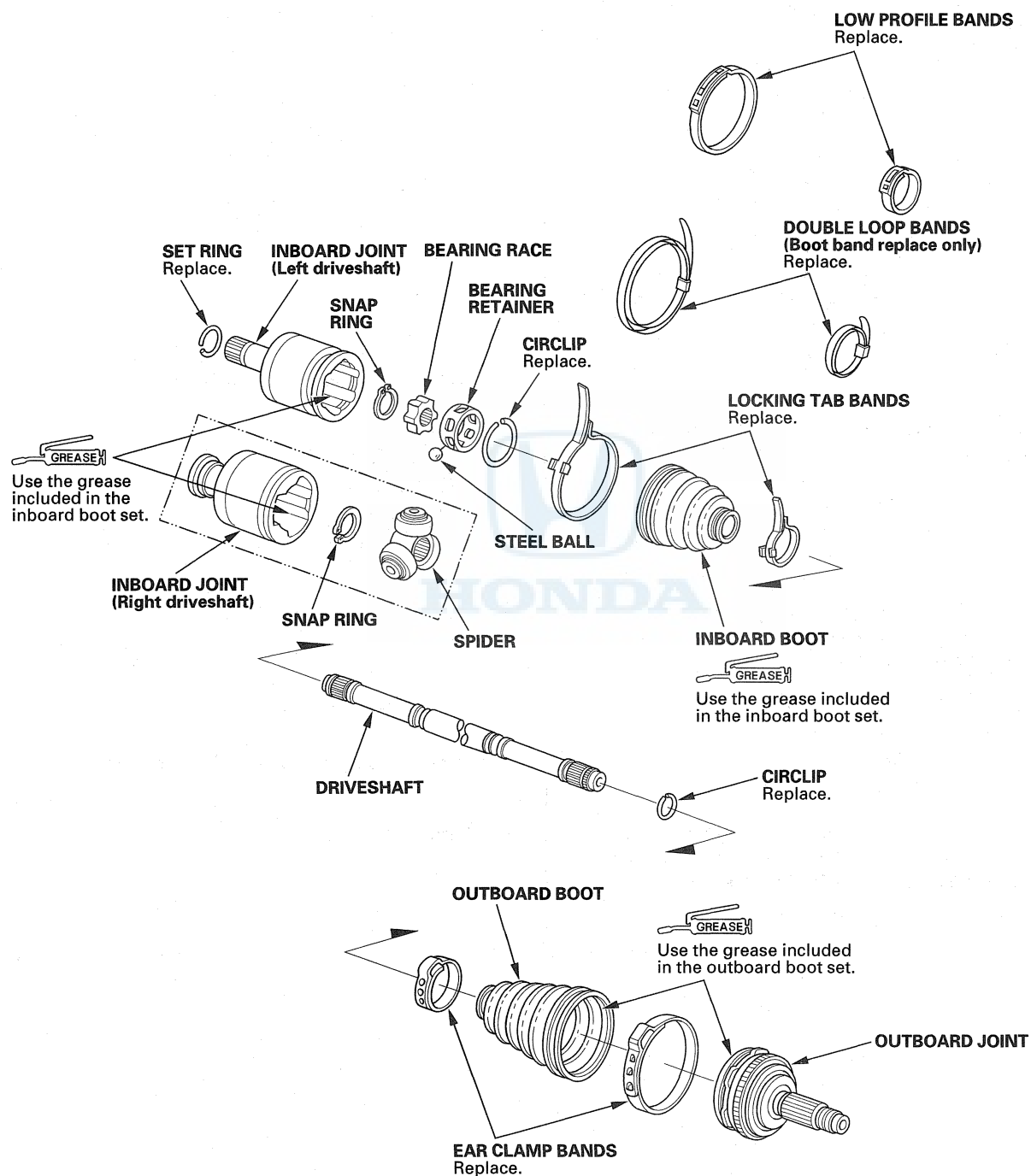


10. Remove the outboard boot. Be careful not to damage the boot.
11. Remove the vinyl tape.

Driveline/Axle

Front Driveshaft Reassembly

Exploded View





Special Tools Required

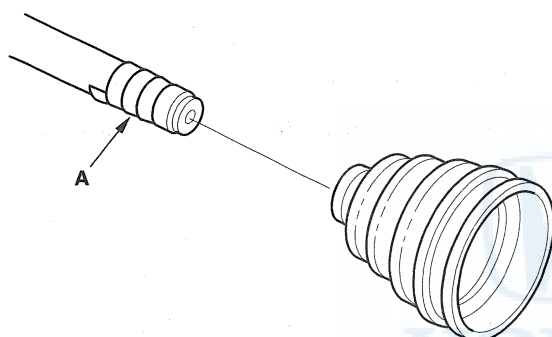
- Boot band tool, KD-3191 or equivalent, commercially available
- Boot band pliers, Kent-Moore J-35910 or equivalent, commercially available

NOTE: Refer to the Exploded View, as needed, during this procedure.

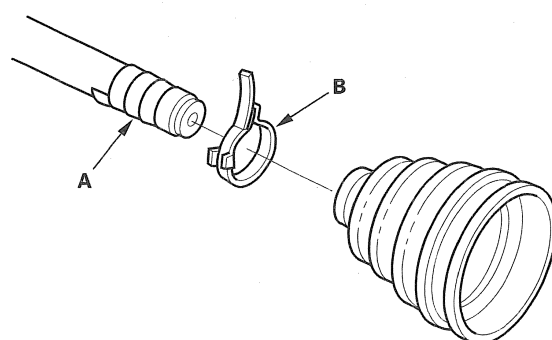
Inboard Joint Side

1. Wrap the splines with vinyl tape (A) to prevent damaging the inboard boot.

Double loop type/Low profile type



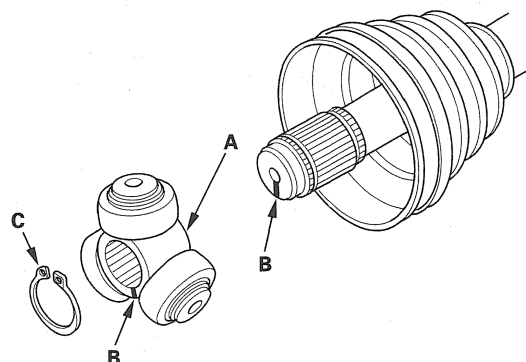
Locking tab type



2. Install the inboard boot and boot band (B) on the driveshaft, then remove the vinyl tape. Be careful not to damage the inboard boot.

3. Install the spider (A) onto the driveshaft by aligning the marks (B) you made on the spider and the end of the driveshaft.

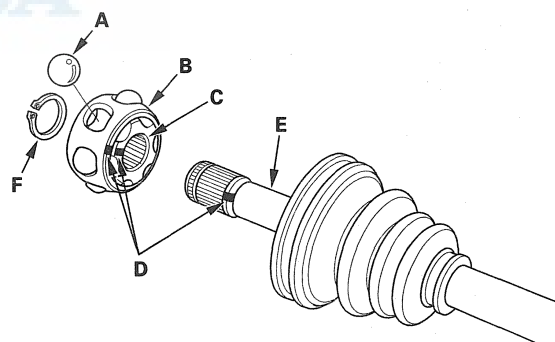
Right driveshaft



4. Install the snap ring (C).

5. Install the steel balls (A) and the bearing retainer (B) onto the bearing race (C) by aligning the marks (D) you made on the bearing retainer and the bearing race.

Left driveshaft



6. Install the bearing onto the driveshaft (E) by aligning the marks on the bearing and the driveshaft.

7. Install the snap ring (F).

(cont'd)

Driveline/Axle

Front Driveshaft Reassembly (cont'd)

8. Pack the inboard joint with the joint grease included in the new inboard boot set.

Grease quantity

Inboard joint

Left driveshaft: 160—180 g (5.6—6.4 oz)

Right driveshaft:

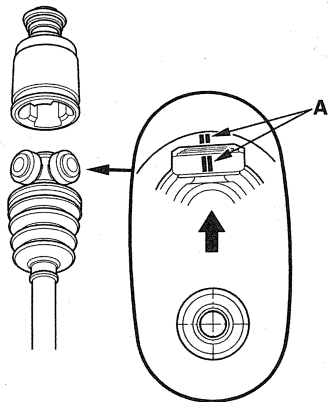
'03—'06 models: 210—230 g (7.4—8.1 oz)

'07—'08 models: 190—210 g (6.7—7.4 oz)

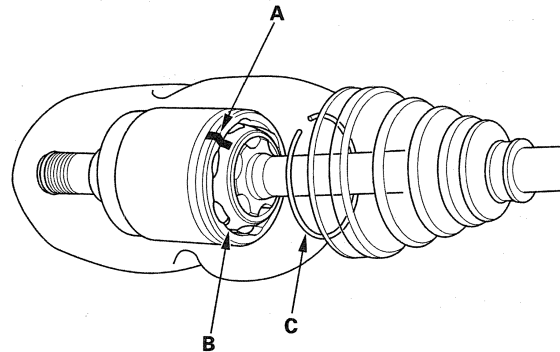


9. Right driveshaft: Fit the inboard joint onto the driveshaft, and note these items:

- Reinstall the inboard joint onto the driveshaft by aligning the marks (A) you made on the inboard joint and the rollers.
- Hold the driveshaft so the inboard joint points up to prevent it from falling off.

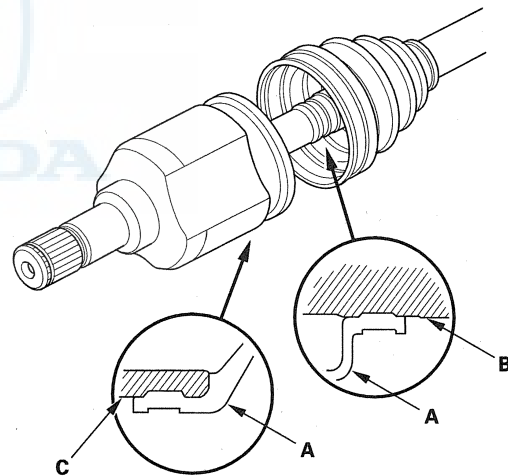


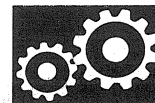
10. Left driveshaft: Install the inboard joint onto the driveshaft by aligning the mark (A) you made on the inboard joint and bearing (B).



11. Install the circlip (C).

12. Fit the boot (A) ends onto the driveshaft (B) and the inboard joint (C).

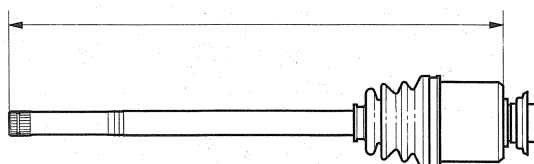




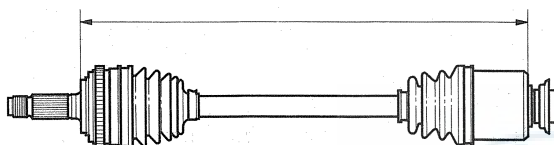
13. Adjust the length of the driveshafts to the figure as shown, then adjust the boots to halfway between full compression and full extension. This prevents a vacuum or too much air in the boot, preventing it from compressing or extending properly.

Right driveshaft:

Without outboard joint: 551.7—556.7 mm (21.72—21.92 in.)

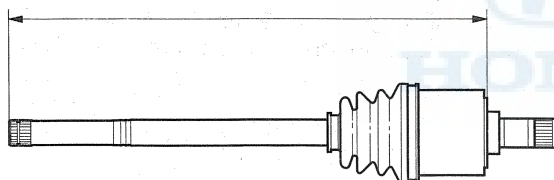


With outboard joint: 573.1—578.1 mm (22.56—22.76 in.)

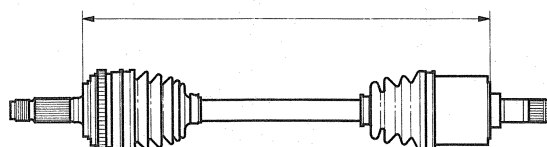


Left driveshaft:

Without outboard joint: 555.9—560.9 mm (21.89—22.08 in.)



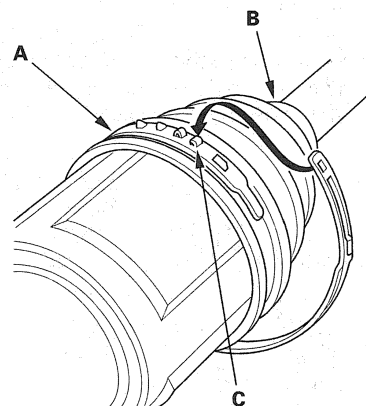
With outboard joint: 577.3—582.3 mm (22.73—22.93 in.)



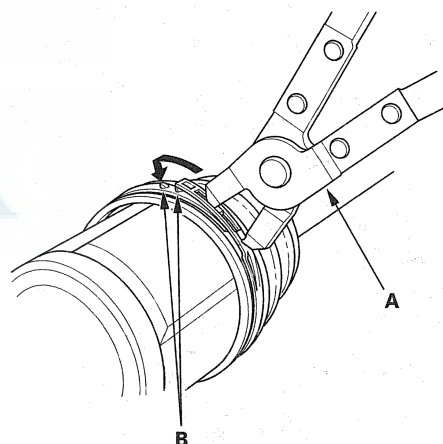
14. Install new boot bands:

- For the low profile type, go to step 15.
- For the double loop type, go to step 18.
(Boot band replace only)
- For the locking tab type, go to step 27.

15. Install the new low profile band (A) onto the boot (B), then hook the tab (C) of the band.



16. Close the hook portion of the band with a commercially available boot band pliers (A), then hook the tabs (B) of the band.



17. Install the boot band on the other end of the boot, and repeat steps 15 through 16.

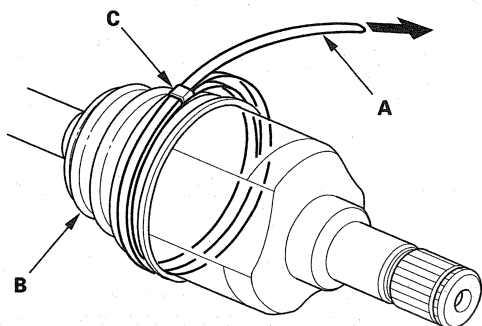
(cont'd)

Driveline/Axle

Front Driveshaft Reassembly (cont'd)

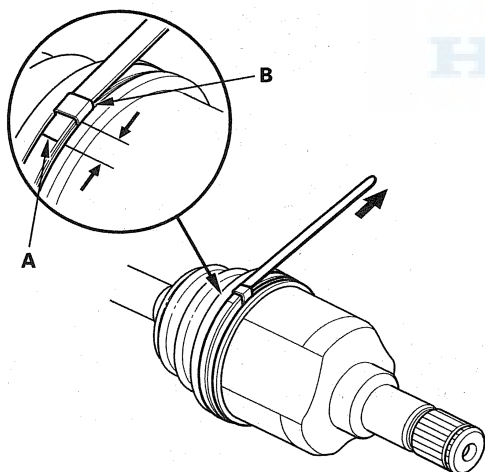
18. Fit the boot ends onto the driveshaft and the inboard joint, then install the new double loop band (A) onto the boot (B).

NOTE: Pass the end of the new double loop band through the clip (C) twice in the direction of the forward rotation of the driveshaft.

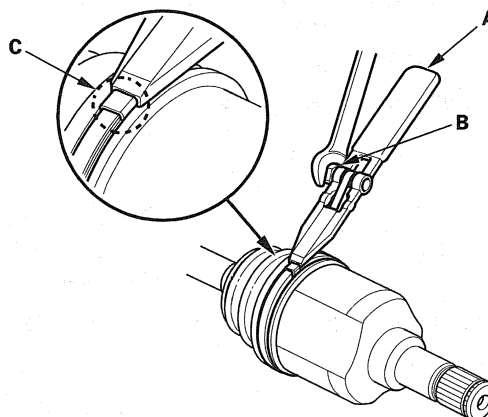


19. Pull up the slack in the band by hand.

20. Mark a position (A) on the band 10–14 mm (0.4–0.6 in.) from the clip (B).

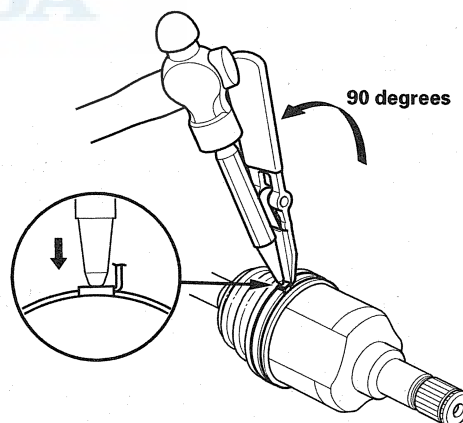


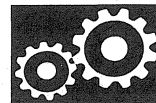
21. Thread the free end of the band through the nose section of a commercially available boot band tool KD-3191 or equivalent (A) and into the slot on the winding mandrel (B).



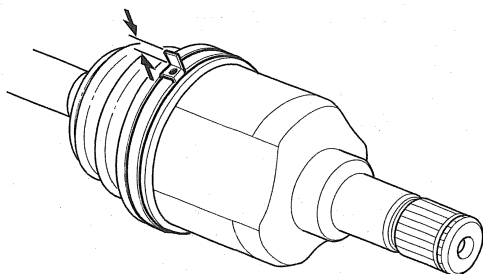
22. Using a wrench on the winding mandrel of the boot band tool to tighten the band until the marked spot (C) on the band meets the edge of the clip.

23. Lift up the boot band tool to bend the free end of the band 90 degrees to the clip. Center-punch the clip, then fold over the remaining tail onto the clip.





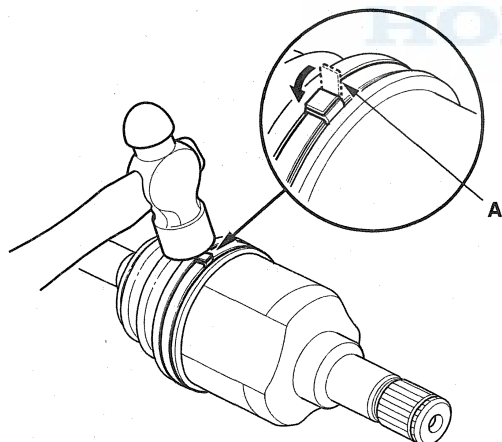
24. Unwind the boot band tool, and cut off the excess free end of the band to leave a 5—10 mm (0.2—0.4 in.) tail protruding from the clip.



25. Bend the band end (A) by tapping it down with a hammer.

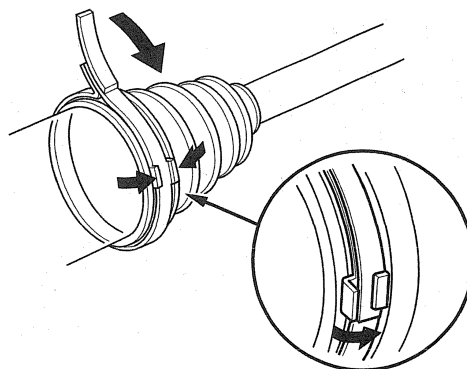
NOTE:

- Make sure the band and clip do not interfere with anything on the vehicle and the band does not move.
- Remove any grease remaining on the surrounding surfaces.



26. Repeat steps 18 through 25 for the band on the other end of the boot.

27. Install a new locking tab type boot band on the inboard joint side of the inboard boot. Fold down the locking tabs.



28. Lightly tap on the doubled-over portions to reduce their height.

29. Repeat steps 27 through 28 for the band on the other end of the boot.

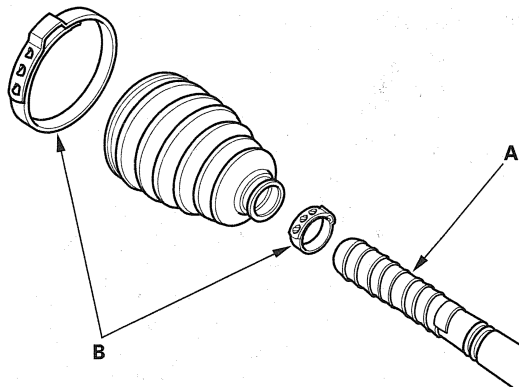
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Driveline/Axle

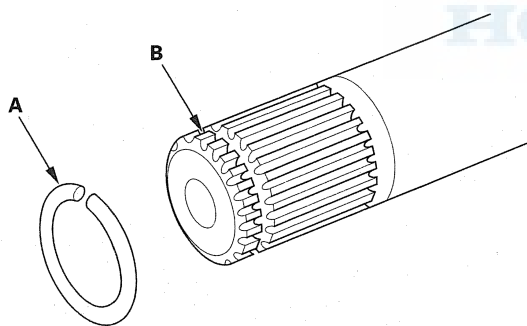
Front Driveshaft Reassembly (cont'd)

Outboard Joint Side

1. Wrap the splines with vinyl tape (A) to prevent damaging the outboard boot.

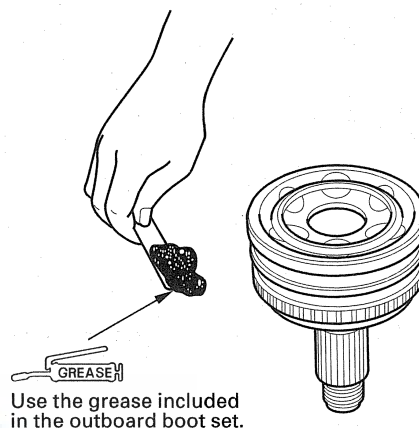


2. Install the new ear clamp bands (B) and outboard boot, then remove the vinyl tape. Be careful not to damage the boot.
3. Install the new circlip (A) in the driveshaft groove (B).

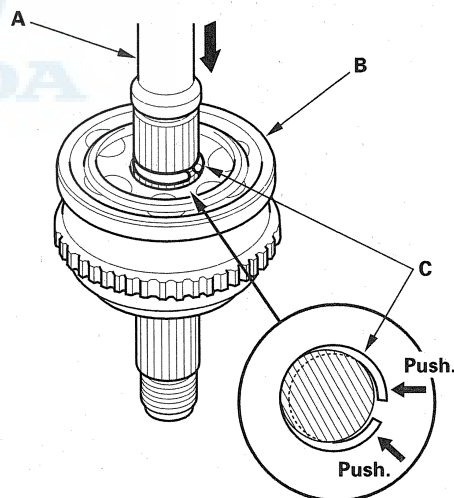


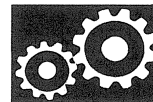
4. Pack about 35 g (1.2 oz) grease included in the new outboard boot set into the driveshaft hole in the outboard joint.

NOTE: If you are installing a new outboard joint, the grease is already installed.



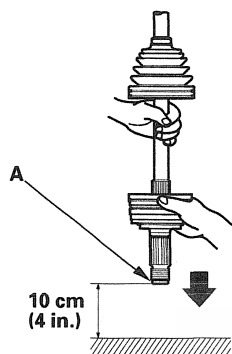
5. Insert the driveshaft (A) into the outboard joint (B) until the circlip (C) is closed to the joint.



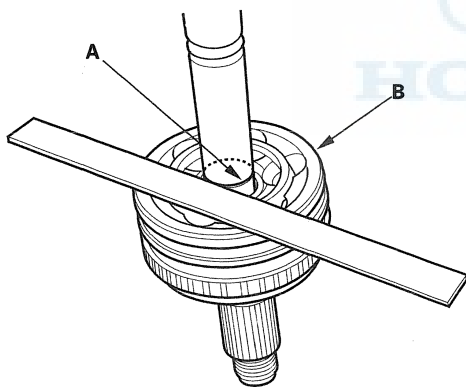


6. To completely seat the outboard joint, pick up the driveshaft and joint, and tap or hit them from a height of about 10 cm (4 in.) onto a hard surface.

NOTE: Do not use a hammer as excessive force may damage the driveshaft. Be careful not to damage the threaded section (A) of the outboard joint.



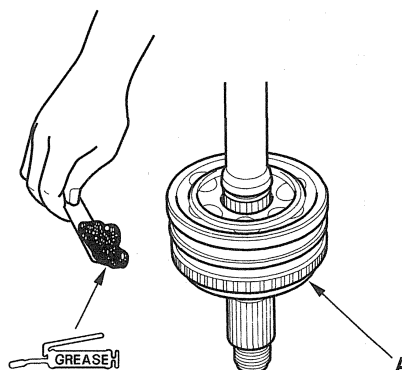
7. Check the alignment of the paint mark (A) you made with the outboard joint rim (B).



8. Pack the outboard joint (A) with the remaining joint grease included in the new outboard boot set.

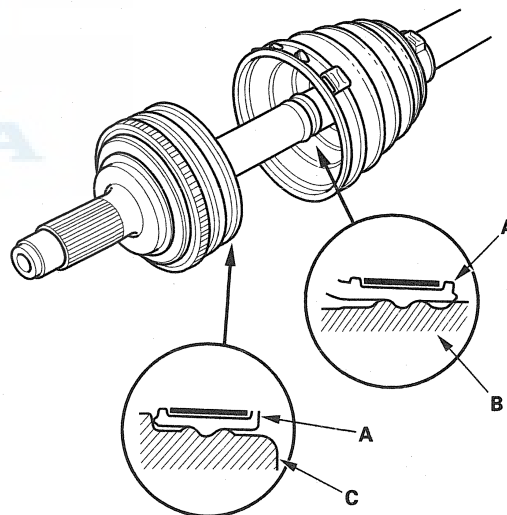
Total grease quantity

Outboard joint: 110–130 g (3.9–4.6 oz)



Use the grease included in the outboard boot set.

9. Fit the boot (A) ends onto the driveshaft (B) and outboard joint (C).

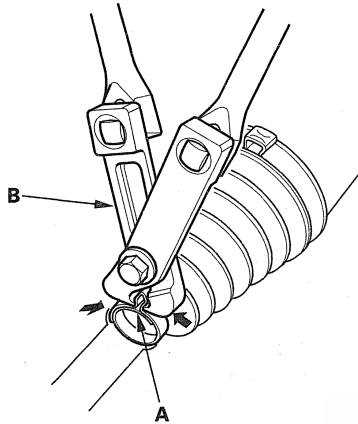


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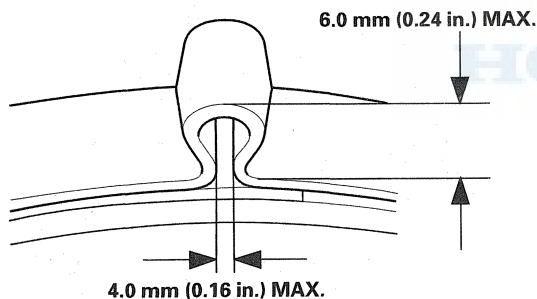
Driveline/Axle

Front Driveshaft Reassembly (cont'd)

10. Close the ear portion (A) of the band with commercially available boot band pliers Kent-Moore J-35910 or equivalent (B).



11. Check the clearance between the closed ear portion of the band. If the clearance is not within the standard, close the ear portion of the band farther.



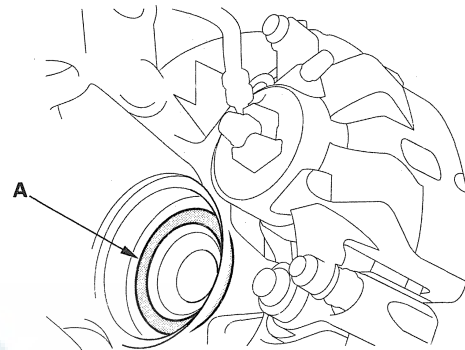
12. Repeat steps 10 and 11 for the band on the other end of the boot.

Front Driveshaft Installation

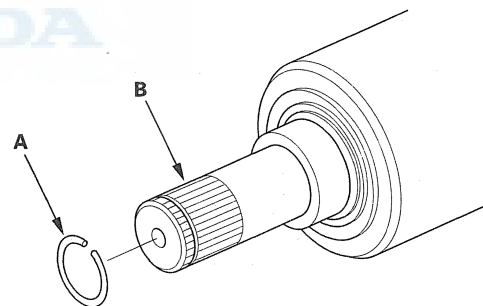
NOTE: Before starting installation, make sure the mating surfaces of the joint and the splined section are free of dirt or dust.

1. Apply grease to the contact area (A) of the outboard joint and the front wheel bearing.

NOTE: Failure to apply grease may cause excessive noise and vibration.

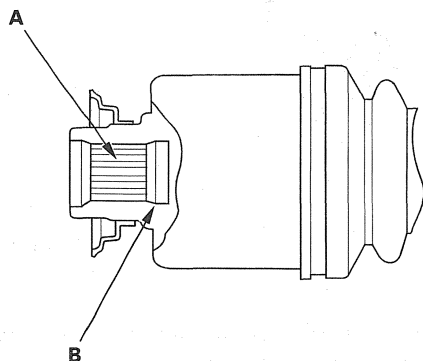


2. Install a new set ring (A) into the set ring groove of the driveshaft (B) (left driveshaft).





3. Apply 2.0—3.0 g (0.07—0.10 oz) of grease to the whole splined surface (A) of the right driveshaft. After applying grease, remove the grease from the splined grooves at intervals of 2—3 splines and from the set ring groove (B) so that air can bleed from the intermediate shaft.

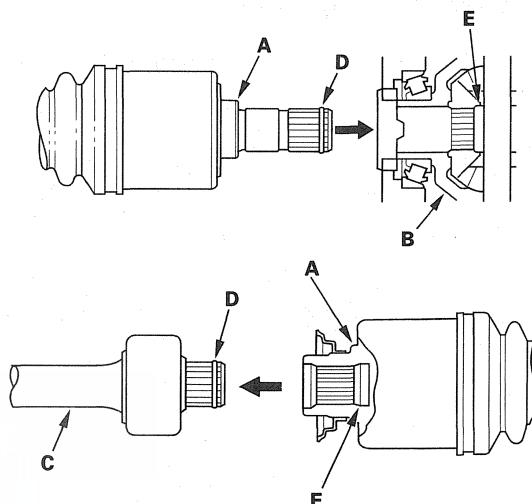


4. Clean the areas where the driveshaft contacts the differential thoroughly with solvent or brake cleaner, and dry with compressed air.

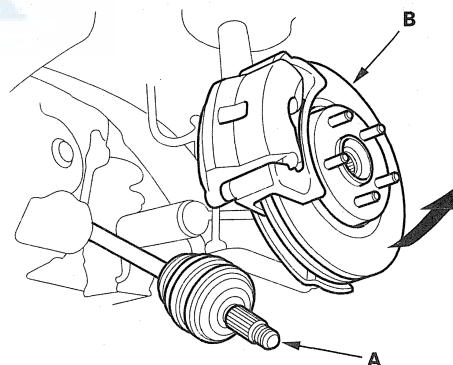
NOTE: Do not wash the rubber parts with solvent.

5. Insert the inboard end (A) of the driveshaft into the differential (B) or intermediate shaft (C) until the set ring (D) locks in the groove (E).

NOTE: Insert the driveshaft horizontally to prevent damaging the differential oil seal.



6. Install the outboard joint (A) into the front wheel hub (B).



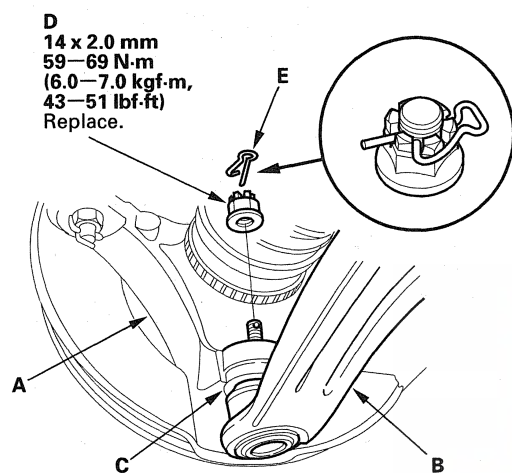
(cont'd)

Driveline/Axle

Front Driveshaft Installation (cont'd)

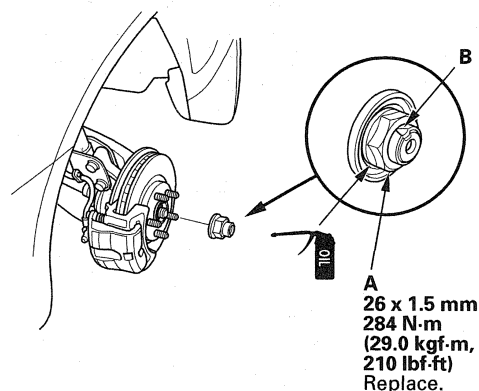
7. Install the knuckle (A) onto the lower arm (B). Be careful not to damage the ball joint boot (C). Wipe off the grease before tightening the nut at the ball joint. Torque the new castle nut (D) to the lower range of torque specification, then tighten it only far enough to align the slot with the pin hole. Do not align the nut by loosening.

NOTE: Make sure the ball joint boot is not damaged or cracked.



8. Install the new lock pin (E) into the pin hole as shown.
9. Connect the front stabilizer link to the damper (see step 4 on page 18-19).

10. Apply a small amount of engine oil to the seating surface of the new spindle nut (A).

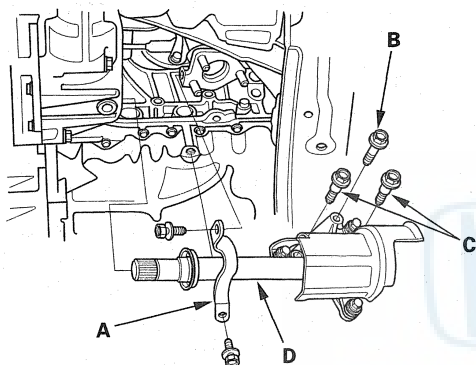


11. Install a new spindle nut, then tighten the nut. After tightening, use a drift to stake the spindle nut shoulder (B) against the driveshaft.
12. Clean the mating surfaces of the brake disc and the front wheel, then install the front wheel.
13. Turn the front wheel by hand, and make sure there is no interference between the driveshaft and surrounding parts.
14. If you removed the left driveshaft, refill the transmission with the recommended fluid (see page 14-214).
15. Lower the vehicle on the lift.
16. Check the front wheel alignment, and adjust it if necessary (see page 18-5).
17. Test-drive the vehicle.



Intermediate Shaft Removal

1. Drain the transmission fluid. Reinstall the drain plug with a new washer (see page 14-214).
2. Remove the right driveshaft (see step 8 on page 16-5).
3. Remove the subframe stiffener (see step 39 on page 14-227).
4. Remove exhaust pipe A (see step 40 on page 14-227).
5. Remove the rear WU-TWC bracket (A), flange bolt (B), and two dowel bolts (C).



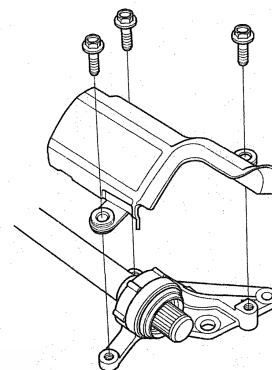
6. Remove the intermediate shaft (D) from the differential. Hold the intermediate shaft horizontally until it is clear of the differential to prevent damaging the differential oil seal.

Intermediate Shaft Disassembly

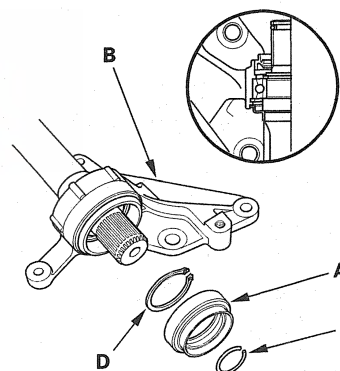
Special Tools Required

- Support base attachment 07LAF-SM40300
- Attachment, 42 x 47 mm 07746-0010300
- Driver 07749-0010000
- Support base 07965-SD90100

1. Remove the heat shield.



2. Remove the intermediate shaft outer seal (A) from the bearing support (B).



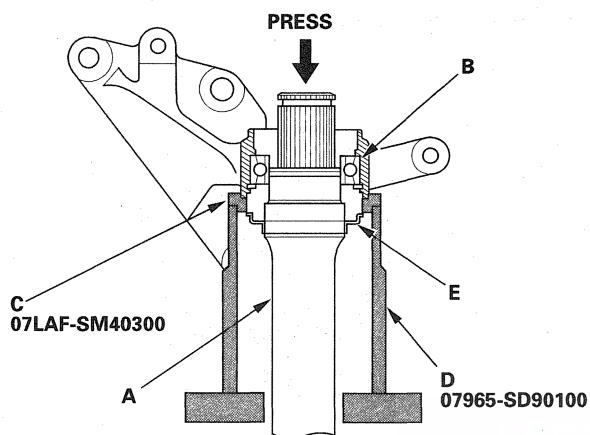
3. Remove the set ring (C) and external snap ring (D).

(cont'd)

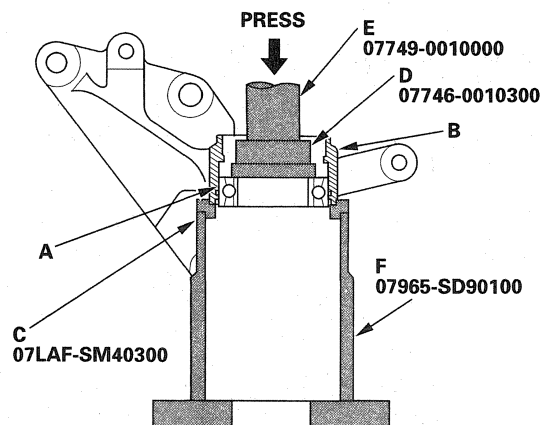
Driveline/Axle

Intermediate Shaft Disassembly (cont'd)

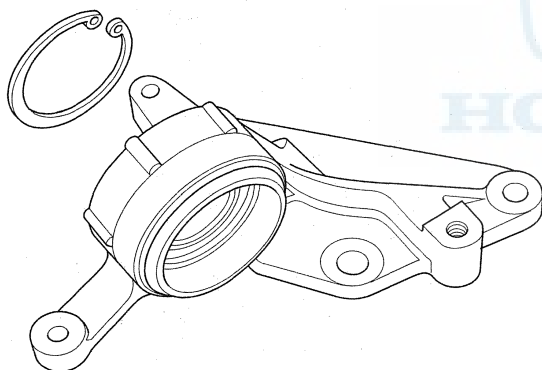
4. Press the intermediate shaft (A) out of the intermediate shaft bearing (B) using the support base attachment (C), support base (D), and a press. Be careful not to damage the bearing support ring (E) on the intermediate shaft during disassembly.



6. Press the intermediate shaft bearing (A) out of the bearing support (B) using the support base attachment (C), 42 x 47 mm attachment (D), driver (E), support base (F), and a press.



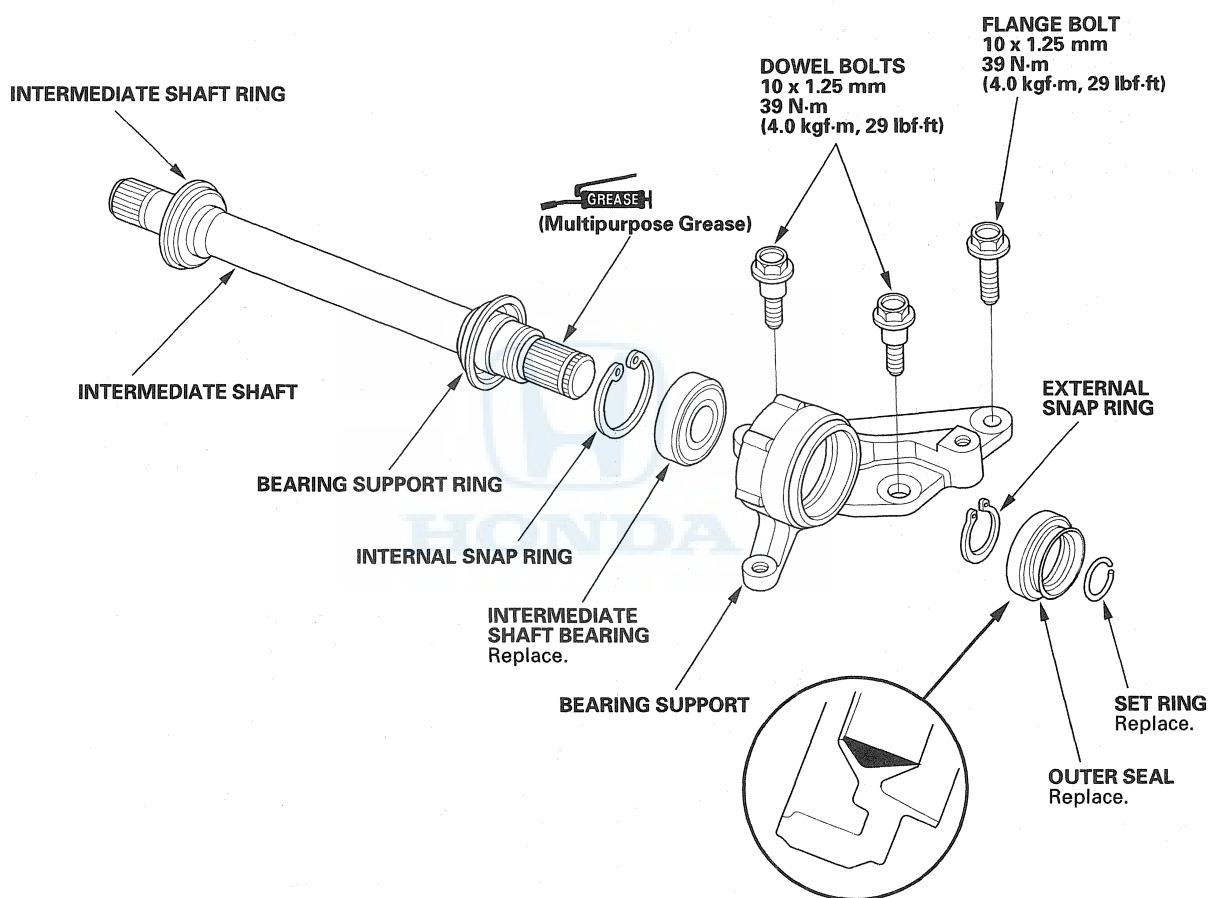
5. Remove the internal snap ring.





Intermediate Shaft Reassembly

Exploded View



(cont'd)

Driveline/Axle

Intermediate Shaft Reassembly (cont'd)

Special Tools Required

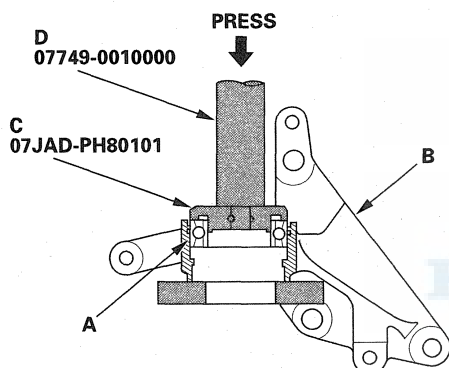
- Oil seal driver attachment 07JAD-PH80101
- Support base attachment 07LAF-SM40300
- Driver 07749-0010000
- Fork seal driver, 39.2 x 49.5 x 15 mm 07947-4630100
- Support base 07965-SD90100

NOTE: Refer to the Exploded View, as needed, during this procedure.

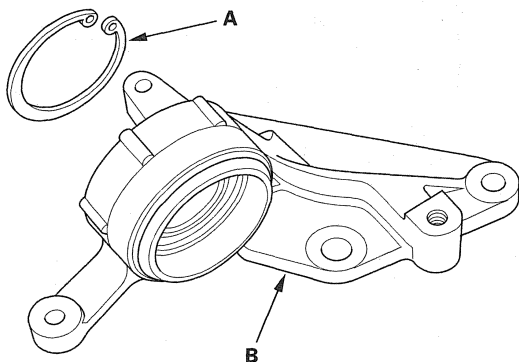
1. Clean the disassembled parts with solvent, and dry them with compressed air.

NOTE: Do not wash the rubber parts with solvent.

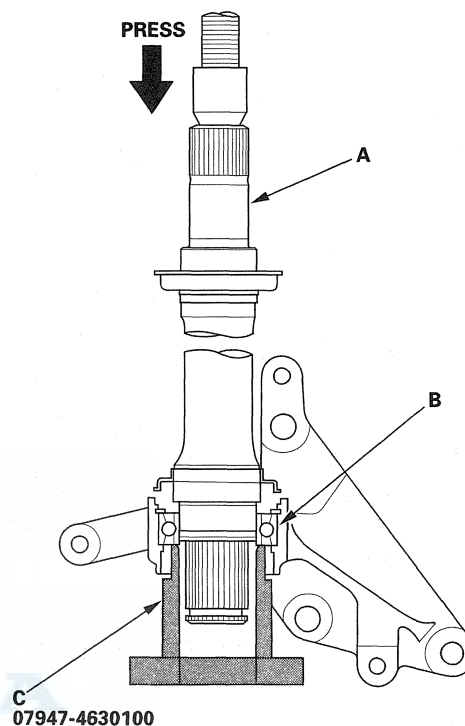
2. Press the intermediate shaft bearing (A) into the bearing support (B) using the oil seal driver attachment (C), driver (D), and a press.



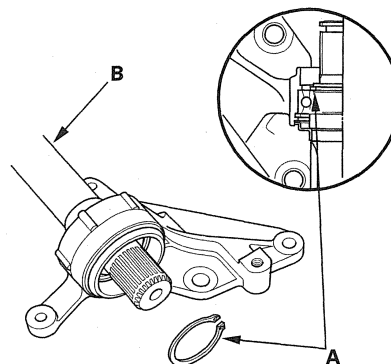
3. Seat the internal snap ring (A) into the groove of the bearing support (B).

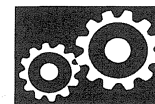


4. Press the intermediate shaft (A) into the new shaft bearing (B) using the 39.2 x 49.5 x 15 mm fork seal driver (C) and a press.

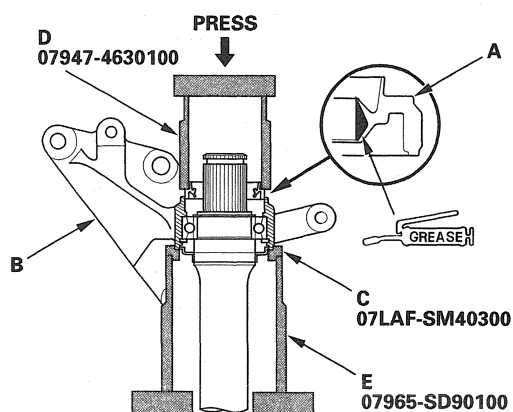


5. Seat the external snap ring (A) into the groove of the intermediate shaft (B).

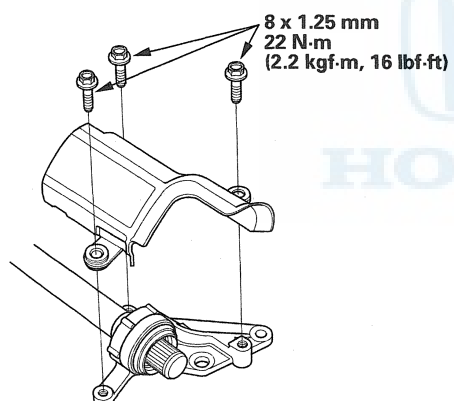




6. Apply multipurpose grease to the interior lip of the new outer seal (A). Install the outer seal into the bearing support (B) using the support base attachment (C), 39.2 x 49.5 x 15 mm fork seal driver (D), support base (E), and a press.



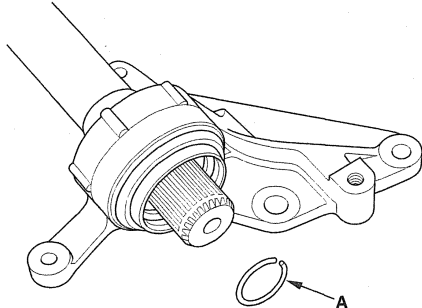
7. Install the heat shield onto the bearing support.



Driveline/Axle

Intermediate Shaft Installation

1. Install the new set ring (A).

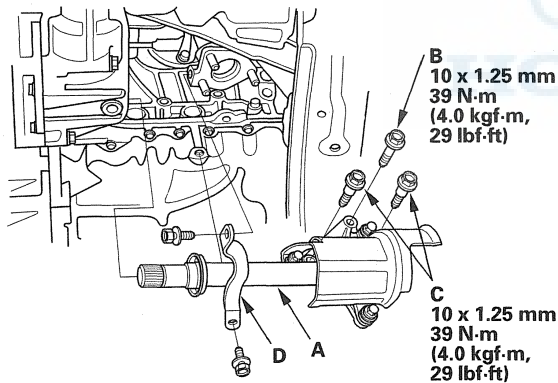


2. Clean the areas where the intermediate shaft contacts the differential thoroughly with solvent or brake cleaner, and dry with compressed air.

NOTE: Do not wash the rubber parts with solvent.

3. Insert the intermediate shaft assembly (A) into the differential until the set ring locks into the groove.

NOTE: Insert the intermediate shaft horizontally to prevent damaging the differential oil seal.



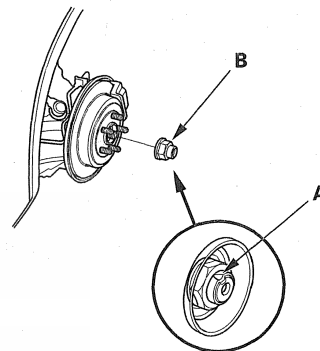
4. Install the flange bolt (B), two dowel bolts (C), and rear WU-TWC bracket (D).
5. Install exhaust pipe A (see step 35 on page 14-241).
6. Install the subframe stiffener (see step 36 on page 14-241).
7. Install the right driveshaft (see page 16-18).
8. Refill the transmission with the recommended transmission fluid (see page 14-214).
9. Test-drive the vehicle.

Rear Driveshaft Removal

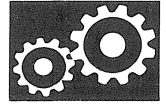
Special Tools Required

Driveshaft remover 07AAD-S9VA000

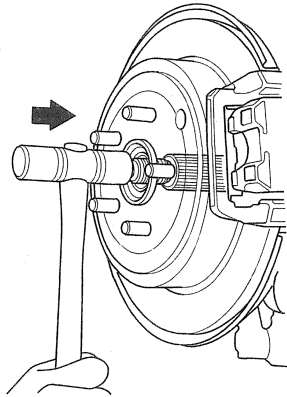
1. Raise the vehicle on a lift.
2. Drain the differential fluid. Reinstall the drain plug with a new washer (see page 15-46).
3. Remove the rear wheels.
4. Lift up the locking tab (A) on the spindle nut (B), then remove and discard the nut.



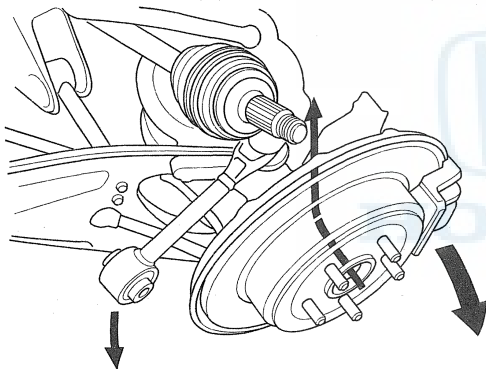
5. Remove the upper arm bolt (see page 18-36).
6. Remove the rear damper (see page 18-40).
7. Remove the lower arm B flange bolt (see page 18-37).
8. Remove the rear wheel sensor bracket (see page 19-102).



9. Pull the knuckle outward, and disconnect the rear driveshaft outboard joint from the rear wheel hub using a plastic hammer.

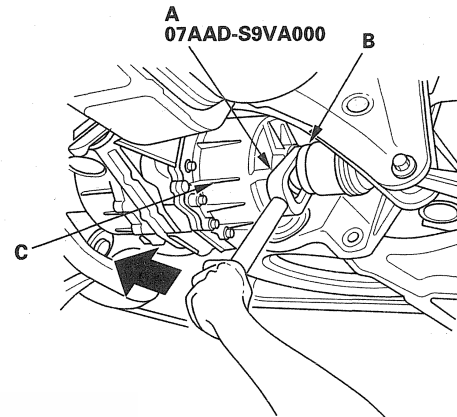


10. Remove the rear driveshaft outboard joint.

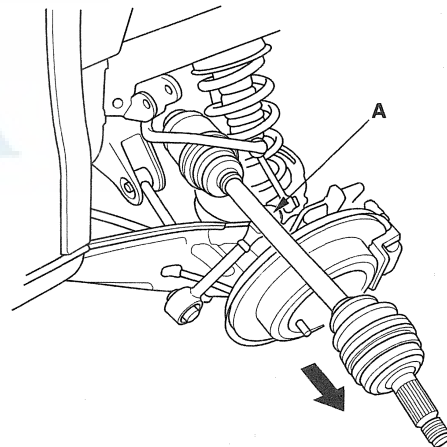


11. Using the driveshaft remover (A), pry out both inboard joint (B) from the differential (C).

NOTE: This is a prying tool, do not strike it with a hammer.



12. Remove the rear driveshaft (A).



Driveline/Axle

Rear Driveshaft Disassembly

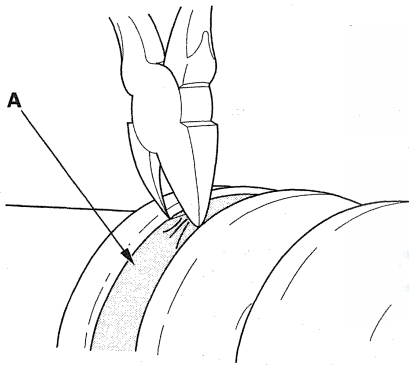
Special Tools Required

- Threaded adapter, 24 x 1.5 mm 07XAC-001020A
- Slide hammer, 5/8"-18 UNF, commercially available

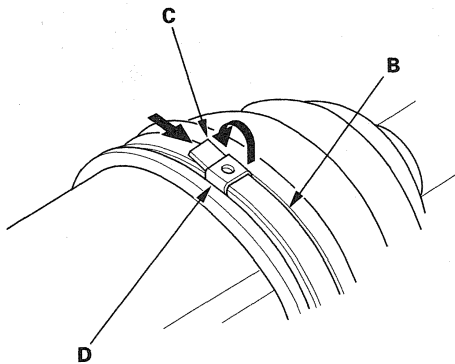
Inboard Joint Side

1. Remove the boot bands. Be careful not to damage the boot.
 - If the boot band is a welded type (A), cut the boot band.
 - If the boot band is a double loop type (B), lift up the band end (C), and push it into the clip (D).
 - If the boot band is a low profile type (E), pinch the boot band using a commercially available boot band pliers (F).

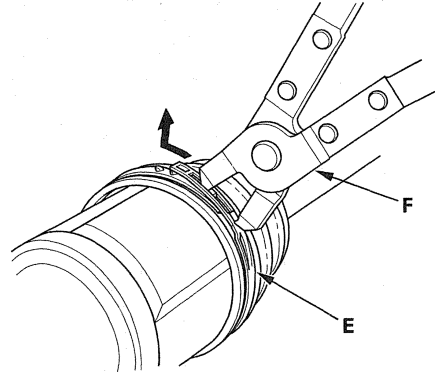
Welded type



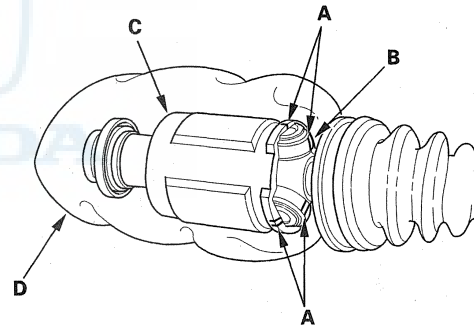
Double loop type

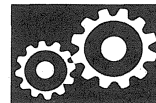


Low profile type



2. Make marks (A) on each roller (B) and inboard joint (C) to identify the locations of rollers and grooves in the inboard joint. Then remove the inboard joint on the shop towel (D). Be careful not to drop the rollers when separating them from the inboard joint.

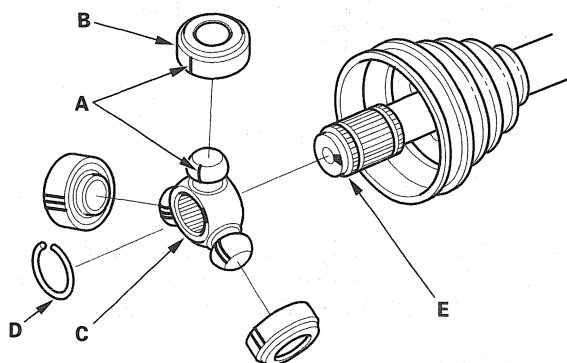




3. Make marks (A) on the rollers (B) and spider (C) to identify the locations of ball rollers on the spider, then remove the rollers.

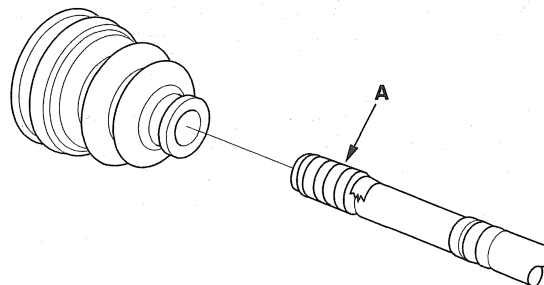
NOTE:

- Do not engrave or scribe mark on the rolling surface.
- If necessary, use a commercially available puller.



4. Remove the circlip (D).
5. Mark the spider (C) and driveshaft (E) to identify the position of the spider on the shaft.
6. Remove the spider (C).

7. Wrap the splines on the driveshaft with vinyl tape (A) to prevent damaging the boot.



8. Remove the inboard boot. Be careful not to damage the boot.
9. Remove the vinyl tape.

(cont'd)

Driveline/Axle

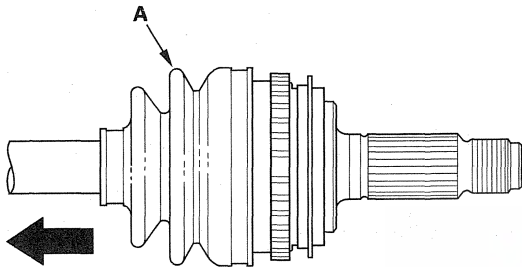
Rear Driveshaft Disassembly (cont'd)

Outboard Joint Side

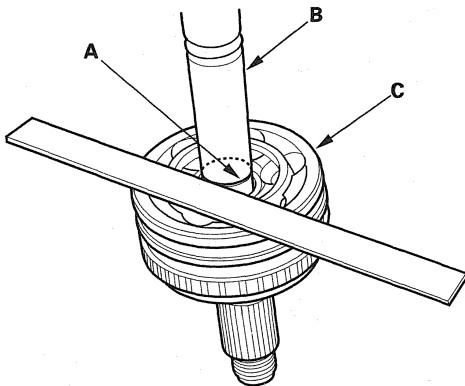
1. Remove the boot bands.

NOTE: The boot bands for the outboard and inboard joints are the same. Use the same procedure.

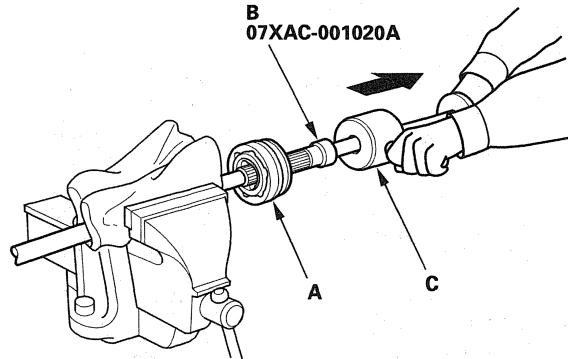
2. Slide the outboard boot (A) partially to the inboard joint side.
Be careful not to damage the boot.



3. Wipe off the grease to expose the driveshaft and the outboard joint end.
4. Make a mark (A) on the driveshaft (B) at the same level as the outboard joint rim (C).



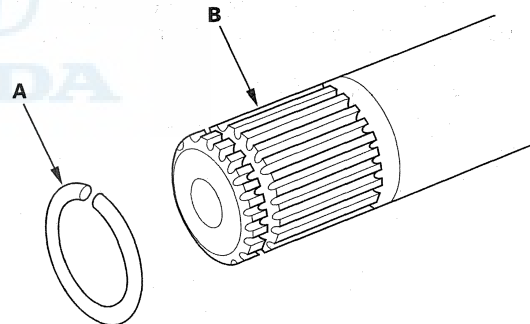
5. Securely clamp the driveshaft in a bench vise with a shop towel.



6. Remove the outboard joint (A) using the 24 x 1.5 mm threaded adapter (B) and a commercially available 5/8\"-18 UNF slide hammer (C).

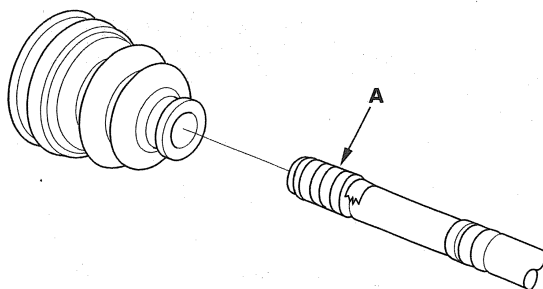
7. Remove the driveshaft from the bench vise.

8. Remove the circlip (A) from the driveshaft (B).



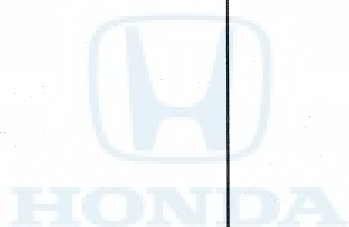


9. Wrap the splines on the driveshaft with vinyl tape (A) to prevent damaging the boot.



10. Remove the outboard boot. Be careful not to damage the boot.

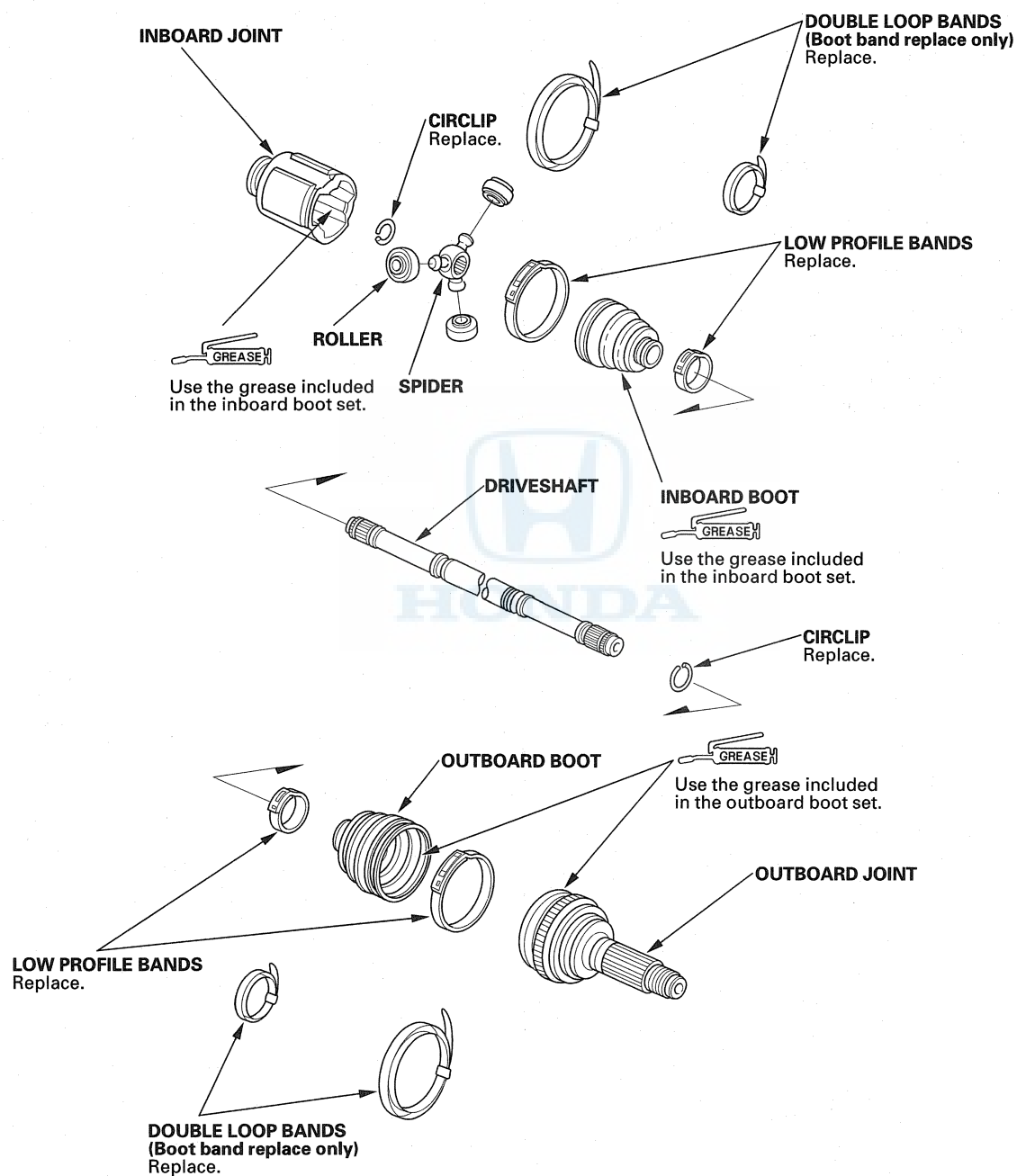
11. Remove the vinyl tape.

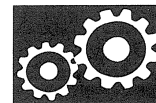


Driveline/Axle

Rear Driveshaft Reassembly

Exploded View





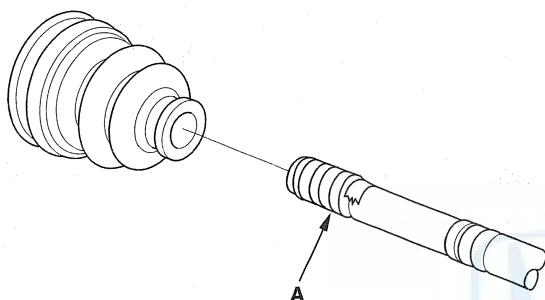
Special Tools Required

Boot band tool, KD-3191 or equivalent, commercially available

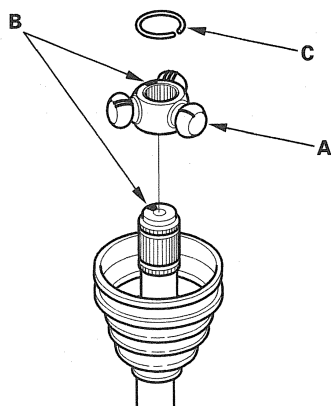
NOTE: Refer to the Exploded View, as needed, during this procedure.

Inboard Joint Side

1. Wrap the splines with vinyl tape (A) to prevent damaging the inboard boot.



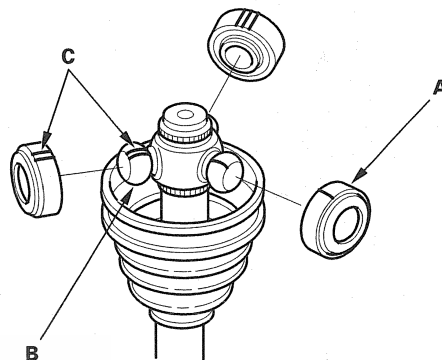
2. Install the inboard boot onto the driveshaft, then remove the vinyl tape. Be careful not to damage the inboard boot.
3. Install the spider (A) onto the driveshaft by aligning the marks (B) you made on the spider and the end of the driveshaft.



4. Install a new circlip (C) into the driveshaft groove. Always rotate the circlip in its groove to make sure it is fully seated.

5. Fit the rollers (A) onto the spider (B) with the high shoulders facing outward and note these items:

- Reinstall the rollers in their original positions on the spider by aligning the marks (C) you made.
- Hold the driveshaft pointed up to prevent the rollers from falling off.



6. Pack the inboard joint with the joint grease included in the new inboard boot set.

Grease quantity

Inboard joint: 130—140 g (4.6—4.9 oz)



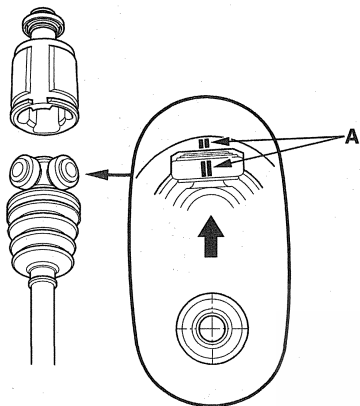
(cont'd)

Driveline/Axle

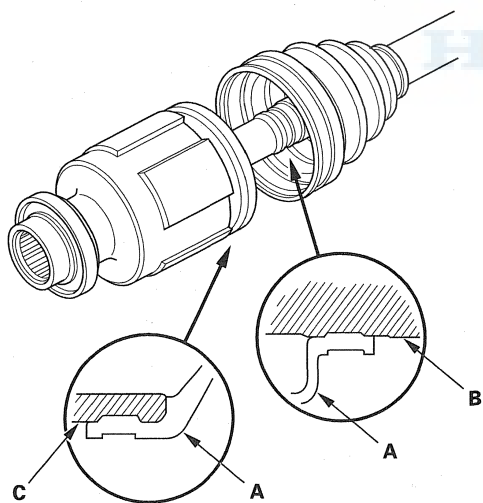
Rear Driveshaft Reassembly (cont'd)

7. Fit the inboard joint onto the driveshaft, and note these items:

- Reinstall the inboard joint onto the driveshaft by aligning the marks (A) you made on the inboard joint and the rollers.
- Hold the driveshaft so the inboard joint points up to prevent it from falling off.



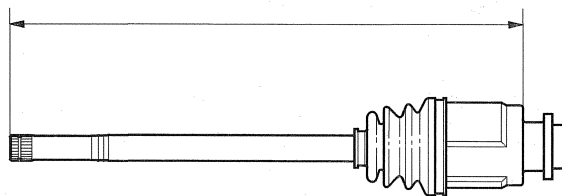
8. Fit the boot (A) ends onto the driveshaft (B) and the inboard joint (C).



9. Adjust the length of the driveshafts to the figure as shown, then adjust the boots to halfway between full compression and full extension. Doing this prevents a vacuum or too much air in the boot, preventing it from compressing or extending properly.

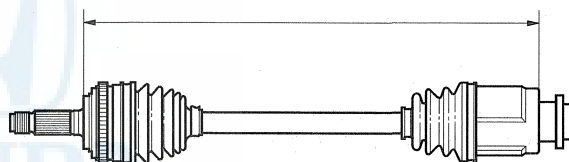
Without outboard joint:

Right driveshaft: 580.9—585.9 mm (22.87—23.07 in.)
Left driveshaft: 551.9—556.9 mm (21.73—21.93 in.)



With outboard joint:

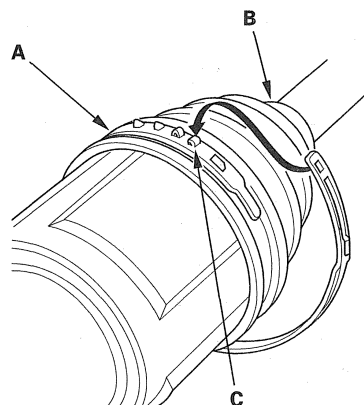
Right driveshaft: 602.0—607.0 mm (23.70—23.90 in.)
Left driveshaft: 573.0—578.0 mm (22.56—22.76 in.)

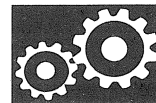


10. Install the boot bands.

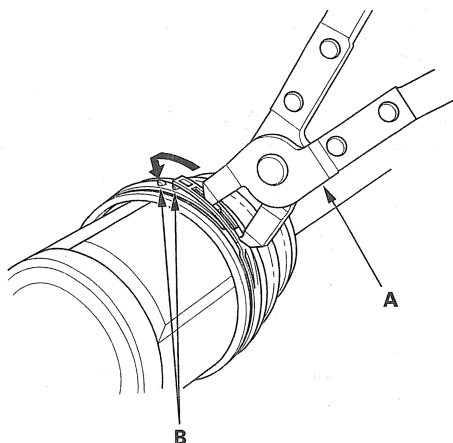
- For the low profile type, go to step 11.
- For the double loop type, go to step 14.
(Boot band replace only)

11. Install the new low profile band (A) onto the boot (B), then hook the tab (C) of the band.



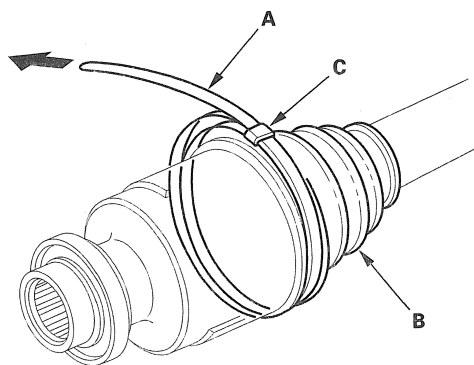


12. Close the hook portion of the band with a commercially available boot band pliers (A), then hook the tabs (B) of the band.



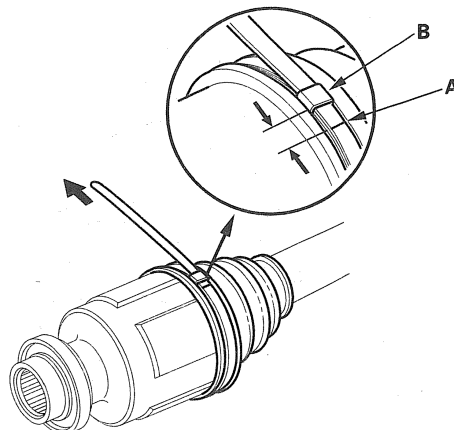
13. Install the boot band on the other end of the boot, and repeat steps 11 through 12.
14. Fit the boot ends onto the driveshaft and the inboard joint, then install the new double loop band (A) onto the boot (B).

NOTE: Pass the end of the new double loop band through the clip (C) twice in the direction of the forward rotation of the driveshaft.

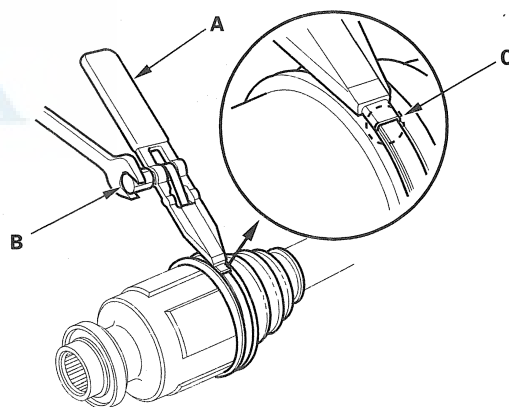


15. Pull up the slack in the band by hand.

16. Mark a position (A) on the band 10—14 mm (0.4—0.6 in.) from the clip (B).



17. Thread the free end of the band through the nose section of the commercially available boot band tool KD-3191 or equivalent (A), and into the slot on the winding mandrel (B).



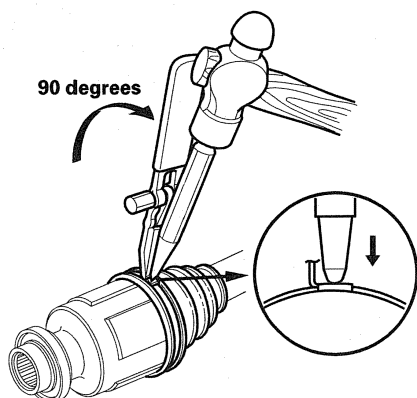
18. Using a wrench on the winding mandrel of the boot band tool to tighten the band until the marked spot (C) on the band meets the edge of the clip.

(cont'd)

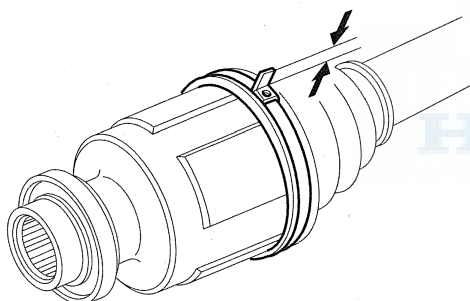
Driveline/Axle

Rear Driveshaft Reassembly (cont'd)

19. Lift up the boot band tool to bend the free end of the band 90 degrees to the clip. Center-punch the clip, then fold over the remaining tail onto the clip.



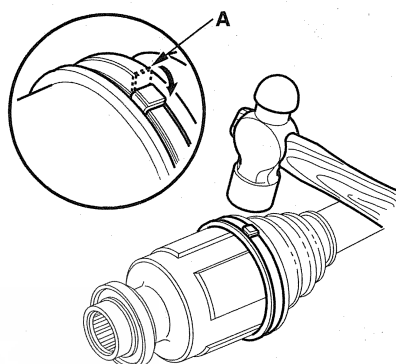
20. Unwind the boot band tool, and cut off the excess free end of the band to leave 5—10 mm (0.2—0.4 in.) from the clip.



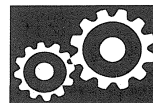
21. Bend the band end (A) by tapping it down with a hammer.

NOTE:

- Make sure the band and clip do not interfere with anything on the vehicle and the band does not move.
- Remove any grease remaining on the surrounding surfaces.

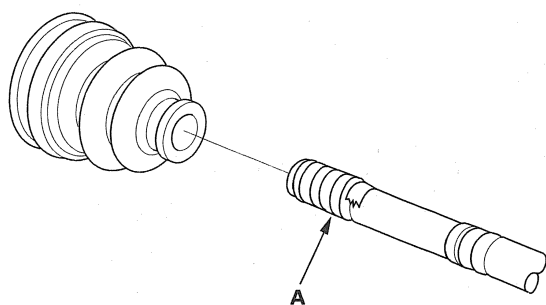


22. Install the boot band on the other end of the boot, and repeat steps 14 through 21.

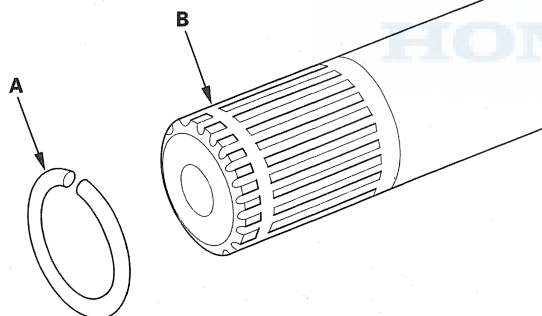


Outboard Joint Side

1. Wrap the splines with vinyl tape (A) to prevent damaging the outboard boot.

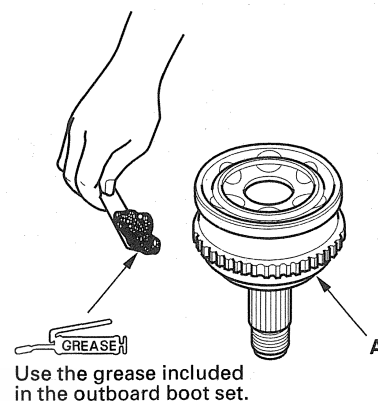


2. Install the outboard boot onto the driveshaft, then remove the vinyl tape. Be careful not to damage the outboard boot.
3. Install the new circlip (A) in the driveshaft groove (B).

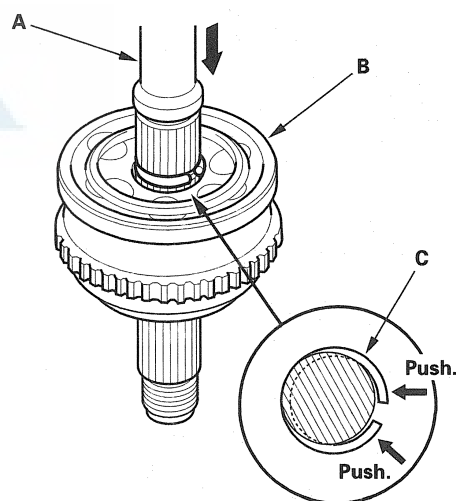


4. Pack about 35 g (1.2 oz) grease, included in the new outboard boot set, into the driveshaft hole in the outboard joint.

NOTE: If you are installing a new outboard joint, the grease is already installed.



5. Insert the driveshaft (A) into the outboard joint (B) until the circlip (C) is closed on the joint.



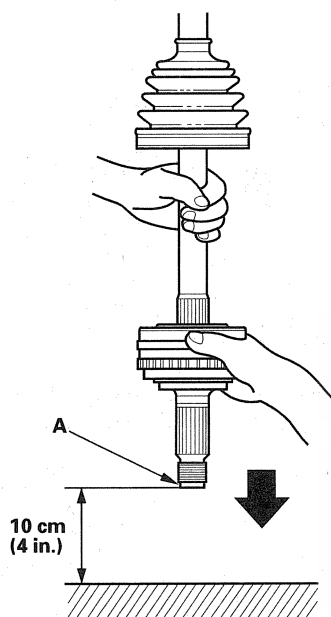
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Driveline/Axle

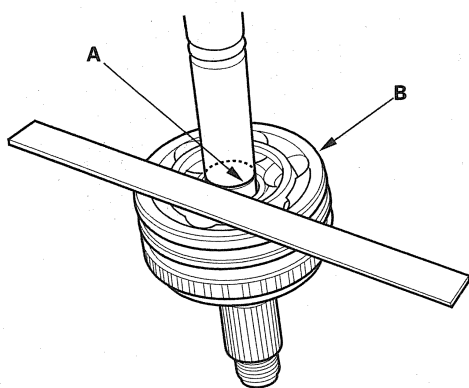
Rear Driveshaft Reassembly (cont'd)

6. To completely seat the outboard joint, pick up the driveshaft and joint, and tap or hit them from a height of about 10 cm (4 in.) onto a hard surface.

NOTE: Do not use a hammer as excessive force may damage the driveshaft. Be careful not to damage the threaded section (A) of the outboard joint.



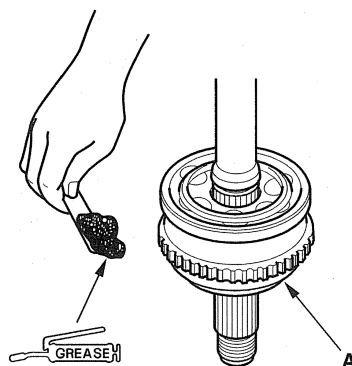
7. Check the alignment of the paint mark (A) you made with the outboard joint rim (B).



8. Pack the outboard joint (A) with the remaining joint grease included in the new outboard boot set.

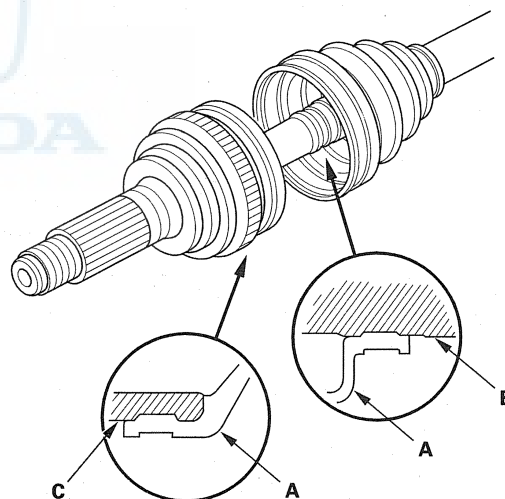
Total grease quantity

Outboard Joint: 70–80 g (2.5–2.8 oz)



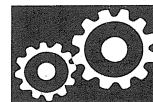
Use the grease included in the outboard boot set.

9. Fit the boot (A) ends onto the driveshaft (B) and the outboard joint (C).



10. Install the boot bands.

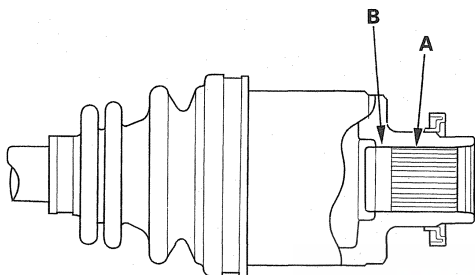
NOTE: The boot bands for the outboard and inboard joints are the same. Use the same procedure.



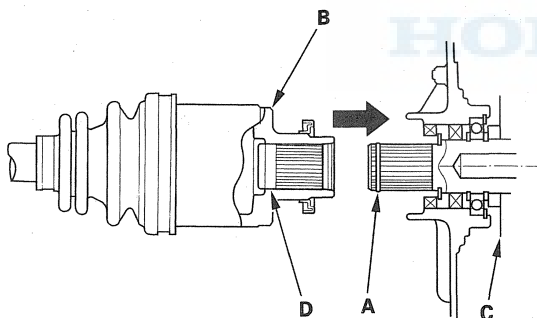
Rear Driveshaft Installation

NOTE: Before starting installation, make sure the mating surfaces of the joint and the splined section are free of dirt or dust.

1. Apply 1.5—2.0 g (0.05—0.07 oz) of grease to the whole splined surface (A). After applying grease, remove the grease from the splined grooves at intervals of 2—3 splines and from the set ring groove (B) so that air can bleed from the differential.



2. Install a new set ring (A) in the set ring groove of the differential.

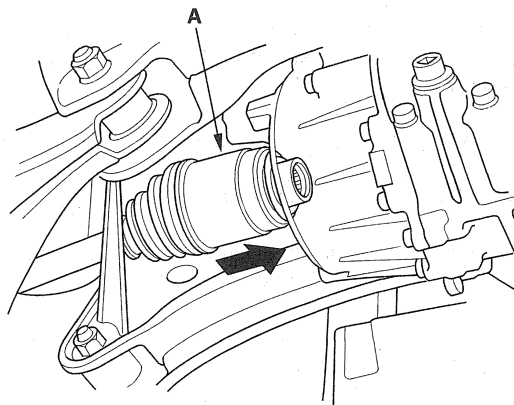


3. Clean the areas where the driveshaft contacts the differential thoroughly with solvent or brake cleaner, and dry with compressed air.

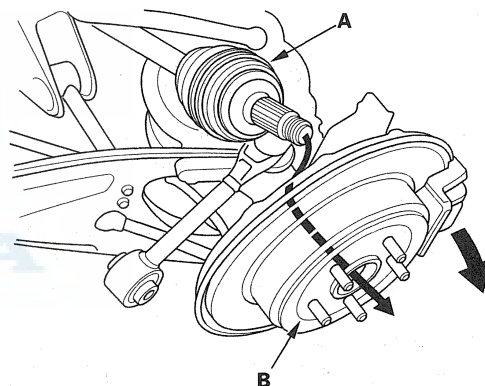
NOTE: Do not wash the rubber parts with solvent.

4. Insert the inboard end (B) of the driveshaft into the differential (C) until the set ring locks in the groove (D).

5. Install the driveshaft (A).



6. Install the outboard joint (A) into the rear wheel hub (B).

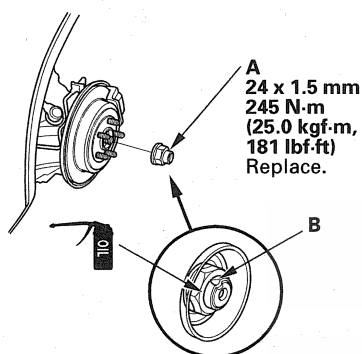


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Driveline/Axle

Rear Driveshaft Installation (cont'd)

7. Install the lower arm B flange bolt (see step 4 on page 18-38).
8. Install the rear wheel sensor bracket (see page 19-102).
9. Install the upper arm bolt (see page 18-36).
10. Install the rear damper (see page 18-41).
11. Apply a small amount of engine oil to the seating surface of the new spindle nut (A).

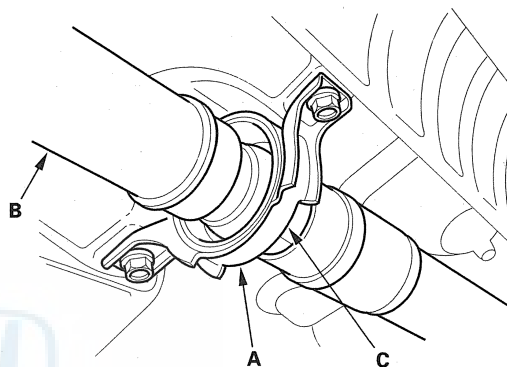


12. Install a new spindle nut, then tighten the nut. After tightening, use a drift to stake the spindle nut shoulder (B) against the driveshaft.
13. Turn the rear wheel by hand, and make sure there is no interference between the driveshaft and surrounding parts.
14. Clean the mating surfaces of the brake disc and the rear wheel, then install the rear wheel.
15. Refill the differential with the recommended fluid (see page 15-46).
16. Lower the vehicle on the lift.
17. Check the rear wheel alignment, and adjust it if necessary (see page 18-5).
18. Test-drive the vehicle.

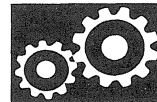
Propeller Shaft Inspection

Universal Joint and Boots

1. Shift the transmission to the N position.
2. Raise the vehicle on a lift.
3. Check the center support bearing (A) for excessive play or rattle. If the center support has excessive play or rattle, replace the propeller shaft assembly (B).



4. Check the universal joint boots (C) for damage and deterioration. If the boots are damaged or deteriorated, replace the propeller shaft assembly.
5. Check the universal joints for excessive play or rattle. If the universal joints have excessive play or rattle, replace the propeller shaft assembly.

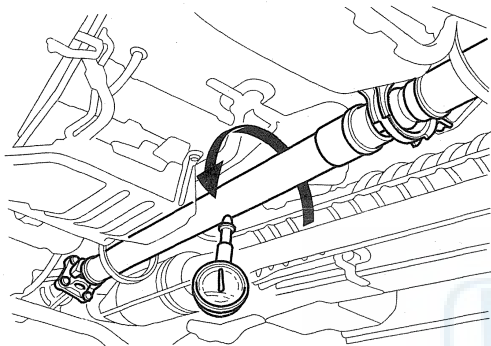


Propeller Shaft Removal

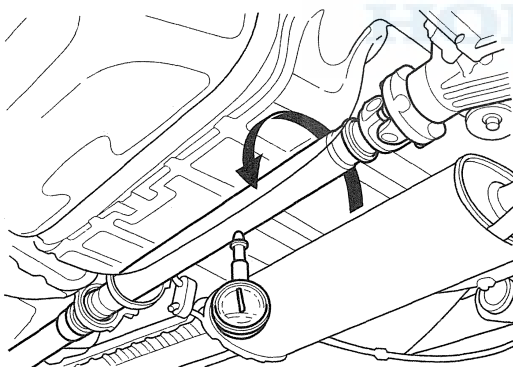
Propeller Shaft Runout

6. Install a dial indicator with its needle on the center of the No. 1 propeller shaft or the No. 2 propeller shaft.
7. Turn the other propeller shaft slowly and check the runout. Repeat this procedure for the other propeller shaft.

No. 1 Propeller Shaft Runout:
Service Limit: 1.5 mm (0.06 in.)



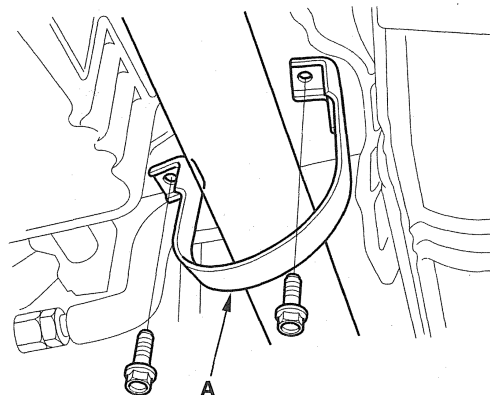
No. 2 Propeller Shaft Runout:
Service Limit: 1.5 mm (0.06 in.)



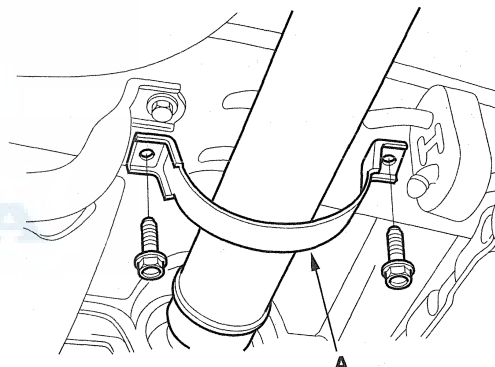
8. If the runout on either propeller shaft exceeds the service limit, replace the propeller shaft assembly.

1. Raise the vehicle on a lift.

2. Remove the No. 1 propeller shaft protector (A).



3. Remove the No. 2 propeller shaft protector (A).

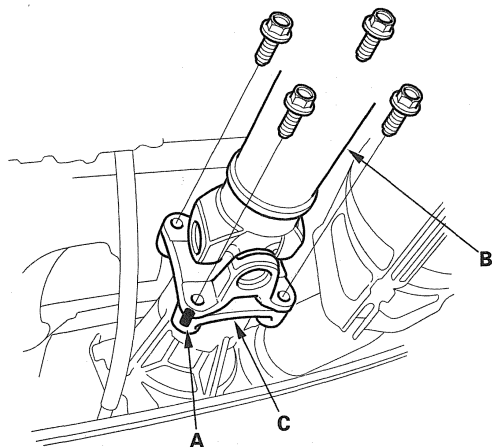


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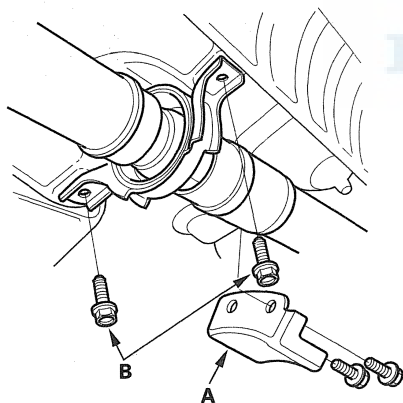
Driveline/Axle

Propeller Shaft Removal (cont'd)

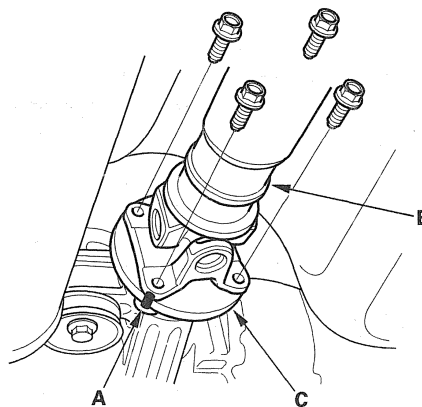
4. Make a reference mark (A) across the No. 1 propeller shaft (B) and the transfer companion flange (C).



5. Remove the bolts, then separate the No. 1 propeller shaft from the transfer assembly.
6. Remove the propeller shaft protector (A) and center support bearing mounting bolts (B).



7. Make a reference mark (A) across the No. 2 propeller shaft (B) and the rear differential companion flange (C).

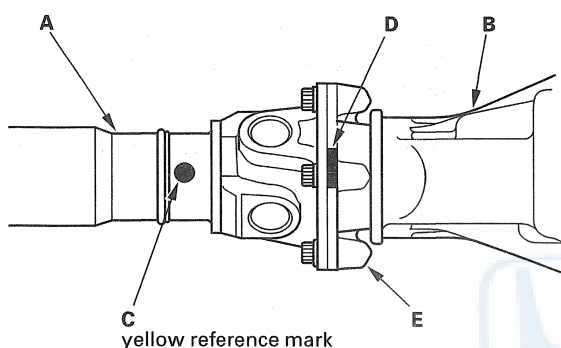


8. Remove the bolts, then separate the No. 2 propeller shaft from the rear differential, then remove the propeller shaft.

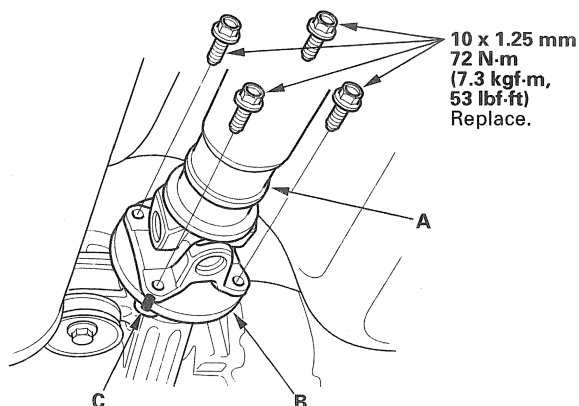


Propeller Shaft Installation

1. If you are installing a new propeller shaft, go to step 2. If you are reinstalling the original propeller shaft, go to step 3.
2. Install the new No. 2 propeller shaft (A) onto the rear differential (B), by aligning the reference mark (C) on the new No. 2 propeller shaft with the factory reference mark (D) on the companion flange (E). Do not use the marks you made on the companion flange during the removal procedure. If there are no factory marks on the companion flange, go to step 4.

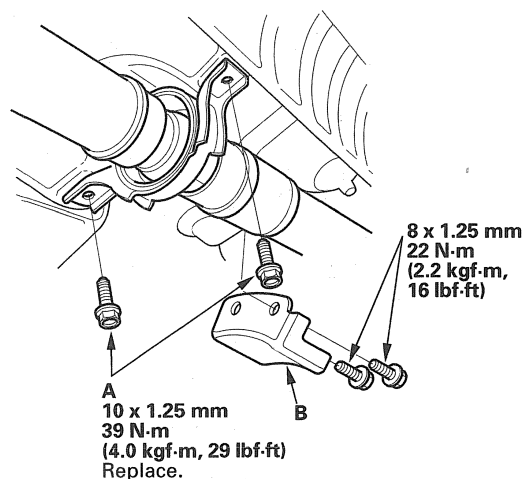


3. Reinstall the propeller shaft (A) to the rear differential (B) by aligning the reference mark (C) you made during the removal procedure.

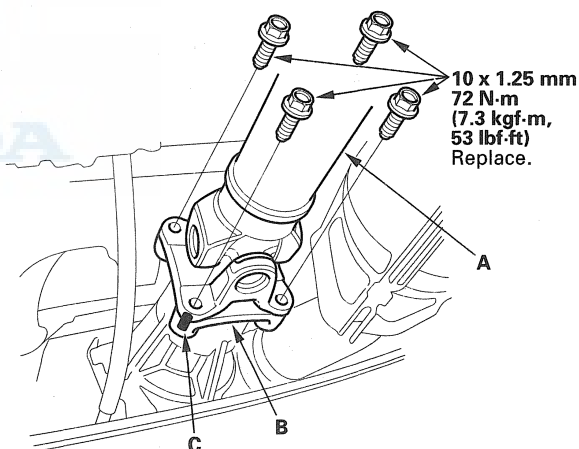


4. Attach the propeller shaft to the rear differential with new mounting bolts. Tighten the bolts to the specified torque.

5. Install the new center support bearing bolts (A). Then install the propeller shaft protector (B).



6. Install the No. 1 propeller shaft (A) onto the transfer companion flange (B) by aligning the reference mark (C). Make sure you use new mounting bolts.

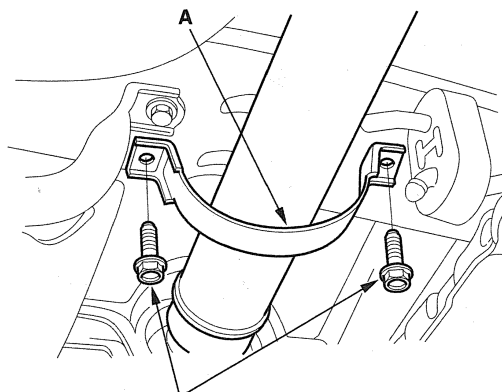


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Driveline/Axle

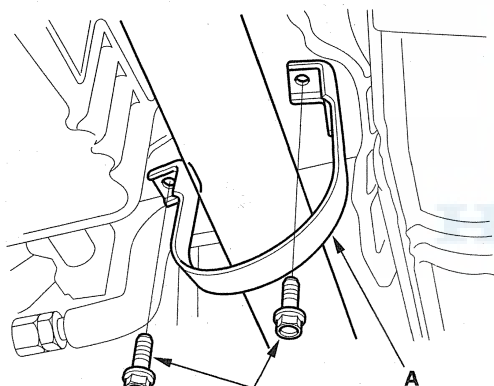
Propeller Shaft Installation (cont'd)

7. Install the No. 2 propeller shaft protector (A).



8 x 1.25 mm
22 N·m
(2.2 kgf·m, 16 lbf·ft)

8. Install the No. 1 propeller shaft protector (A).



8 x 1.25 mm
22 N·m
(2.2 kgf·m, 16 lbf·ft)

9. If you installed a new propeller shaft, test-drive the vehicle at 55 mph (88 kph), and check for noise or vibration.

- If there is no noise or vibration, the repair is complete.
- If there is a noise or vibration, go to step 10.

10. Remove the mounting bolts from the propeller shaft at the rear differential companion flange. Note the current alignment of the propeller shaft to the rear differential companion flange.

11. Rotate the propeller shaft 180 degrees from its current alignment with the rear differential companion flange.

12. Install new mounting bolts and tighten them to the specified torque, go to step 4.

SUPPLEMENTAL RESTRAINT SYSTEM (SRS) (If steering maintenance is required)

The Pilot SRS includes a driver's airbag in the steering wheel hub, a passenger's airbag in the dashboard above the glove box, seat belt tensioners in the front seat belt retractors, side curtain airbags in the side of the roof, and side airbags in the front seat-backs. Information necessary to safely service the SRS is included in this Service Manual. Items marked with an asterisk (*) on the contents page include or are located near SRS components. Servicing, disassembling, or replacing these items requires special precautions and tools, and should be done by an authorized Honda dealer.

- To avoid rendering the SRS inoperative, which could lead to personal injury or death in the event of a severe frontal or side collision, all SRS service should be done by an authorized Honda dealer.
- Improper service procedures, including incorrect removal and installation of the SRS, could lead to personal injury caused by unintentional deployment of the airbags and/or side airbags.
- Do not bump or impact the SRS unit, front impact sensors, or side impact sensors when the ignition switch is ON (II), or for at least 3 minutes after the ignition switch is turned OFF; otherwise, the system may fail in a collision, or the airbags may deploy.
- SRS electrical connectors are identified by yellow color coding. Related components are located in the steering column, front console, dashboard, dashboard lower panel, in the dashboard above the glove box, in the front seats, in the roof side, and around the floor. Do not use electrical test equipment on these circuits.



Steering

Power Steering

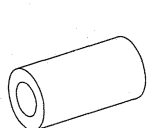
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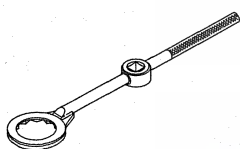
Power Steering

Special Tools

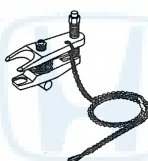
Ref. No.	Tool Number	Description	Qty
①	07GAF-PH70100	Pilot Collar	1
②	07MAA-SL00100 or 07916-SA50001	Locknut Wrench, 40 mm	1
③	07MAC-SL0A202	Ball Joint Remover, 28 mm	1
④	07NAG-SR3090A	Valve Seal Ring Sizing Tool	1
⑤	07RAK-S040122	P/S Joint Adapter (Hose)	1
⑥	07TAF-SZ50100	Cylinder End Seal Remover Attachment	1
⑦	07VAK-P8A011A	P/S Joint Adapter (Pump)	1
⑧	07VAK-P8A012B	P/S Joint Adapter Plate (Pump)	1
⑨	07YAG-S2X0100	Sleeve Seal Ring Guide	1
⑩	07ZAB-S5A0100	Pulley Holder	1
⑪	07ZAG-S3VA100	Piston Seal Ring Guide	1
⑫	07ZAG-S3VA200	Piston Seal Ring Sizing Tool	1
⑬	07ZAG-S5A0100	Sleeve Seal Ring Sizing Tool, 36 mm	1
⑭	07406-0010001 or 07406-001000A or 07406-001A101	P/S Pressure Gauge	1
⑮	07746-0010100	Attachment, 32 x 35 mm	1
⑯	07749-0010000	Driver	1
⑰	07946-1870100	Attachment, 28 x 30 mm	1
⑱	07965-SA50500	Front Hub Dis/Assembly Tool	1



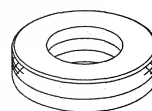
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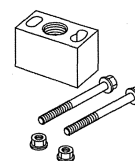
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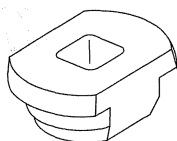
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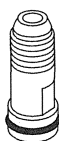
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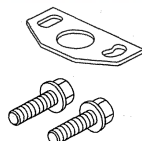
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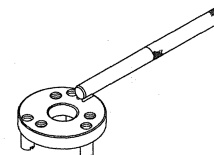
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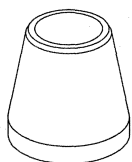
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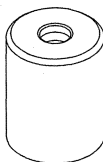
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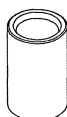
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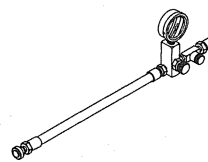
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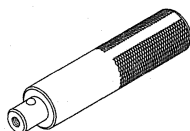
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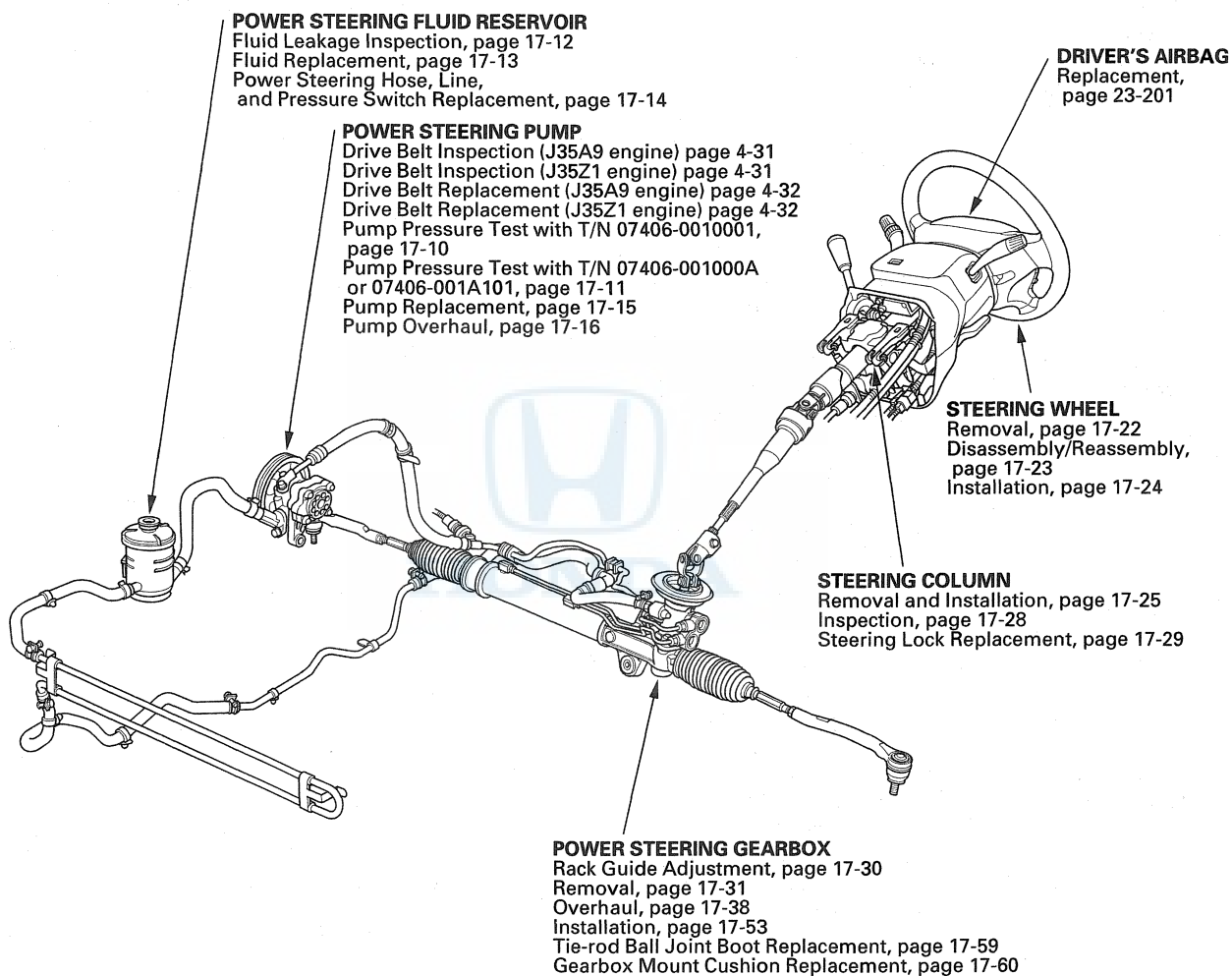
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Component Location Index



Power Steering

Symptom Troubleshooting Index

Find the symptom in the chart below, and do the related procedures in the order listed until you find the cause.

Symptom	Procedure(s)	Also check for:
Hard steering	Troubleshoot the system (see page 17-6).	<ul style="list-style-type: none"> Modified suspension Damaged suspension Tire sizes, tire varieties, and air pressure
Assist (excessively light steering at high speed)	Check the rack guide adjustment (see page 17-30).	Front wheel alignment (see page 18-5)
Shock or vibration when the steering wheel is turned to full lock	<ol style="list-style-type: none"> 1. Check the rack guide adjustment (see page 17-30). 2. Check the drive belt for slippage: J35A9 engine model (see page 4-31), J35Z1 engine model (see page 4-31). 3. Check the power steering pump fluid pressure with T/N 07406-0010001 (see page 17-10), T/N 07406-001000A or T/N 07406-001A101 (see page 17-11). 4. Overhaul the steering gearbox (see page 17-38). 	
Steering wheel will not return smoothly	<ol style="list-style-type: none"> 1. Check cylinder lines for deformation. 2. Check the ball joints for binding. 3. Check wheel alignment (see page 18-5). 4. Overhaul the steering gearbox (see step 2 on page 17-39). 	
Uneven or rough steering	<ol style="list-style-type: none"> 1. Check the rack guide adjustment (see page 17-30). 2. Check the drive belt: J35A9 engine model (see page 4-31), J35Z1 engine model (see page 4-31). 3. Check for low or erratic engine idle speed (see page 11-358). 4. Check for air in the power steering system due to air entering inlet side of pump. 5. Check for low fluid level in the power steering reservoir due to possible leaks in system (see page 17-13). 6. Overhaul the steering gearbox (see step 2 on page 17-39). 	
Steering wheel kicks back during wide turns	<ol style="list-style-type: none"> 1. Check the drive belt: J35A9 engine model (see page 4-31), J35Z1 engine model (see page 4-31). 2. Check the power steering pump fluid pressure with T/N 07406-0010001 (see page 17-10), T/N 07406-001000A or T/N 07406-001A101 (see page 17-11). 	
Humming noise from the power steering system	<ol style="list-style-type: none"> 1. Check when the noise occurs: <ul style="list-style-type: none"> • If the noise is heard 2—3 minutes after starting the engine in cold weather, this is normal. • If the noise is heard when the wheel is turned with the vehicle stopped, this is normal due to the fluid pulsation. 2. Check for the high-pressure hose touching the subframe or body. 3. Check for automatic transmission converter noise. 4. Check for air bubbles in the power steering fluid, leak on inlet side of pump. 5. Check for particle contamination of fluid and restricted filter in the reservoir. 	Pump pressure
Power steering rack rattle or chattering	<ol style="list-style-type: none"> 1. Check for loose steering components (tie-rod and ball joints). Tighten or replace as necessary. 2. Check the steering column shaft for wobbling. If the steering column wobbles, replace the steering column assembly (see page 17-25). 3. Check the rack guide adjustment (see page 17-30). 4. Check the power steering pump pulley: <ul style="list-style-type: none"> • If the pulley is loose, tighten it (see step 34 on page 17-21). • If the pump shaft is loose, replace the pump (see page 17-15). 	



Symptom	Procedure(s)	Also check for:
Hissing from the power steering system/foaming fluid	<ul style="list-style-type: none"> • Check the fluid level. If low, fill the reservoir to the proper level and check for leaks (see page 17-12). • Check the reservoir for leaks. • Check for crushed inlet hose or loose hose clamp allowing air into the suction side of the system (see page 17-14). • Check the power steering pump shaft oil seal for leaks. 	Air in the P/S fluid
Noise from the power steering pump	<ul style="list-style-type: none"> • Compare the pump noise at normal operating temperature to another like vehicle (pump noise for 2—3 minutes after starting the engine in cold weather is normal). • Remove and inspect the pump for wear and damage (see page 17-16). 	<ul style="list-style-type: none"> • P/S pump pressure • Air in the P/S fluid
Squeaking from the power steering pump	Check the drive belt: J35A9 engine model (see page 4-31), J35Z1 engine model (see page 4-31).	
Fluid leaks from the steering gearbox	<ul style="list-style-type: none"> • Fluid leaks from the top of the valve body unit. Overhaul the valve body unit (see page 17-38). • Fluid leaks from the driver's side boot. Replace the valve oil seal on the pinion shaft. Replace the cylinder end seal on the gearbox side. • Fluid leaks from the passenger's side boot. Replace the cylinder end seal on the cylinder side. • Fluid leaks from pinion shaft near the lower steering joint bolt. Overhaul the valve body unit (see page 17-38). • Fluid leaks from the steering damping valve covers on the valve body unit. Replace the valve housing. 	
Fluid leaks from the power steering line	<ul style="list-style-type: none"> • Fluid leaks from the cylinder line connections (flare nuts). Tighten the connection and retest (see page 17-14). • Fluid leaks from damaged cylinder lines. Replace the cylinder line (see page 17-14). • Fluid leaks from the pump outlet hose or return line fitting on the valve body unit (flare nuts). Tighten the fitting and retest. If it still leaks, replace the hose, the line, or valve body unit as necessary. 	
Fluid leaks from the power steering pump	<ul style="list-style-type: none"> • Fluid leaks from the front oil seal. Replace the front oil seal. • Fluid leaks from the power steering pump housing. Replace the leaking O-rings or seals (see page 17-16), and if necessary replace the power steering pump (see page 17-15). 	
Fluid leaks from the power steering reservoir	<ul style="list-style-type: none"> • Fluid leaks from around the reservoir cap because the fluid level is too high. Drain the reservoir to the proper level. If the fluid is aerated check for an air leak on the inlet side of pump. • Fluid leaks from reservoir. Check reservoir for cracks and replace as necessary. 	
Fluid leaks from the power steering pump outlet hose (high-pressure)	<ul style="list-style-type: none"> • Check the fitting for loose bolts. If the bolts are tight, replace the fitting O-ring. • Fluid leaks at the swaged joint. Replace the outlet hose. 	
Fluid leaks from the power steering pump inlet hose (low-pressure)	Check the hose for damage, deterioration, or improper assembly. Replace or repair as necessary.	

Power Steering

Symptom Troubleshooting

Hard Steering

1. Check the power assist (see page 17-8).

Is the initial turning load more than 29 N (3.0 kgf, 6.6 lbf)?

YES—Go to step 2.

NO—Power assist is OK. ■

2. Connect the P/S joint adapter (pump), P/S joint adapter (hose), and P/S pressure gauge T/N 07406-0010001 (see page 17-10), T/N 07406-001000A or T/N 07406-001A101 (see page 17-11) to the pump.

3. Measure steady-state fluid pressure from the pump at idle.

Is the pressure 1,470 kPa (15 kgf/cm², 213 psi) or less?

YES—Go to step 4.

NO—Go to step 8.

4. Measure the pump relief pressure at idle.

Is the pressure 8,300–8,800 kPa (85–90 kgf/cm², 1,210–1,280 psi) or more?

YES—Go to step 5.

NO—Go to step 9.

5. With a spring scale, measure the power assist in both directions, to the left and to the right.

Are the two measurements within 5.0 N (0.51 kgf, 1.12 lbf) of each other?

YES—Go to step 6.

NO—Go to step 11.

6. Measure the fluid pressure with both pressure gauge valves open (if so equipped), while turning the steering wheel fully to the left and fully to the right.

Is the pressure 8,300–8,800 kPa (85–90 kgf/cm², 1,210–1,280 psi) or more?

YES—Go to step 7.

NO—Faulty gearbox. ■

7. Adjust the rack guide (see page 17-30), and retest.

Is the steering OK?

YES—Repair is completed. ■

NO—Faulty gearbox. ■

8. Check the outlet and return hoses and lines between the pump and the gearbox for clogging and deformation.

Are the lines clogged or deformed?

YES—Repair or replace the lines. ■

NO—Faulty valve body unit. ■



9. Disassemble the pump (see page 17-17).
10. Check the flow control valve for smooth movement and leaks (see step 11 on page 17-18).

Is the flow control valve OK?

YES—Faulty pump assembly. ■

NO—Faulty flow control valve. ■

11. Check the cylinder lines A and B for deformation (see page 17-14).

Are the A or B lines deformed?

YES—Replace the deformed line. ■

NO—Go to step 12.

12. Check for a bent rack shaft or misadjusted rack guide (too tight).

Is the rack shaft bent or the rack guide adjusted too tight?

YES—Replace the rack shaft, or readjust the rack guide. ■

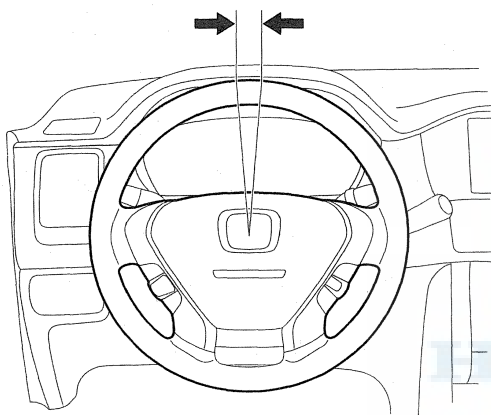
NO—Faulty valve body unit. ■

Power Steering

Steering Wheel Rotational Play Check

1. Turn the front wheels to the straight ahead position.
2. Measure how far you can turn the steering wheel left and right without moving the front wheels.
 - If the play is within the limit, the gearbox and linkages are OK.
 - If the play exceeds the limit, adjust the rack guide (see page 17-30). If the play is still excessive after rack guide adjustment, inspect the steering linkage and gearbox (see page 17-9).

Rotational play: 0–10 mm (0–0.39 in.)

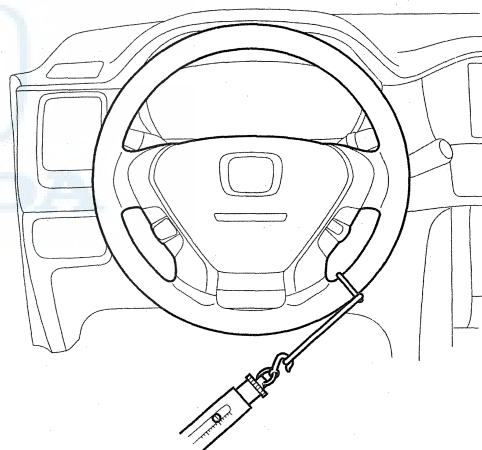


Power Assist Check

NOTE: This test should be done with original equipment tires and wheels at the correct tire pressure.

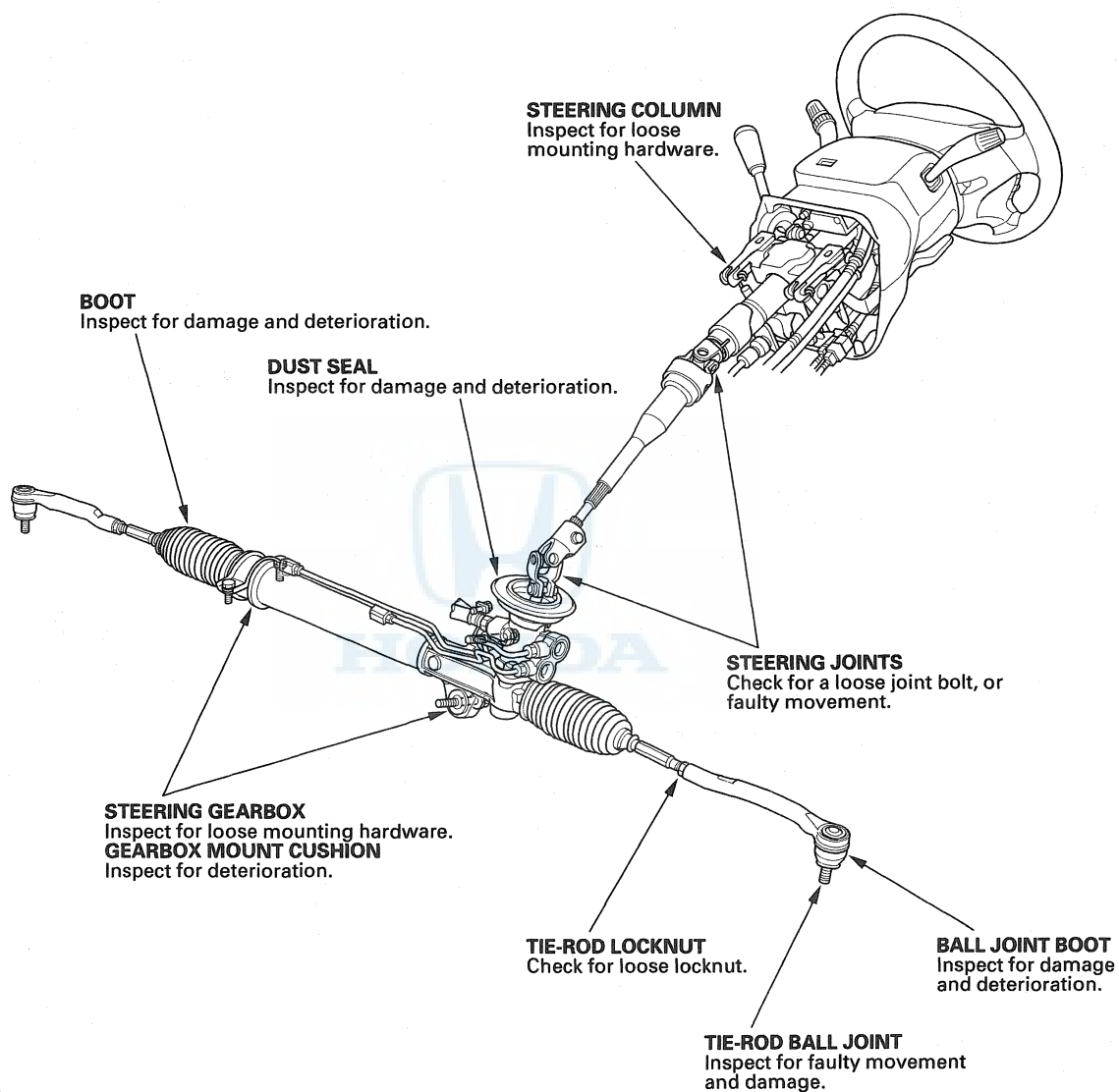
1. Check the power steering fluid level (see page 17-13).
2. Start the engine, let it idle, and turn the steering wheel from lock-to-lock several times to warm up the fluid.
3. Attach a commercially available spring scale to the steering wheel. With the engine idling and the vehicle on a clean, dry floor, pull the scale as shown and read it as soon as the tires begin to turn.
 - If the scale reads no more than the specification, the gearbox and pump are OK.
 - If the scale reads more than the specification, troubleshoot the steering system (see page 17-6).

Initial turning load: 29 N (3.0 kgf, 6.6 lbf)





Steering Linkage and Gearbox Inspection



Power Steering

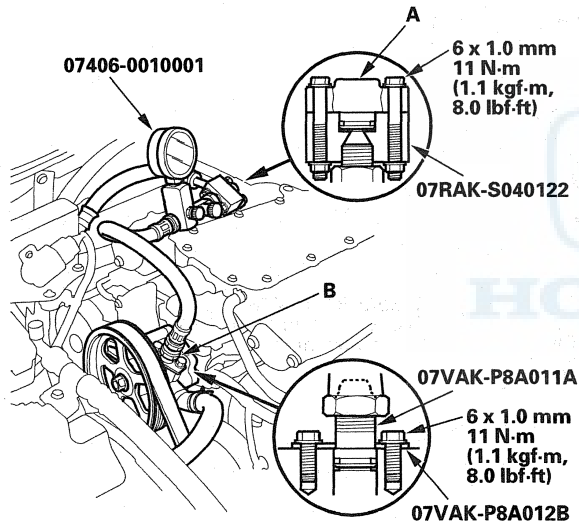
Pump Pressure Test with T/N 07406-0010001

Special Tools Required

- P/S joint adapter (pump) 07VAK-P8A011A
- P/S joint adapter plate (pump) 07VAK-P8A012B
- P/S joint adapter (hose) 07RAK-S040122
- P/S pressure gauge 07406-0010001

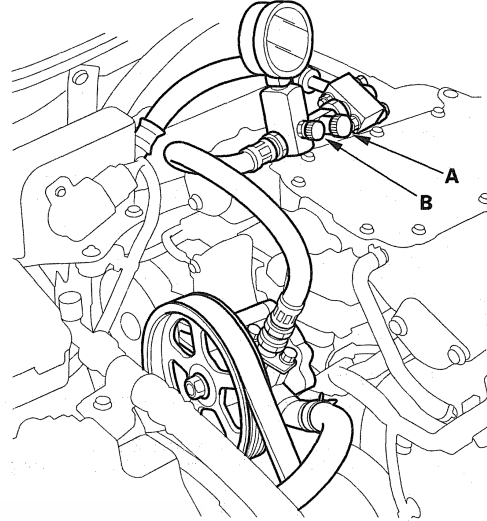
Check the fluid pressure as follows to determine whether the trouble is in the pump or gearbox.

1. Check the power steering fluid level (see page 17-13).
2. Disconnect the pump outlet hose (A) from the pump outlet with care so as not to spill the power steering fluid on the frame and other parts, then install the P/S joint adapter (pump) on the pump outlet (B) with the P/S joint outlet plate.



3. Connect the P/S joint adapter (hose) to the P/S pressure gauge, then connect the pump outlet hose to the P/S joint adapter (hose).
4. Install the P/S pressure gauge to the P/S joint adapter (pump).

5. Fully open the shut-off valve (A).



6. Fully open the pressure control valve (B).
7. Start the engine and let it idle.
8. Turn the steering wheel from lock-to-lock several times to warm the fluid to operating temperature.
9. Measure steady-state fluid pressure while the engine is idling. If the pump is in good condition, the gauge should read no more than 1,470 kPa (15 kgf/cm², 213 psi). If it reads high, check for:
 - Clogged or deformed inlet or return line between the pump and gearbox.
 - Clogged valve body unit.
10. Close the shut-off valve, then close the pressure control valve gradually until the pressure gauge needle is stable. Read the pressure.

NOTICE

Do not keep the shut-off valve closed more than 5 seconds or the pump could be damaged by over-heating.

11. Immediately open the shut-off valve fully. If the pump is in good condition, the gauge should read at least 8,300—8,800 kPa (85—90 kgf/cm², 1,210—1,280 psi). A low reading means pump output is too low for full assist. Repair or replace the pump.



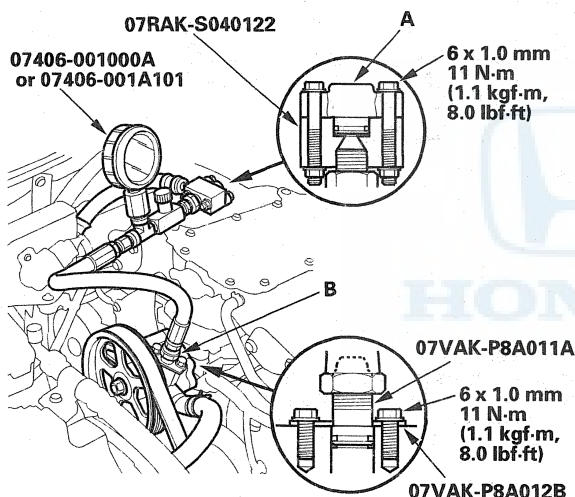
Pump Pressure Test with T/N 07406-001000A or T/N 07406-001A101

Special Tools Required

- P/S joint adapter (pump) 07VAK-P8A011A
- P/S joint adapter plate (pump) 07VAK-P8A012B
- P/S joint adapter (hose) 07RAK-S040122
- P/S pressure gauge 07406-001000A or 07406-001A101

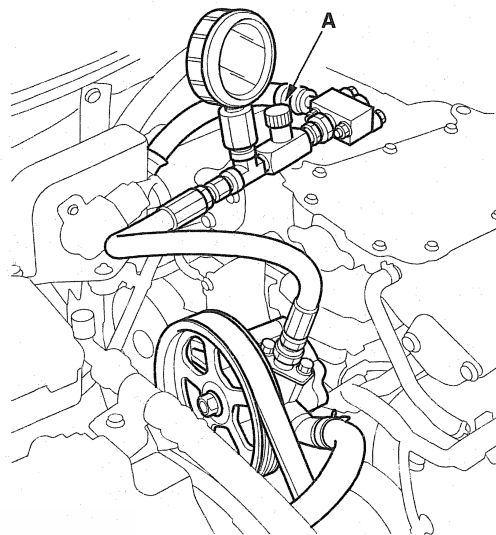
Check the fluid pressure as follows to determine whether the trouble is in the pump or gearbox.

1. Check the power steering fluid level (see page 17-13).
2. Disconnect the pump outlet hose (A) from the pump outlet with care so as not to spill the power steering fluid on the frame and other parts, then install the P/S joint adapter (pump) on the pump outlet (B) with the P/S joint outlet plate.



3. Connect the P/S joint adapter (hose) to the P/S pressure gauge, then connect the pump outlet hose to the P/S joint adapter (hose).
4. Install the P/S pressure gauge to the P/S joint adapter (pump).

5. Open the shut-off valve (A) fully.



6. Start the engine and let it idle.
7. Turn the steering wheel from lock-to-lock several times to warm the fluid to operating temperature.
8. Measure steady-state fluid pressure while the engine is idling. If the pump is in good condition, the gauge should read no more than 1,470 kPa (15 kgf/cm², 213 psi). If it reads high, check for:
 - Clogged or deformed inlet or return line between the pump and gearbox.
 - Clogged valve body unit.
9. Let the engine idle, and gradually close the shut-off valve and immediately read the pressure.

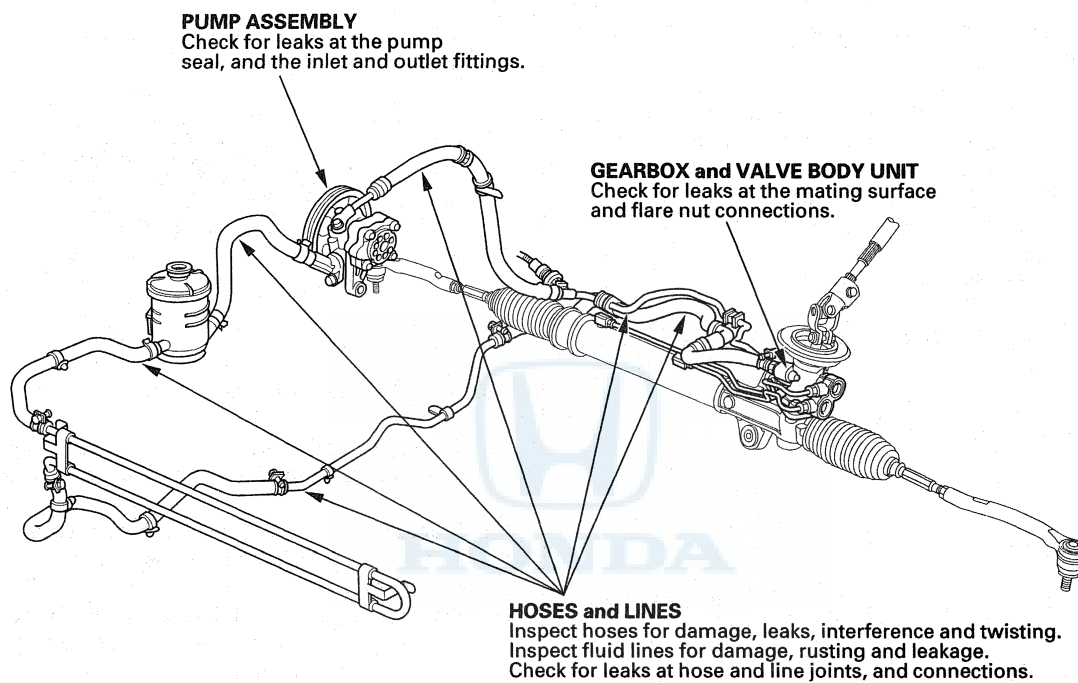
NOTICE

Do not keep the shut-off valve closed more than 5 seconds or the pump could be damaged by over-heating.

10. Immediately open the shut-off valve fully. If the pump is in good condition, the gauge should read at least 8,300—8,800 kPa (85—90 kgf/cm², 1,210—1,280 psi). A low reading means pump output is too low for full assist. Repair or replace the pump.

Power Steering

Fluid Leakage Inspection





Fluid Replacement

Check the reservoir (A) at regular intervals, and add the recommended fluid as necessary. Always use Honda Power Steering Fluid. Use of any other type of power steering fluid or automatic transmission fluid can cause increased wear and poor steering in cold weather.

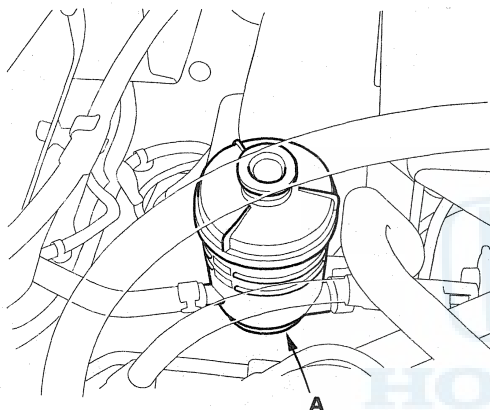
NOTE: If the fluid is contaminated, the screen in the reservoir may be partially blocked. Replace the reservoir if necessary.

System capacity:

1.22 L (1.29 US. qt) at disassembly

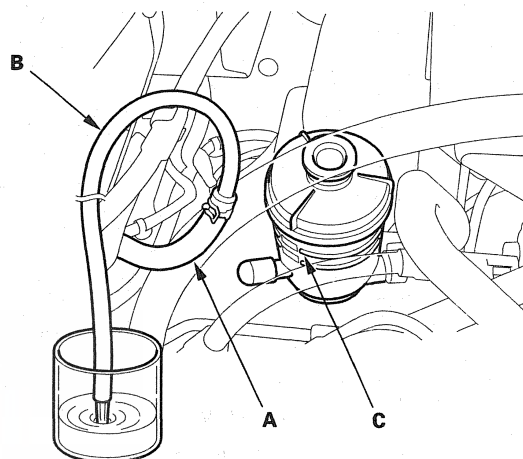
Reservoir capacity:

0.4 L (0.42 US. qt)



1. Raise the reservoir, then disconnect the return hose (A) to drain the reservoir. Take care not to spill the fluid on the body and parts. Wipe off any spilled fluid at once.

NOTE: Inspect the reservoir screen for any debris. If the reservoir screen is clogged, replace the reservoir.



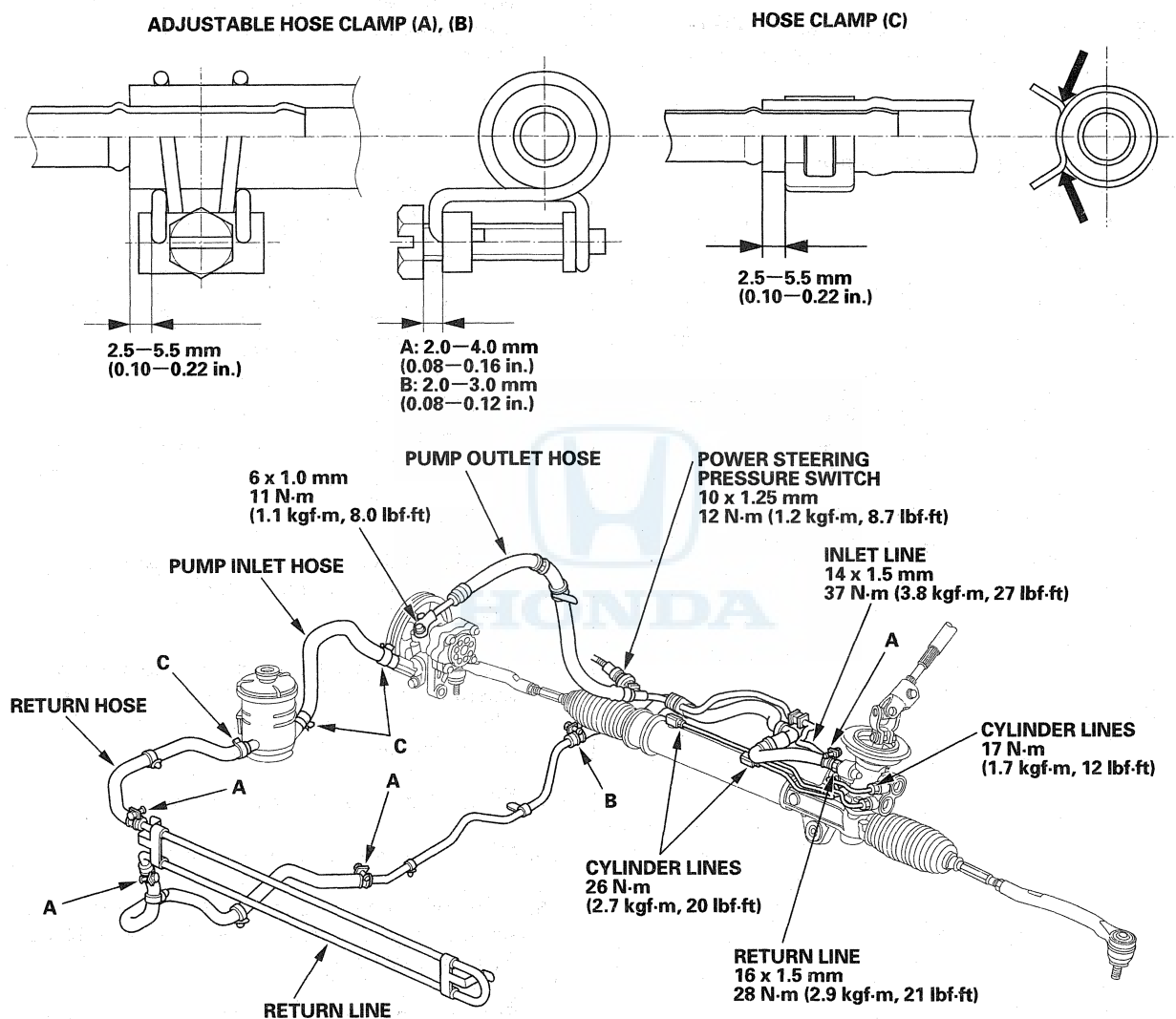
2. Connect a hose (B) of suitable diameter to the disconnected return hose, and put the hose end in a suitable container.
3. Start the engine, let it run at idle, and turn the steering wheel from lock-to-lock several times. When fluid stops running out of the hose, shut off the engine. Discard the fluid.
4. Reinstall the return hose on the reservoir.
5. Fill the reservoir to the upper level line (C).
6. Start the engine and run it at idle, then turn the steering from lock-to-lock several times to bleed air from the system.
7. Recheck the fluid level and add some if necessary. Do not fill the reservoir beyond the upper level line.
8. If the fluid is contaminated, dark, or discolored, repeat the procedure as necessary.

Power Steering

Power Steering Hose, Line, and Pressure Switch Replacement

Note these items during installation:

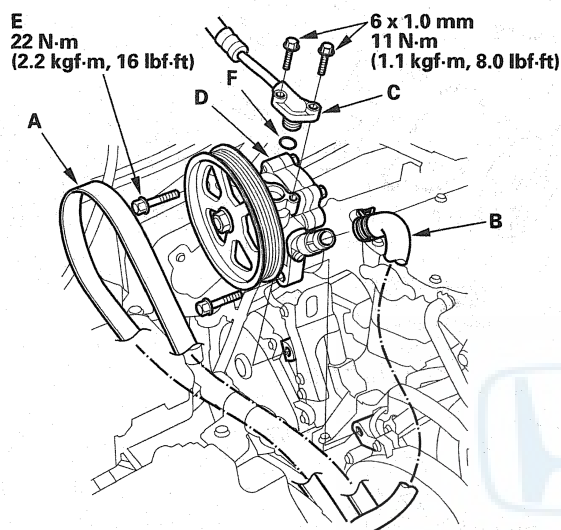
- Connect each hose to the corresponding line securely until it contacts the stop on the line. Install the clamp or adjustable clamp at the specified distance from the hose end as shown.
- Check all clamps for deterioration or deformation; replace the clamps with new ones, if necessary.
- Add the recommended power steering fluid to the specified level on the reservoir and check for leaks.





Pump Replacement

1. Place a suitable container under the vehicle.
2. Drain the power steering fluid from the reservoir (see page 17-13).
3. Remove the drive belt (A) from the pump pulley:
J35A9 engine model (see page 4-32), J35Z1 engine model (see page 4-32).



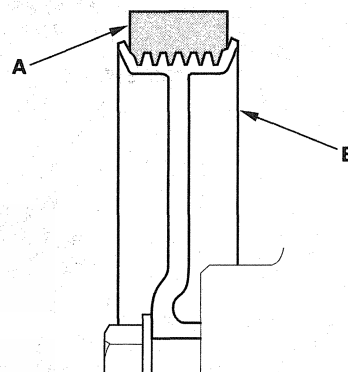
4. Cover the auto-tensioner, alternator, and A/C compressor with several shop towels to protect them from spilled power steering fluid. Disconnect the pump inlet hose (B) and pump outlet hose (C) from the pump (D), and plug them. Take care not to spill the fluid on the body or parts. Wipe off any spilled fluid at once. Do not turn the steering wheel with the pump removed.
5. Remove the pump mounting bolts (E).
6. Cover the opening of the pump with a piece of tape to prevent foreign material from entering the pump.
7. Connect the pump inlet hose and pump outlet hose onto the new pump with a new O-ring (F).
8. Loosely install the pump in the pump bracket with the mounting bolts, then tighten the pump fittings securely.

9. Tighten the pump mounting bolts to the specified torque.

10. Install the drive belt (A).

Note these items during belt installation:

- Make sure that the belt is properly positioned on the pulleys (B).
- Do not get power steering fluid or grease on the auto-tensioner, alternator, A/C compressor, and drive belt or pulley faces. Clean off any fluid or grease before installation.



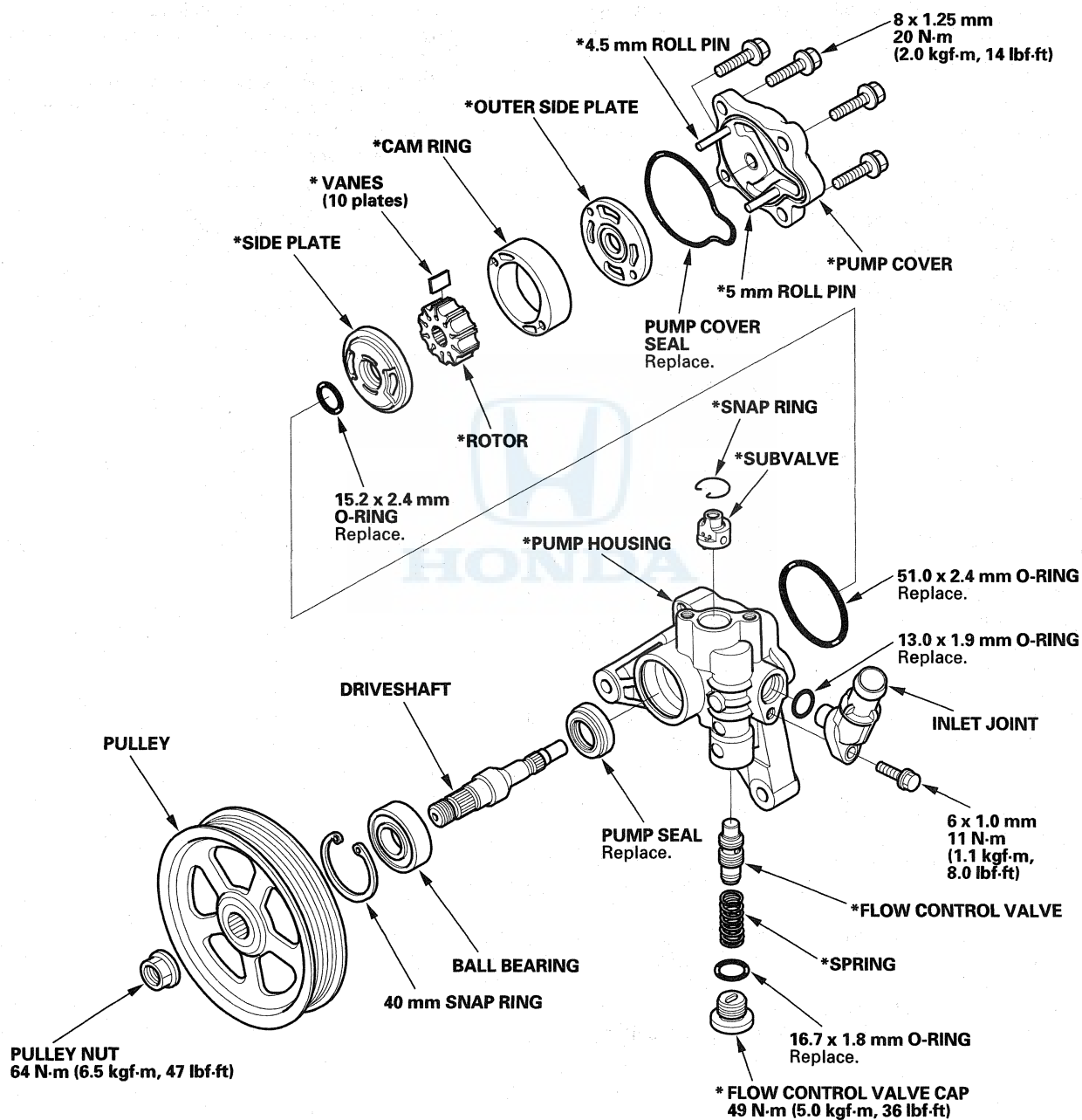
11. Fill the reservoir to the upper level line (see page 17-13).

Power Steering

Pump Overhaul

Exploded View

Replace the pump as an assembly if the parts indicated with an asterisk (*) are worn or damaged.





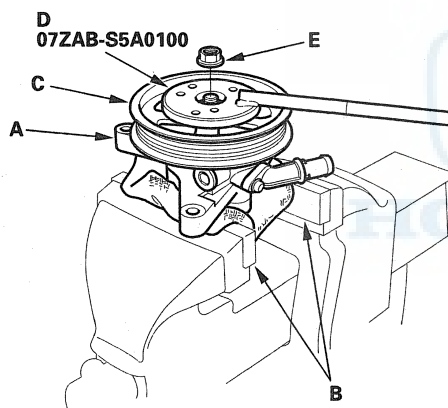
Special Tools Required

- Pulley holder 07ZAB-S5A0100
- Attachment, 28 x 30 mm 07946-1870100
- Driver 07749-0010000

Disassembly

NOTE: Refer to the Exploded View as needed during the following procedure.

1. Drain the fluid from the power steering pump (see page 17-13).
2. Remove the power steering pump (see page 17-15).
3. Hold the power steering pump (A) in a vise with soft jaws (B), then hold the pulley (C) with the pulley holder (D), and remove the pulley nut (E) and pulley. Be careful not to damage the pump housing with the jaws of the vise.



4. Remove the inlet joint and O-ring.
5. Loosen the flow control valve cap with a hex wrench, and remove it and the O-ring, spring, and flow control valve.
6. Remove the pump cover and pump cover seal.
7. Remove the outer side plate, cam ring, rotor, vanes, side plate and O-rings.
8. Remove the snap ring, then remove the subvalve from the pump housing.
9. Remove the snap ring, then remove the driveshaft by tapping the shaft end with a plastic hammer.
10. Remove the pump seal from the pump housing.

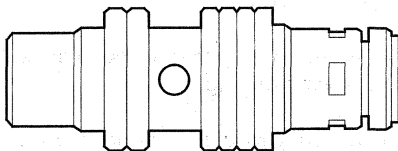
(cont'd)

Power Steering

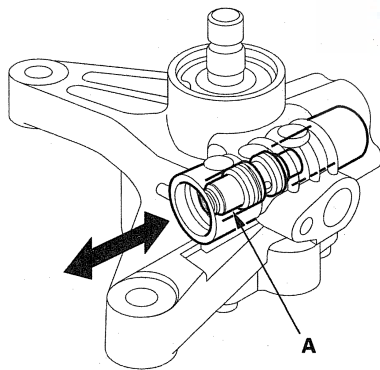
Pump Overhaul (cont'd)

Inspection

11. Check the flow control valve for wear, burrs, and other damage to the edges of the grooves in the valve.

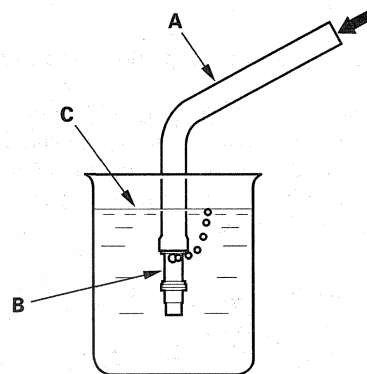


12. Inspect the bore of the flow control valve on the pump housing for scratches and wear.
13. Slip the flow control valve back in the pump housing, and check that it moves in and out smoothly. If OK, go to step 14; if not, replace the pump as an assembly. The flow control valve (A) is not available separately.

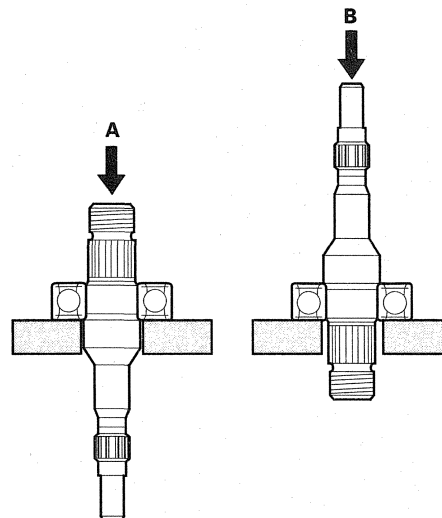


14. Attach a hose (A) to the end of the flow control valve (B) as shown. Then submerge the flow control valve in a container of power steering fluid or solvent (C), and blow in the hose.

- If air bubbles leak through the valve at less than 98 kPa (1.0 kgf/cm², 14.2 psi), replace the pump as an assembly. The flow control valve is not available separately.
- If the flow control valve is OK, set it aside for reassembly later.



15. Inspect the ball bearing by rotating the outer race slowly. If you feel any play (axial or radial) or roughness remove the faulty ball bearing (A), and install a new one (B).

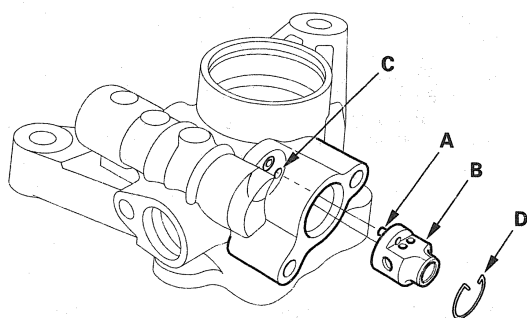


16. Inspect each part shown with an asterisk in the Exploded View. If any of them are worn or damaged, replace the pump as an assembly.

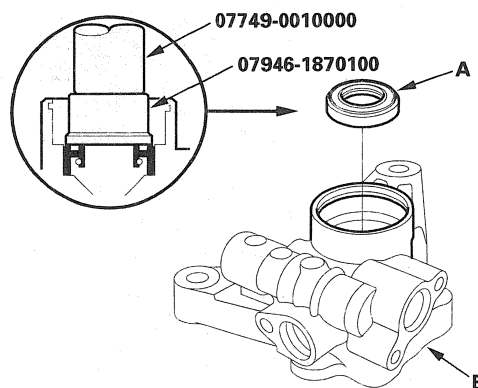


Reassembly

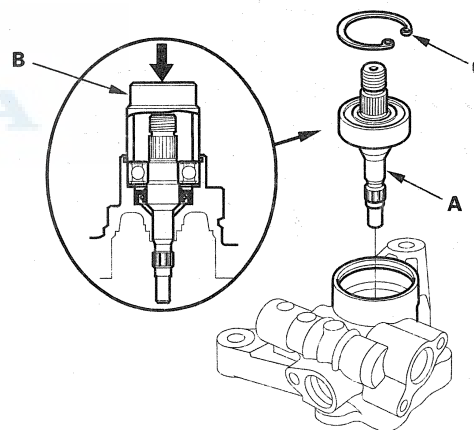
17. Align the pin (A) of the subvalve (B) with the oil passage (C) in the pump housing, and push the subvalve into place, then install the snap ring (D).



18. Install the new pump seal (A) (with its grooved side facing in) into the pump housing (B) by hand first, then drive it in using the attachment and the driver until there is no step at the top of the pump seal, and the seal is fully seated in the pump housing.



19. Position the driveshaft (A) in the pump housing, then press it in with the appropriate size socket wrench (B) as shown.



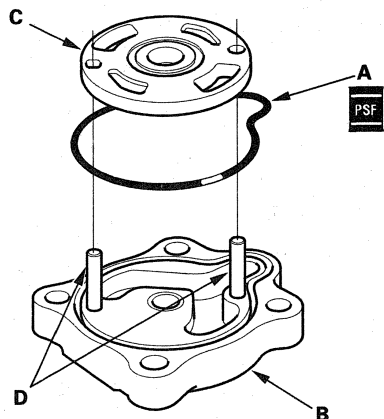
20. Install the 40 mm snap ring (C) with its beveled edge facing out.

(cont'd)

Power Steering

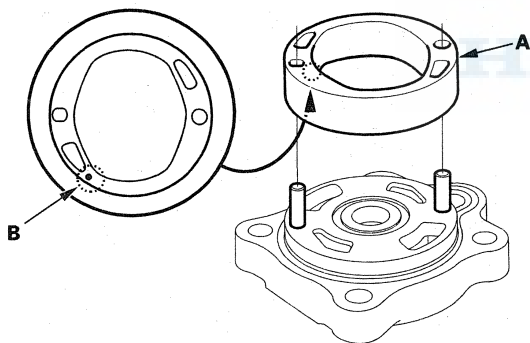
Pump Overhaul (cont'd)

21. Coat the new pump cover seal (A) with power steering fluid, and install it into the groove in the pump cover (B).

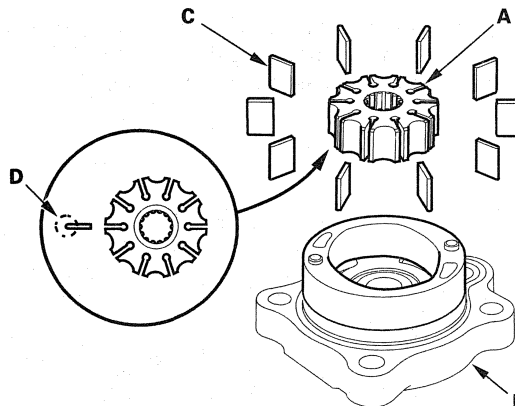


22. Install the outer side plate (C) over the two roll pins (D).

23. Set the cam ring (A) over the two roll pins with the "•" mark (B) facing down.

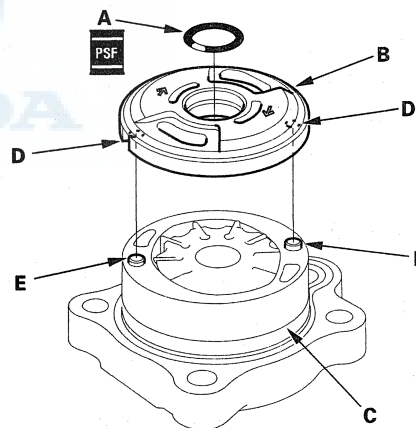


24. Install the rotor (A) to the pump cover (B).



25. Set the 10 vanes (C) in the grooves in the rotor. Make sure that the round ends (D) of the vanes are in contact with the sliding surface of the cam ring.

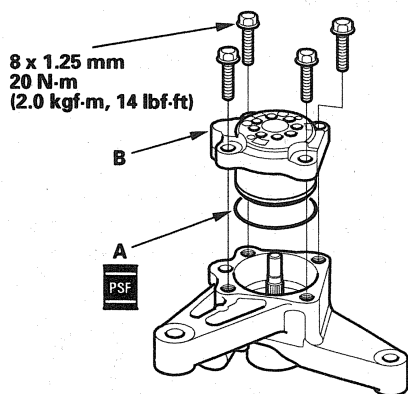
26. Coat the new 15.2 mm O-ring (A) with power steering fluid, and install it into the groove in the side plate (B).



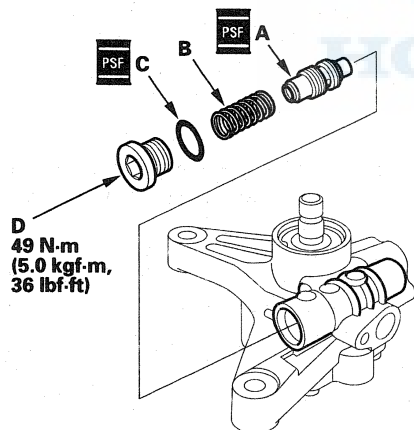
27. Install the side plate on the cam ring (C) by aligning the roll pin set holes (D) in the side plate with the roll pins (E).



28. Coat the new 51.0 mm O-ring (A) with power steering fluid, and position it in the bottom of the pump housing.

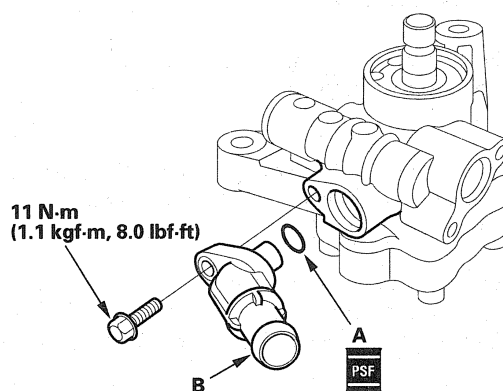


29. Install the pump cover assembly (B) in the pump housing. Tighten the bolts to the specified torque alternating in two or more steps.
30. Coat the flow control valve (A) with power steering fluid, then install it and the spring (B) in the pump housing.

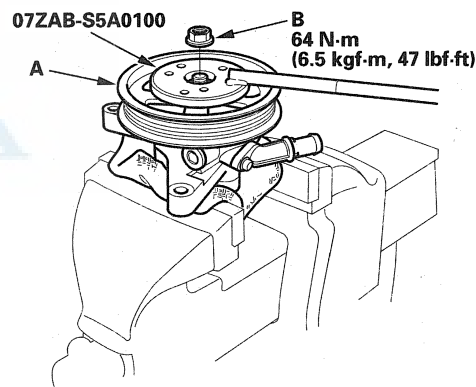


31. Coat the new 16.7 mm O-ring (C) with power steering fluid, and install it on the flow control valve cap (D), then install the cap on the pump housing. Tighten it to the specified torque.

32. Coat the new 13.0 mm O-ring (A) with power steering fluid, and install it on the inlet joint (B). Install the inlet joint on the pump housing.



33. Install the pulley (A), then loosely install the pulley nut (B). Hold the steering pump in a vise with soft jaws. Be careful not to damage the pump housing with the jaws of the vise.



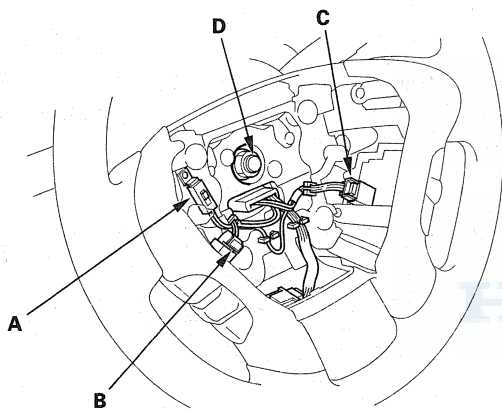
34. Hold the pulley with the pulley holder, and tighten the pulley nut to the specified torque.
35. Check that the pump turns smoothly by turning the pulley by hand. If it turns hard, loosen the four flange bolts on the cover, then retighten them in the same manner as in step 29. Turn the pump again by hand.

Power Steering

Steering Wheel Removal

SRS components are located in this area. Review the SRS component locations (see page 23-17), and the precautions and procedures (see page 23-19) before doing repairs or service.

1. Make sure you have the anti-theft codes for the audio system and the navigation system (if equipped).
2. Align the front wheels straight ahead, then remove the driver's airbag from the steering wheel (see page 23-201).
3. Disconnect the horn switch connector (A), radio remote switch connector (B), and the cruise control set/decel, resume/accel, cancel switch connector (C).

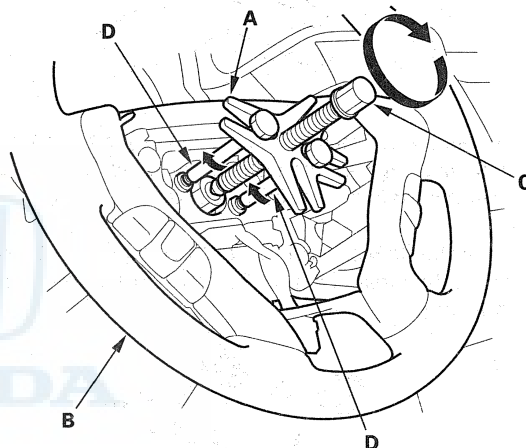


4. Loosen the steering wheel nut (D).

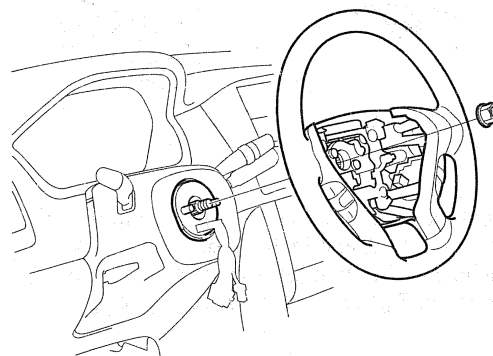
5. Install a commercially available steering wheel puller (A) on the steering wheel (B). Free the steering wheel from the steering column shaft by turning the pressure bolt (C) of the puller.

Note these items when removing the steering wheel:

- Do not tap on the steering wheel or the steering column shaft when removing the steering wheel.
- If you thread the puller bolts (D) into the wheel hub more than five threads, the bolts will hit the cable reel and damage it. To prevent this, install a pair of jam nuts five threads up on each puller bolt.

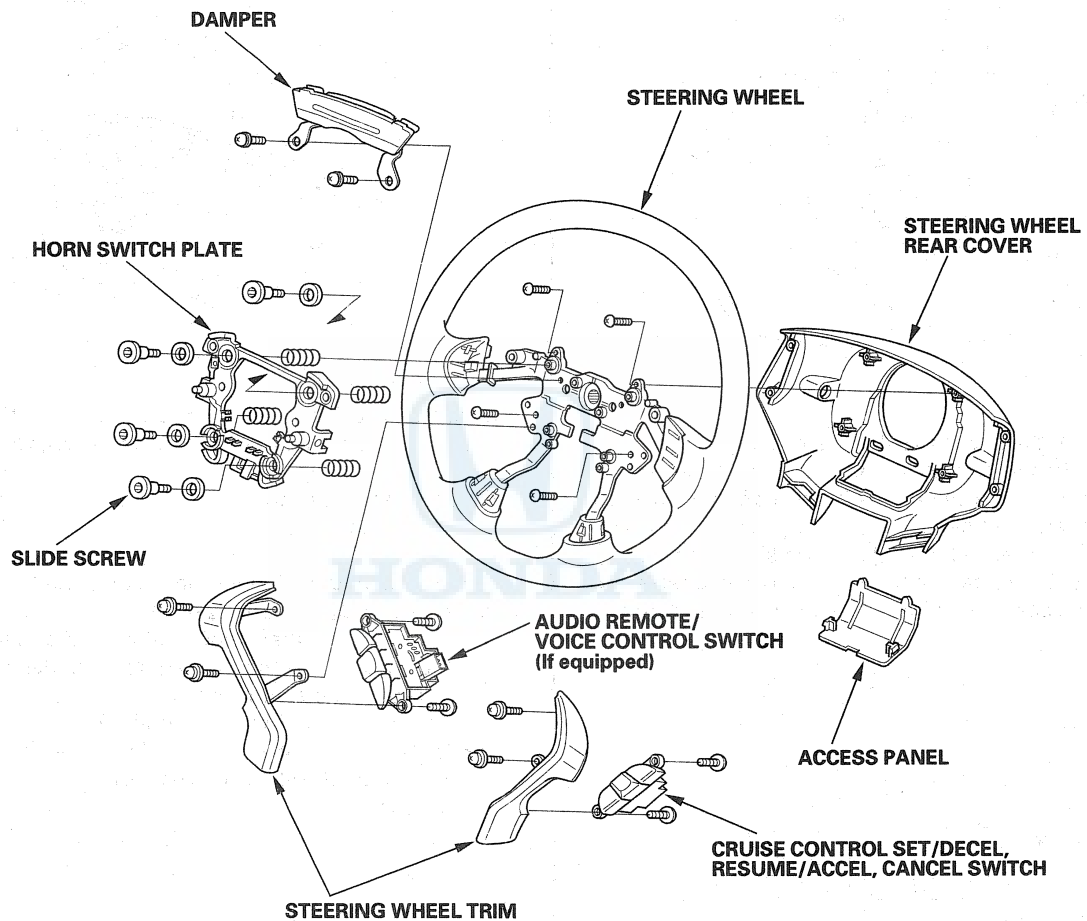


6. Remove the steering wheel puller, then remove the steering wheel nut and steering wheel from the steering column.





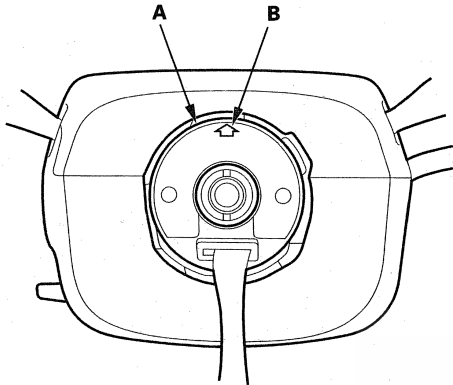
Steering Wheel Disassembly/Reassembly



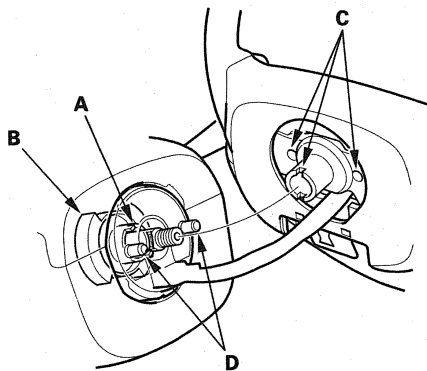
Power Steering

Steering Wheel Installation

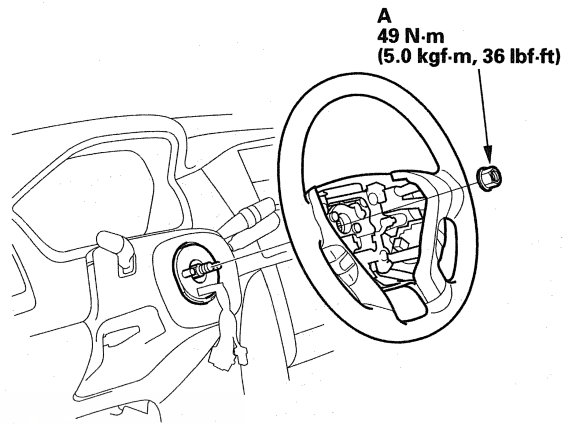
1. Before installing the steering wheel, make sure the front wheels are aligned straight ahead, then center the cable reel (A). Do this by first rotating the cable reel clockwise until it stops. Then rotate it counterclockwise about two and half turns. The arrow mark (B) on the cable reel label should point straight up.



2. Position the two tabs (A) of the turn signal cancelling sleeve (B) as shown. Install the steering wheel on to the steering column shaft, making sure the steering wheel hubs (C) engages the pins (D) of the cable reel and tabs of the turn signal cancelling sleeve. Do not tap on the steering wheel or steering column shaft when installing the steering wheel.



3. Install the steering wheel nut (A) and tighten it to the specified torque. Connect the horn switch, radio remote switch, and the cruise control set/decel, resume/accel, cancel switch connectors. Make sure the wire harness is routed and fastened properly.



4. Install the driver's airbag, and confirm that the system is operating properly (see page 23-201).
5. Reconnect the negative battery cable to the battery, and do these tasks:
 - Do the power window control unit reset procedure (see page 22-255).
 - Enter the anti-theft codes for the audio system or the navigation system (if equipped), then enter the customer's audio preset.
 - Set the clock (without navigation).
 - Make sure the steering wheel is centered.
 - Make sure the steering wheel switches work properly.

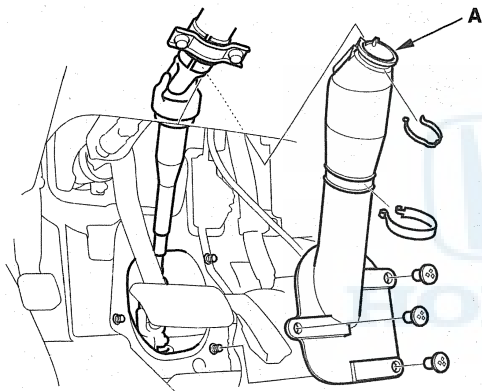


Steering Column Removal and Installation

SRS components are located in this area. Review the SRS component locations (see page 23-17), and the precautions and procedures (see page 23-19) before doing repairs or service.

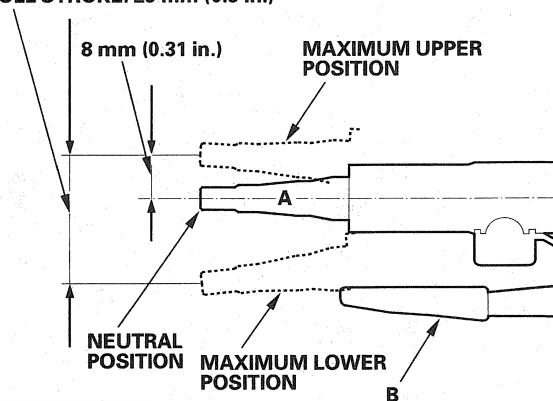
Removal

1. Make sure you have the anti-theft codes for the audio unit or the navigation system (if equipped).
2. Make sure the ignition switch is OFF, then disconnect the negative cable from the battery.
3. Remove the driver's airbag assembly and the steering wheel (see page 17-22).
4. Remove the steering joint cover (A).



5. Set the column shaft (A) in the neutral position by pulling up the steering column to its uppermost position, then lower it 8 mm (0.31 in.). Tighten the tilt lever (B).

FULL STROKE: 23 mm (0.9 in.)

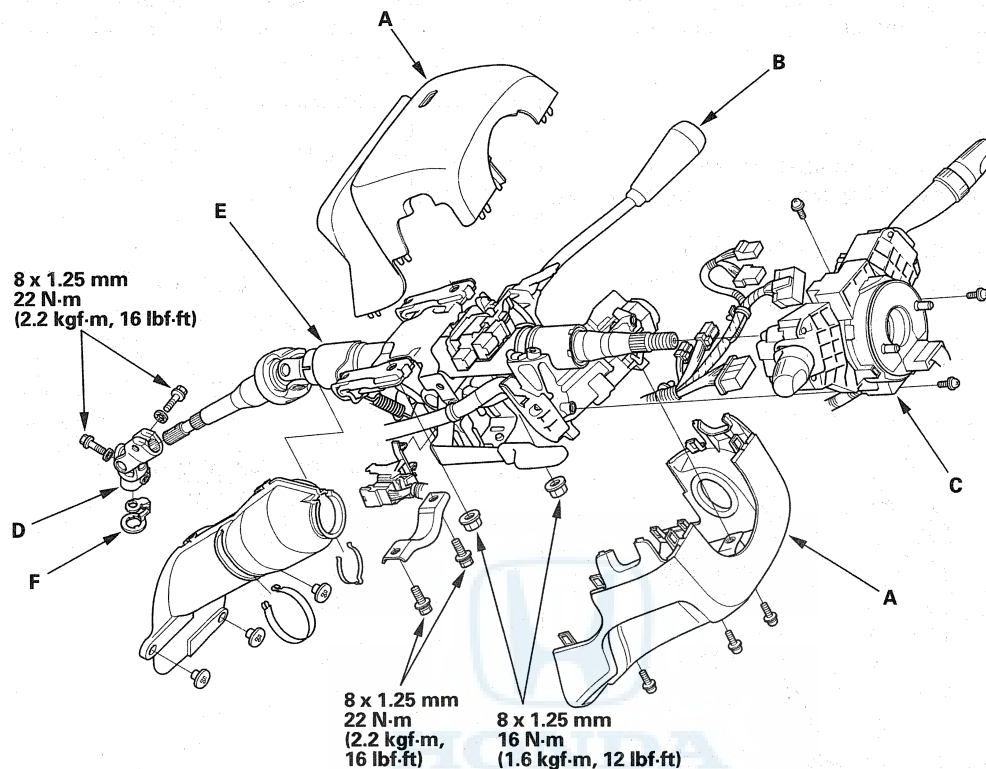


(cont'd)

Power Steering

Steering Column Removal and Installation (cont'd)

6. Remove the column covers (A).



7. Move the shift lever (B) to the N position, and remove the shift cable from the column, and set it aside.
8. Remove the combination switch assembly and cable reel (C) from the steering column shaft by removing the three mounting screws, and disconnecting the connectors.
9. Disconnect the ignition switch connectors and disconnect the harness clips.
10. Disconnect the immobilizer receiver unit, the park pin switch, and the shift lock solenoid.
11. Disconnect the steering joint (D), and remove it from the column shaft.
12. Remove the steering column (E) by removing the attaching nuts and bolts.
13. Remove the center guide (F) (if equipped) from the top of the pinion shaft, and discard it. The center guide is for factory assembly use only.



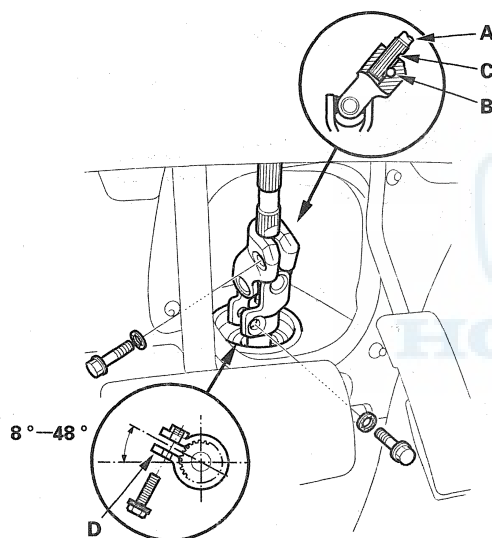
Installation

1. Install the steering column in the reverse order of removal, and note these items:

- Take care not to let the sliding plates fall out of position during column installation.
- Make sure the wires are not caught or pinched by any parts.

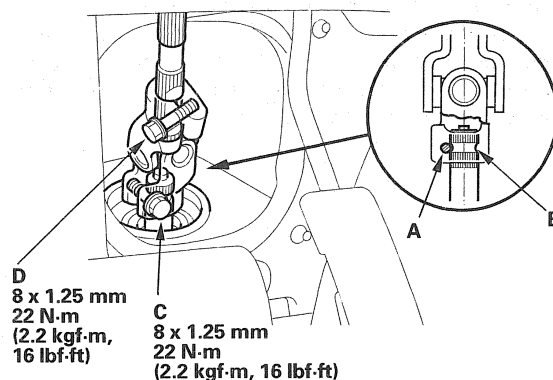
2. Center the steering rack within its stroke.

3. Insert the upper end of the steering joint onto the steering shaft (A) (line up the bolt hole (B) with the flat portion (C) on the shaft), and loosely install the upper joint bolt.



4. Slip the lower end of the steering joint onto the pinion shaft taking care to align the gap (D) within the angle.

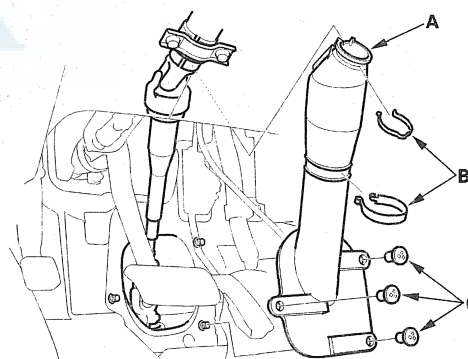
5. Align the bolt hole (A) on the steering joint with the groove (B) around the pinion shaft then loosely install the lower joint bolt (C).



6. Pull on the steering joint to make sure that the steering joint is fully seated, then tighten the lower joint bolt to the specified torque.

7. Tighten the upper joint bolt (D) to the specified torque.

8. Install the steering joint cover (A) with the clamps (B) and clips (C).



9. Install the steering wheel (see page 17-24).

10. Reconnect the negative battery cable to the battery, and do these tasks:

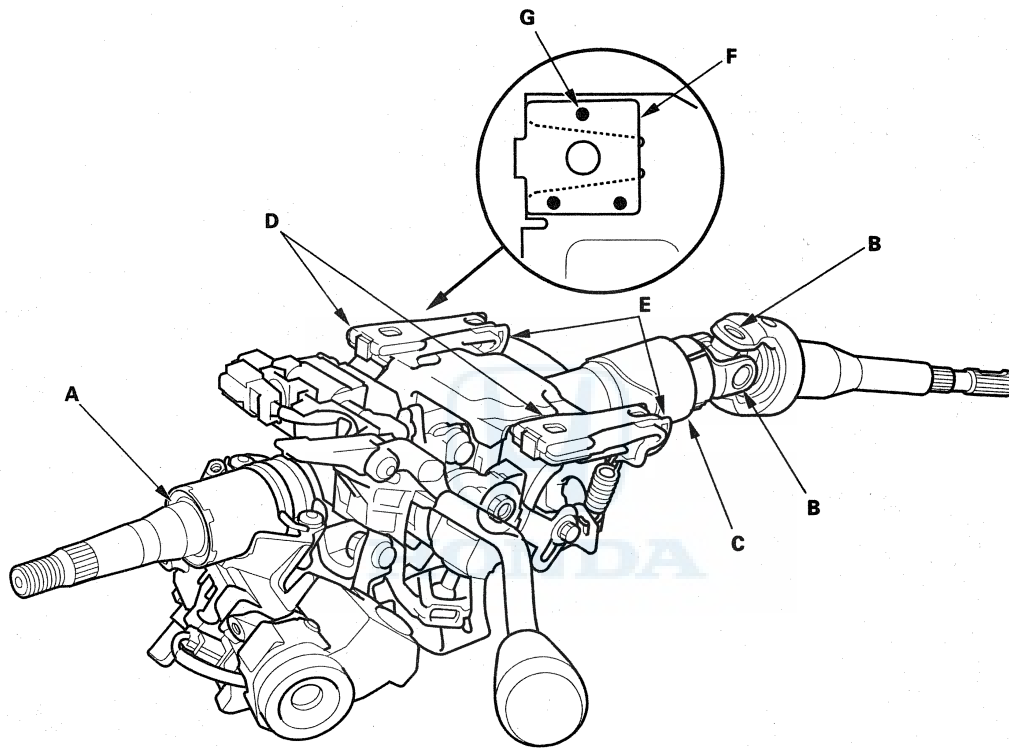
- Do the power window control unit reset procedure (see page 22-255).
- Enter the anti-theft codes for the audio system or the navigation system (if equipped), then enter the customer's audio preset.
- Set the clock (without navigation).
- Make sure the steering wheel is centered.
- Make sure the steering wheel switches work properly.

Power Steering

Steering Column Inspection

Inspection

- Check the steering column ball bearing (A) and the steering joint bearings (B) for play and proper movement. If any bearing is noisy or has excessive play, replace the steering column as an assembly.
- Check the retaining collar (C) for damage. If it is damaged, replace the steering column as an assembly.
- Check the absorbing plates (D), absorbing plate guides (E) and sliding capsules (F) for distortion or breakage. If there is distortion or breakage, replace the steering column as an assembly. The sliding capsule is attached to the column bracket with the plastic injections (G).



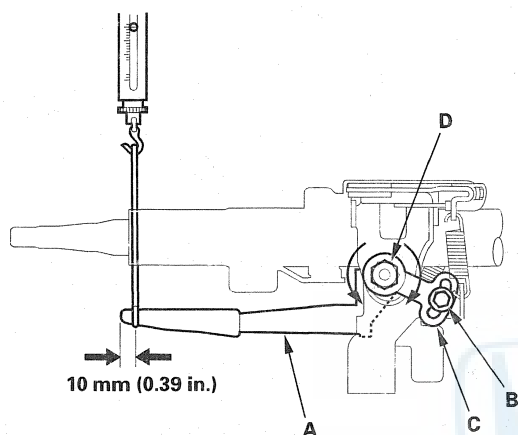


Steering Lock Replacement

Lock Lever Inspection/Adjustment

1. Move the lock lever (A) from the loosened position to the locked position three to five times. With the lock lever in the loosened position measure the lock lever preload at 10 mm (0.39 in.) from the end of the lock lever.

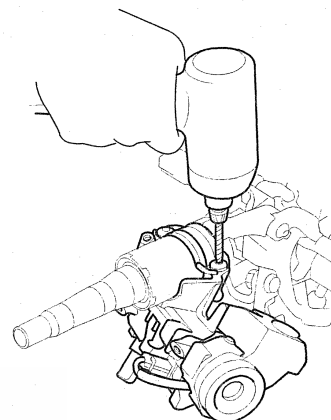
Preload: 70–90 N (7–9 kgf, 15–20 lbf)



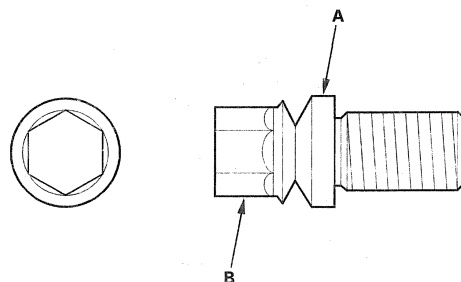
2. If the measurement is out of the specification, adjust the preload using the following procedures.

- Loosen the lock lever, and set the steering column to the neutral position.
- Remove the 6 mm lock bolt (B), and remove the stop (C). Be careful not to loosen the lock lever when installing the stop or tightening the 6 mm lock bolt.
- Adjust the preload by turning the tilt lock bolt (D) left or right.
- Pull up the lock lever to the uppermost position, and install the stop. Check the preload again. If the measurement is still out of specification, repeat the above procedures to adjust.

1. Remove the steering column (see page 17-25).
2. Center-punch each of the two shear bolts, and drill their heads off with a 5 mm (3/16 in.) drill bit. Be careful not to damage the switch body and steering column when removing the shear bolts.



3. Remove the shear bolts from the switch body.
4. Install the switch body without the key inserted.
5. Loosely tighten the new shear bolts.
6. Insert the ignition key, and check for proper operation of the steering wheel lock and that the ignition key turns freely.
7. Tighten the shear bolts (A) until the hex heads (B) twist off.



8. Register the immobilizer control unit-receiver (see page 22-239), and make sure the immobilizer system works properly.

Power Steering

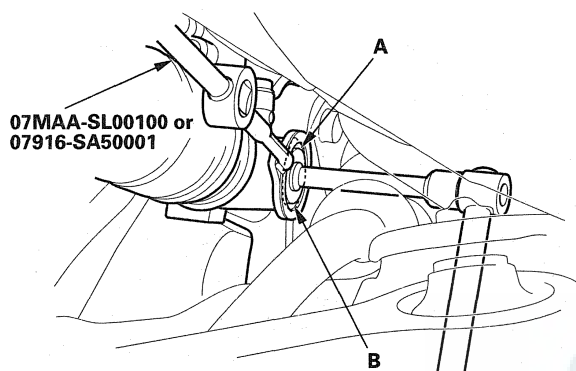
Rack Guide Adjustment

Special Tools Required

Locknut wrench, 40 mm

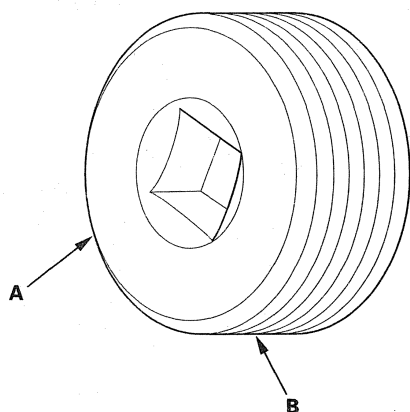
07MAA-SL00100 or 07916-SA50001

1. Set the wheels in the straight ahead position.
2. Loosen the rack guide screw locknut (A) with the locknut wrench, then remove the rack guide screw (B).

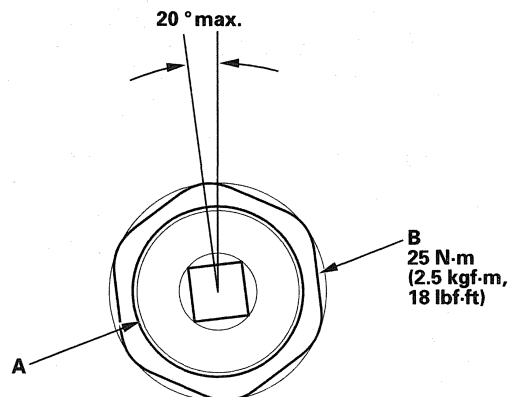


3. Remove the old sealant from the rack guide screw (A), and apply new sealant (Three Bond 1215 or Loctite 5699) to the middle of the threads (B). Loosely install the rack guide screw on the steering gearbox.

NOTE: If more than 5 minutes has passed after applying the sealant, remove the old sealant and residue, and reapply new sealant.



4. Tighten the rack guide screw (A) to 25 N·m (2.5 kgf·m, 18 lbf·ft), then loosen it.



5. Retighten the rack guide screw to 3.9 N·m (0.4 kgf·m, 4 lbf·ft), then back it off to the specified angle.

Specified return angle: 20 ° max.

6. Hold the rack guide screw stationary with a wrench, and tighten the locknut by hand until it's fully seated.
7. Install the locknut wrench on the locknut (B), continue to hold the rack guide screw stationary and tighten the locknut an additional 30 ° with the locknut wrench.
8. Check for unusual steering effort through the complete turning range.
9. Check the steering wheel rotational play (see page 17-8) and the power assist (see page 17-8).



Steering Gearbox Removal

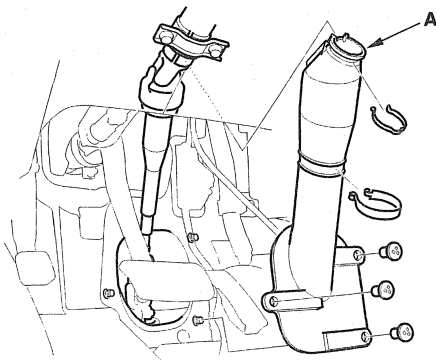
Special Tools Required

- Ball joint remover, 28 mm 07MAC-SL0A202
- Engine support hanger, A and Reds AAR-T-12566 *
- Engine hanger balance bar VSB02C000019 *
- Engine hanger adapter VSB02C000014 *
- Front subframe adapter VSB02BX0 *
- * Available through the American Honda Tool and Equipment program, 1-888-424-6857

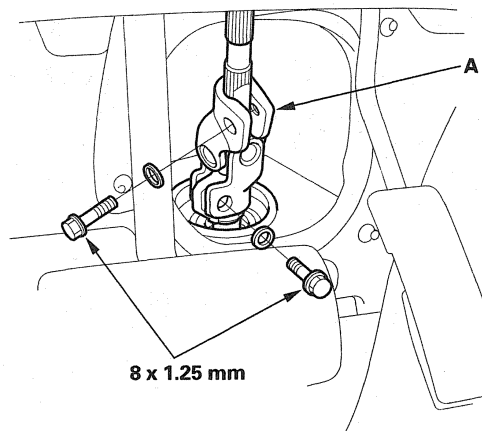
Note these items during removal:

- Using solvent and a brush, wash any oil and dirt off the valve body unit, it's lines, and the end of the gearbox. Blow dry with compressed air.
- Be sure to remove the steering wheel before disconnecting the steering joint. Damage to the cable reel can occur.
- Lower the front subframe from the body and remove the steering gearbox through the gap produced by lowering the front subframe.

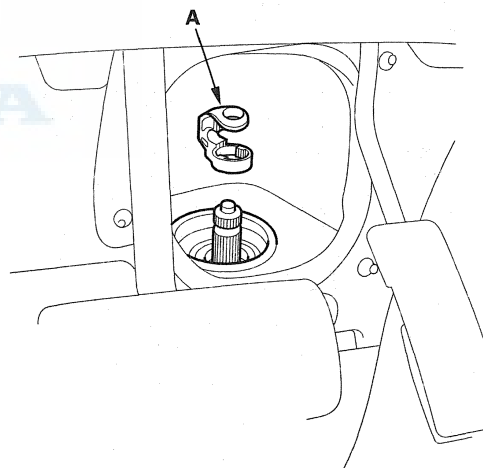
1. Drain the power steering fluid (see page 17-13).
2. Make sure you have the anti-theft code for the audio system or the navigation system (if equipped), then write down the audio presets.
3. Make sure the ignition switch is OFF, then disconnect the negative cable from the battery.
4. Raise the front of vehicle, and support it with safety stands in the proper locations (see page 1-13).
5. Remove the front wheels.
6. Remove the driver's airbag assembly (see page 23-201).
7. Remove the steering wheel (see page 17-22).
8. Remove the steering joint cover (A).



9. Remove the steering joint bolts, disconnect the steering joint by moving the steering joint (A) toward the column.



10. Remove the center guide (A) (if equipped), and discard it. The center guide is for factory assembly use only.

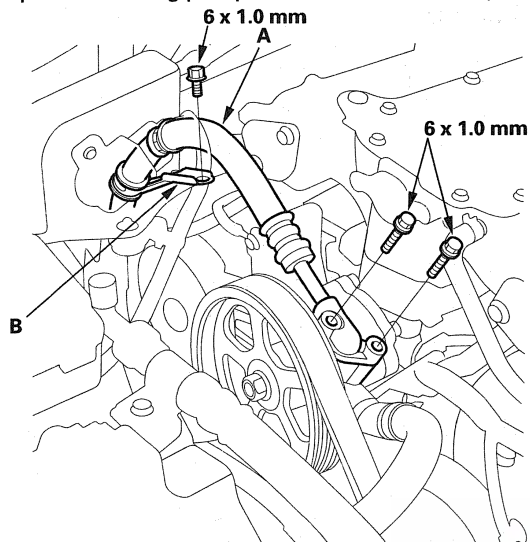


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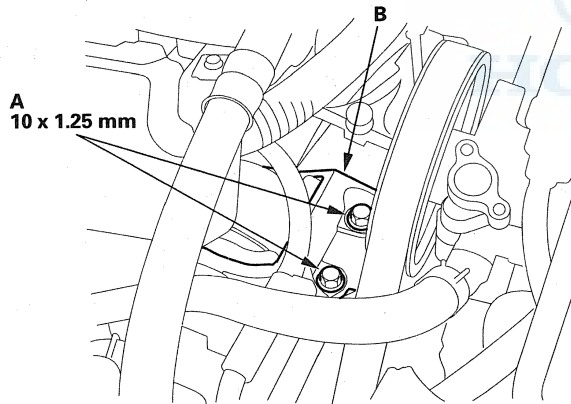
Power Steering

Steering Gearbox Removal (cont'd)

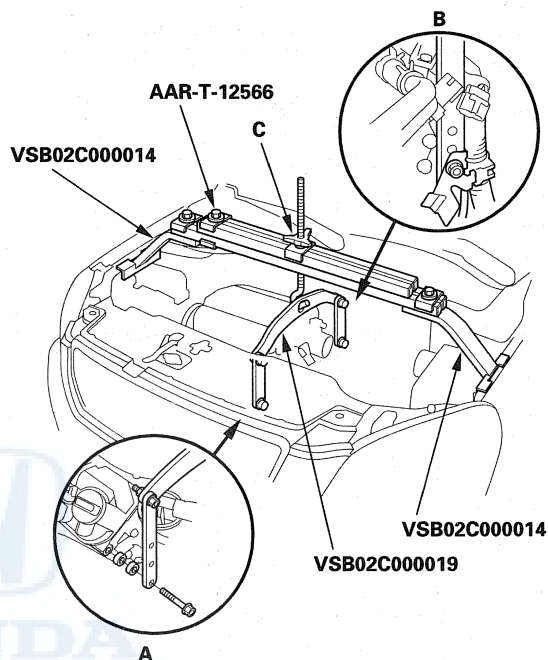
11. Disconnect the pump outlet hose (A) from the power steering pump, and remove the clamp (B).



12. Remove the 10 mm flange bolts (A) on the engine side mount bracket (B).



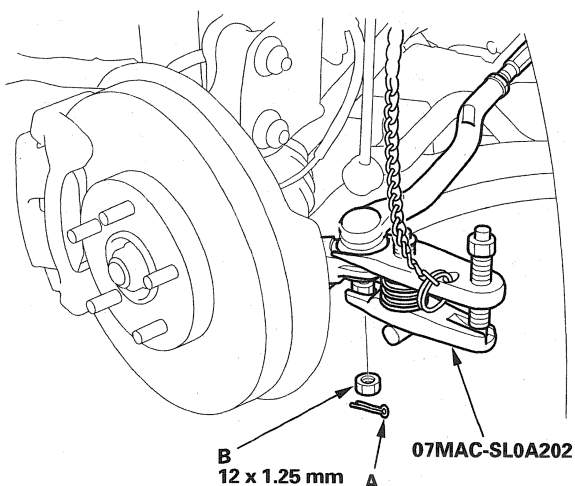
13. Install the engine hanger balance bar (VSB02C000019); attach the front arm (A) to the front cylinder head with a spacer and the 10 mm bolt, and attach the rear arm (B) to the rear cylinder head with the 8 mm bolt.



14. Install the engine hanger adapters (VSB02C000014) on the ends of the support beams of the engine support hanger (AAR-T-12566). Install the engine support hanger and adapters to the vehicle, and attach the hook to the slotted hole in the engine hanger balance bar. Tighten the wing nut (C) by hand, and to lift and support the engine/transmission.

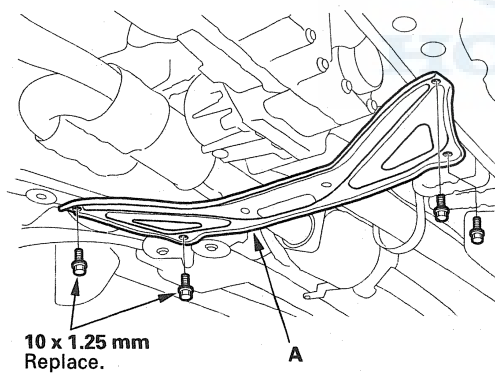


15. Remove the cotter pin (A) from the 12 mm nut (B), and loosen the nut.



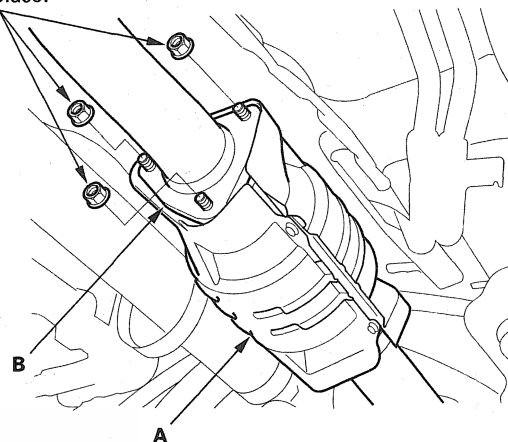
16. Separate the tie-rod ball joints and knuckles using the ball joint remover (see page 18-11).

17. Remove the front suspension subframe stiffener plate (A).

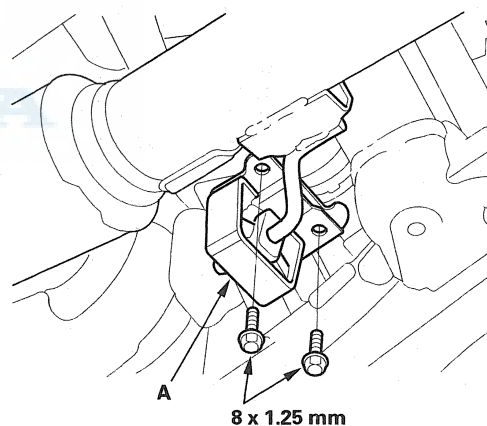


18. Remove the three self-locking nuts, and disconnect the under-floor threeway catalytic converter (A) from the muffler (B) (see page 9-10).

10 x 1.25 mm
Replace.



19. Remove the 8 mm flange bolts from the exhaust rubber mount (A).

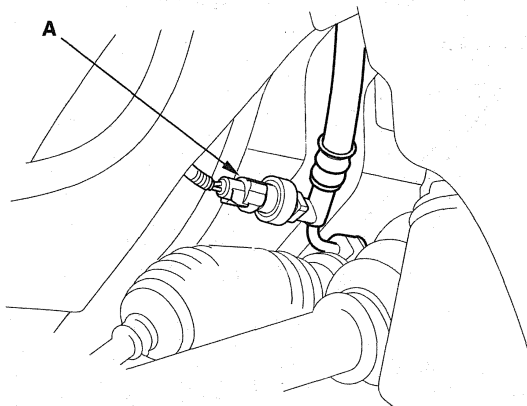


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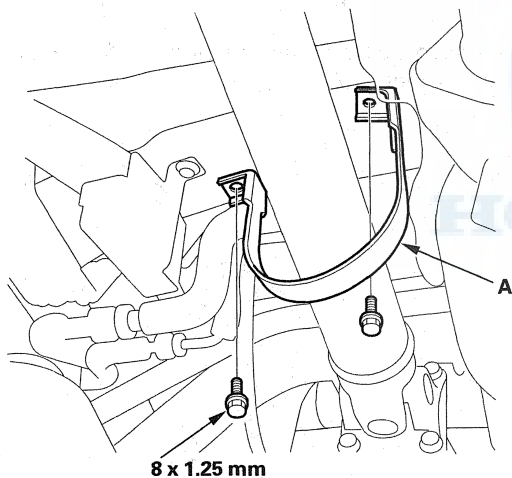
Power Steering

Steering Gearbox Removal (cont'd)

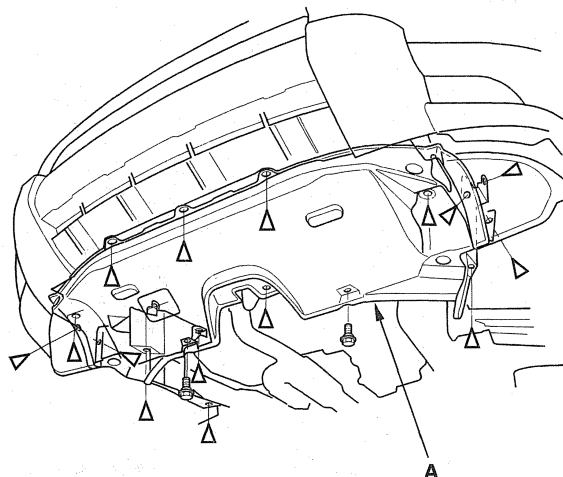
20. Disconnect the power steering pressure switch connector (A).



21. 4WD model: remove the propeller shaft protector (A).

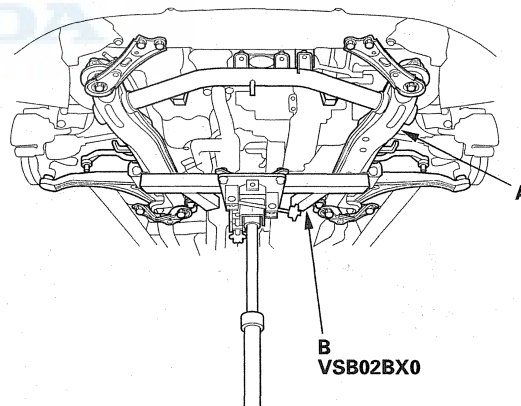


22. Remove the splash shield (A).



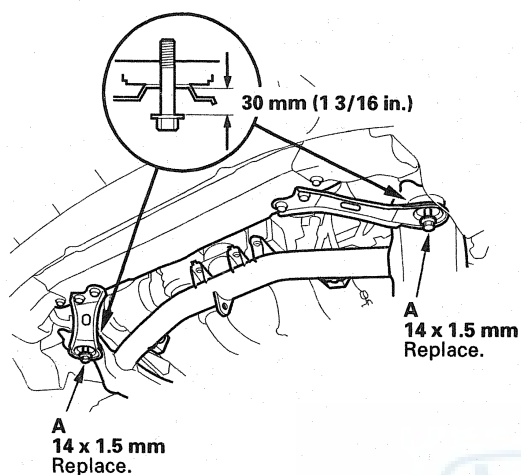
23. Attach the front subframe adapter to the front suspension subframe and the transmission jack or the powertrain lift (see step 57 on page 14-230).

24. Make sure the front suspension subframe (A) is securely supported by the jack with the front subframe adapter (B).

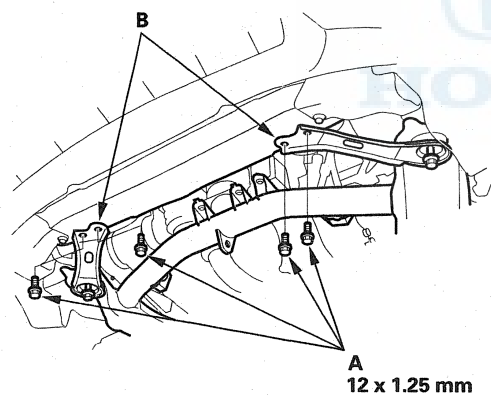




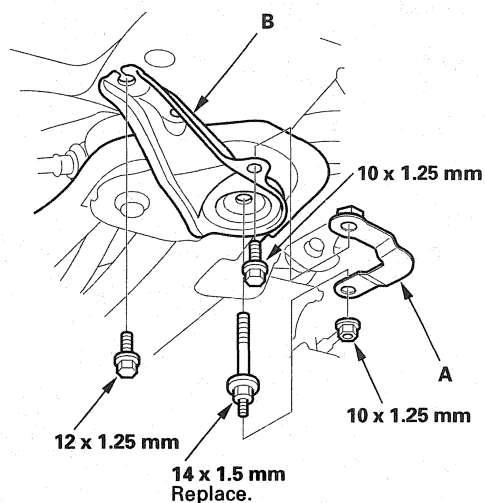
25. Loosen the two 14 mm flange bolts (A) on the front suspension subframe so they are about 30 mm (1 3/16 in.) from the mounting surface. Do not loosen the 14 mm flange bolts more than necessary.



26. Remove the four 12 mm flange bolts (A) from the front suspension subframe front brackets (B).

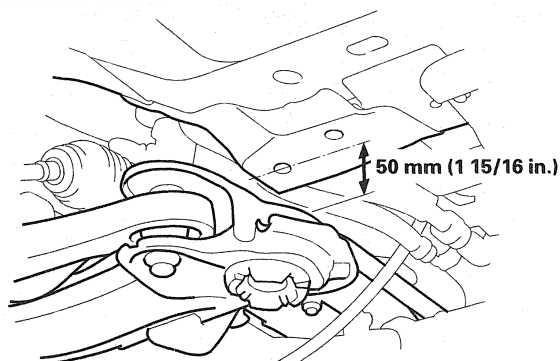


27. Then remove the 10 mm flange bolts, nuts, and the subframe bolt retainers (A).



28. Remove the two 12 mm flange bolts, 14 mm special bolts and front suspension subframe rear brackets (B) on the right and left of the vehicle.

29. Lower the transmission jack slowly until the rear portion of the front suspension subframe has dropped about 50 mm (1 15/16 in.) from the mounting surface.



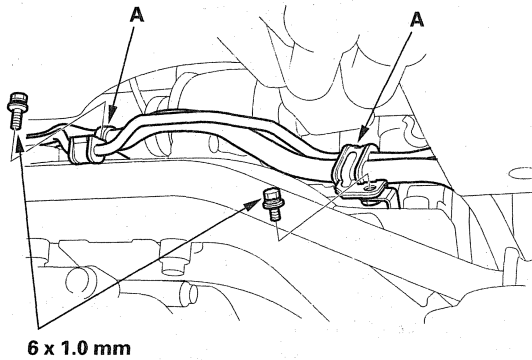
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Power Steering

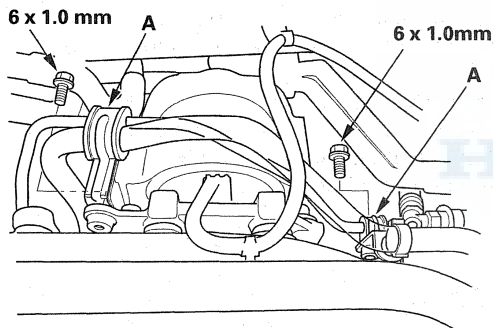
Steering Gearbox Removal (cont'd)

30. Remove the P/S line mounting brackets (A) from the front suspension subframe and gearbox mounting bracket.

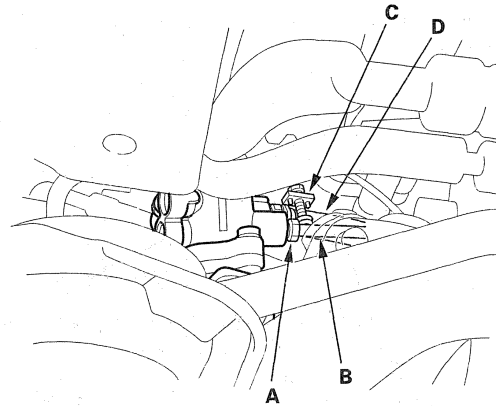
4WD model:



2WD model:

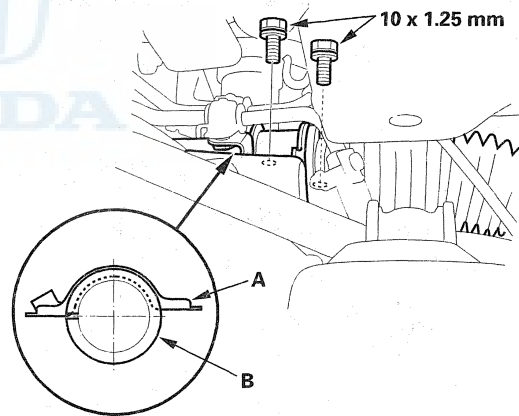


31. Loosen the 14 mm flare nut (A), and disconnect the inlet line (B).



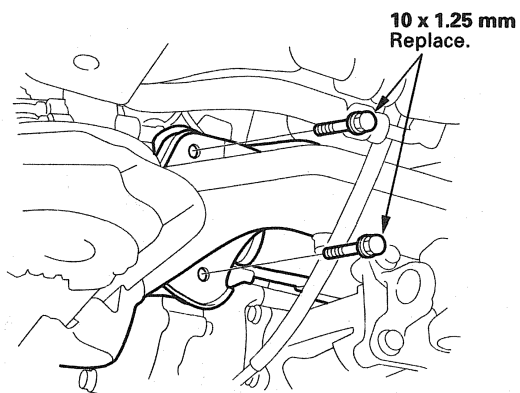
32. Loosen the adjustable hose clamp (C) and disconnect the return hose (D).

33. Remove the two 10 mm flange bolts from the right side of the steering gearbox, then remove the mounting bracket (A) and cushion (B).

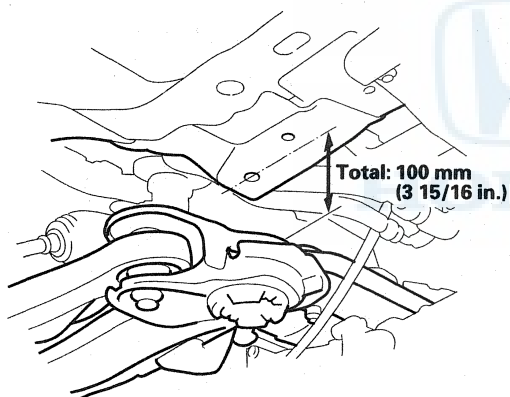




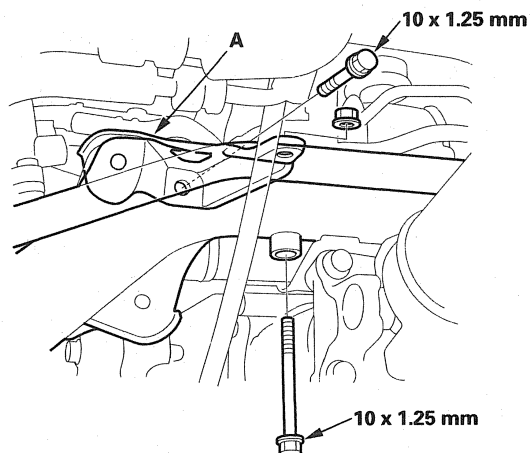
34. Remove the two 10 mm flange bolts from the left side of the gearbox.



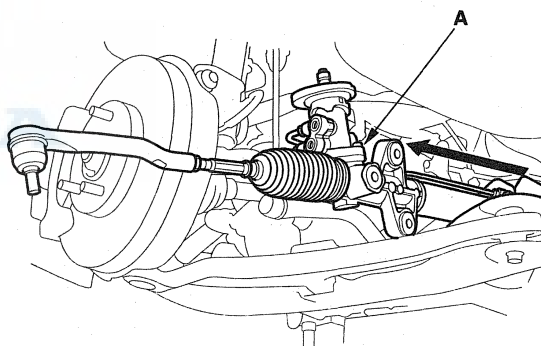
35. Lower the transmission jack slowly until the front suspension subframe rear edge has dropped 100 mm (3 15/16 in.) total.



36. Remove the gearbox stiffener bracket (A) from the left side of the front suspension subframe.



37. Slide the steering gearbox (A) between the body and front suspension subframe toward the left, and remove the steering gearbox.

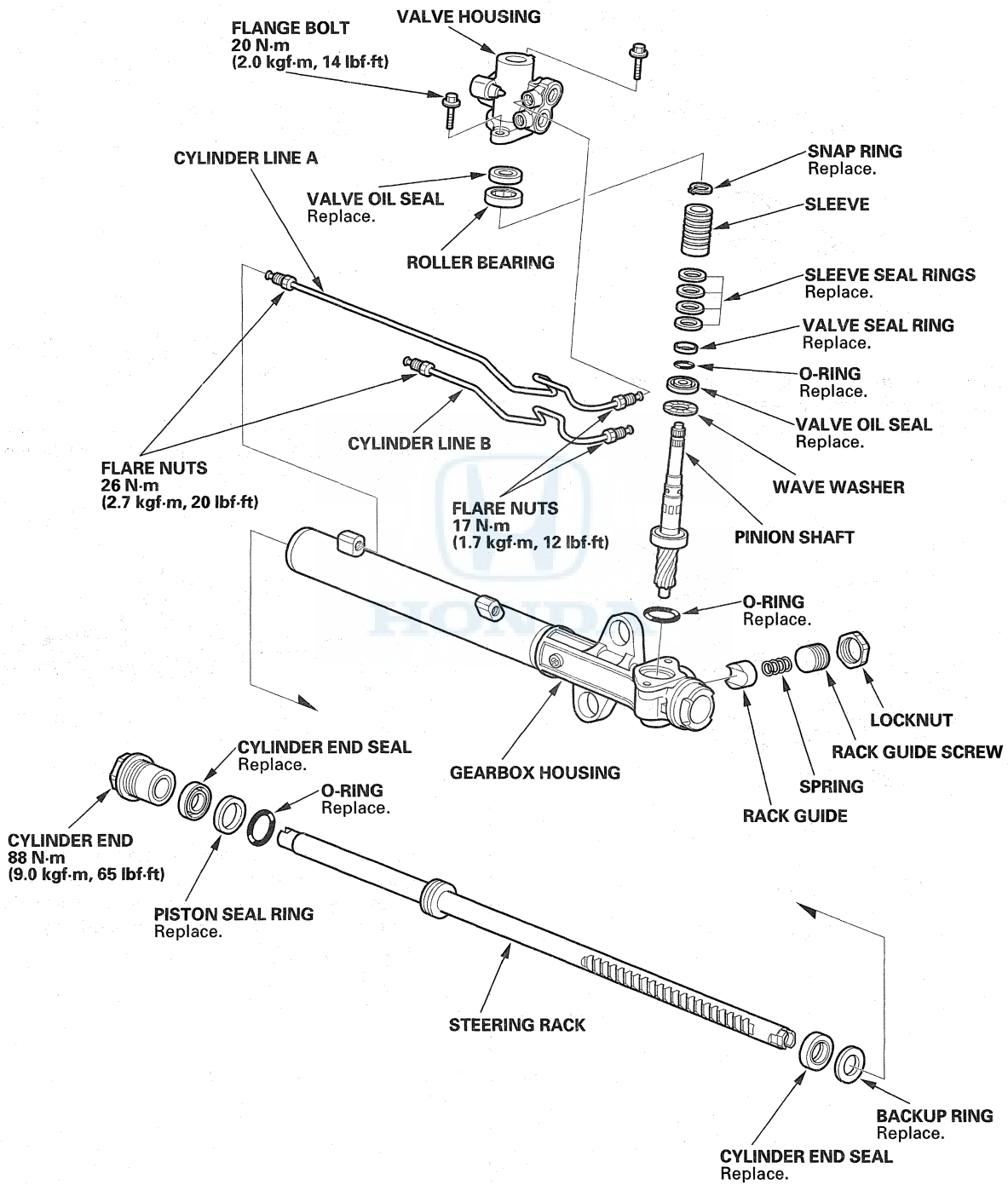


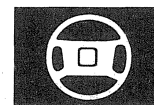
38. After removing the steering gearbox, make sure that no power steering fluid gets on the gearbox mount cushions, gearbox housing, surface of the front subframe and stiffener. Wipe off any spilled fluid at once.

Power Steering

Steering Gearbox Overhaul

Exploded View





Special Tools Required

- Cylinder end seal remover attachment 07TAF-SZ50100
- Pilot collar 07GAF-PH70100
- Valve seal ring sizing tool 07NAG-SR3090A
- Sleeve seal ring guide 07YAG-S2X0100
- Sleeve seal ring sizing tool, 36 mm 07ZAG-S5A0100
- Attachment, 32 x 35 mm 07746-0010100
- Driver 07749-0010000
- Piston seal ring guide 07ZAG-S3VA100
- Piston seal ring sizing tool 07ZAG-S3VA200
- Pincer Oetiker 1098, or equivalent, commercially available

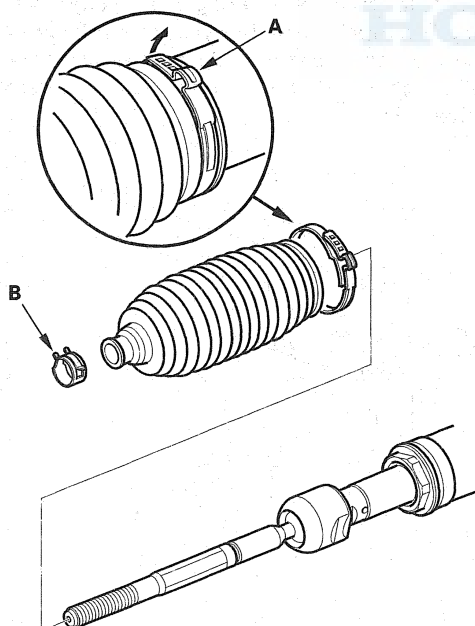
NOTE: Refer to the Exploded View as needed during this procedure.

Removal

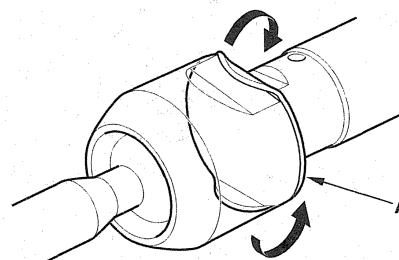
1. Remove the steering gearbox (see page 17-31).

Disassembly

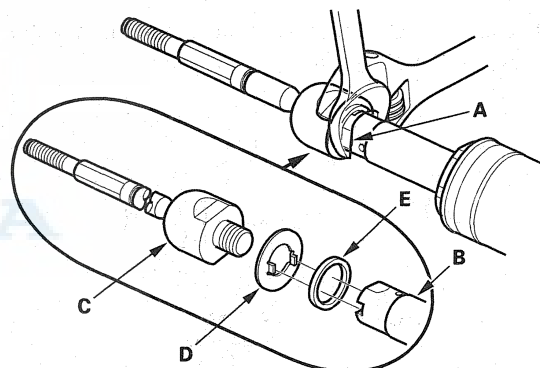
2. Remove the boot bands (A) and tie-rod clips (B). Pull the boots away from the ends of the steering gearbox.



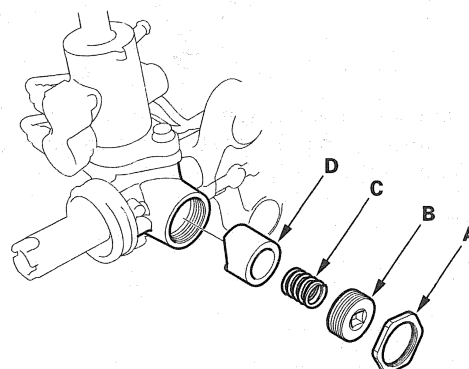
3. Unbend the lock washer (A).



4. Hold the flat surface sections (A) of the steering rack (B) with a wrench, and unscrew both rack ends (C) with a wrench. Be careful not to damage the rack surface with the wrench. Remove the lock washer (D) and rubber stop (E).



5. Loosen the locknut (A), then remove the rack guide screw (B).



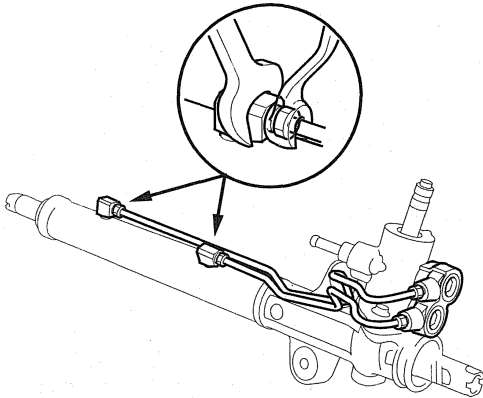
6. Remove the spring (C) and the rack guide (D) from the gearbox housing.

(cont'd)

Power Steering

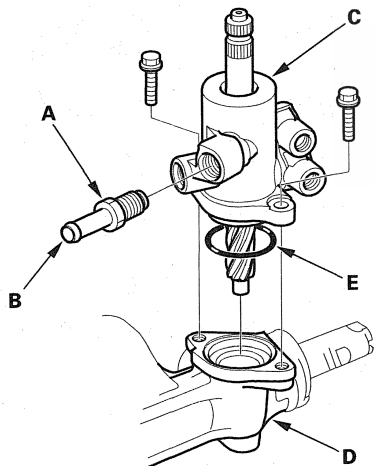
Steering Gearbox Overhaul (cont'd)

7. Remove the cylinder lines from the steering gearbox.



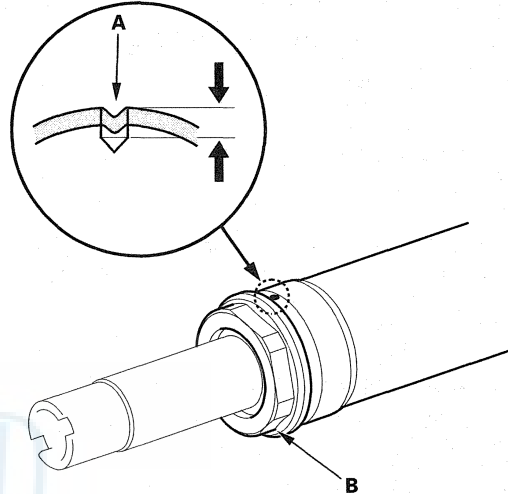
8. Drain the fluid from the cylinder fittings by slowly moving the steering rack back and forth.

9. Loosen the 16 mm flare nut (A), and remove the return line joint (B).

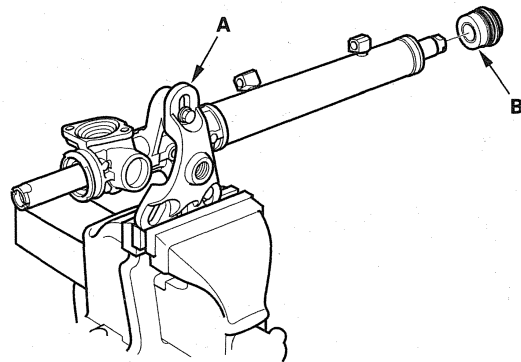


10. Remove the two flange bolts, then remove the valve body unit (C) from the gearbox housing (D). Remove the O-ring (E).

11. Drill a 3 mm (0.12 in.) diameter hole about 2.5—3.0 mm (0.10—0.12 in.) in depth in the staked point (A) on the cylinder. Do not allow metal shavings to enter the cylinder housing. After removing the cylinder end (B), remove any burrs at the staked point.

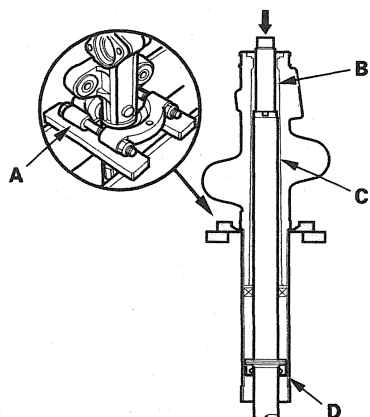


12. Attach the yoke of a universal puller (commercially available) (A) to the steering gearbox mounts with bolts. Clamp the yoke in a vise with soft jaws as shown, then loosen and remove the cylinder end (B). Do not clamp the cylinder housing or gearbox housing in the vise.

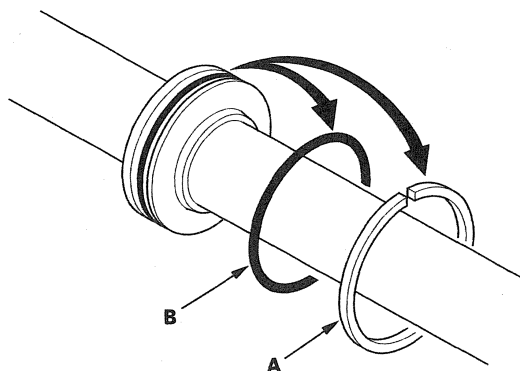




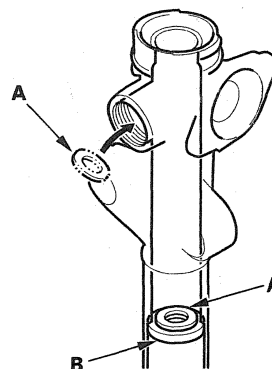
13. Install a commercially available bearing separator (A) on the gearbox housing as shown.



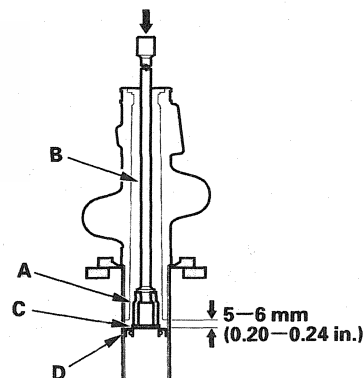
14. Place an appropriately sized deep socket wrench (B) on the steering rack (C).
15. Set the gearbox housing in a press so the gearbox housing points upward, then press the cylinder end seal (D) and steering rack out of the gearbox. Hold the steering rack to keep it from falling when pressed clear. Be careful not to damage the inner surface of the cylinder housing with the tool.
16. Remove the cylinder end seal from the steering rack.
17. Carefully pry the piston seal ring (A) and O-ring (B) off the rack piston. Be careful not to damage the inside of the seal ring groove and piston edges when removing the seal ring.



18. Install a washer (O.D. 27.5 mm, P/N 94103-10400) (A) so it will fit through the rack guide hole of the gearbox housing, then position the washer on the cylinder end seal (B). Make sure that the washer is securely positioned on the cylinder end seal edges.



19. Install the socket wrench with a 27.5 mm O.D. (A) onto the 24" long 3/8" drive extension (B), and carefully place it on the washer (C).



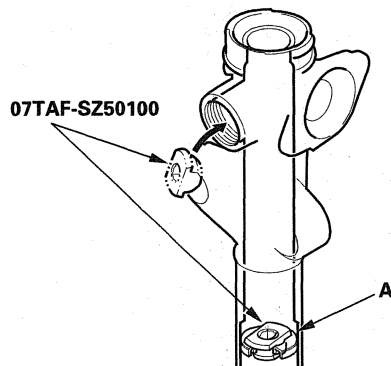
20. Set the steering gearbox in a press so the gearbox housing points upward, then push out the cylinder end seal (D) 5-6 mm (0.20-0.24 in.) by pressing on the 24" long 3/8" drive extension end.
21. Remove the gearbox housing from the press, and remove the washer from the gearbox inside.

(cont'd)

Power Steering

Steering Gearbox Overhaul (cont'd)

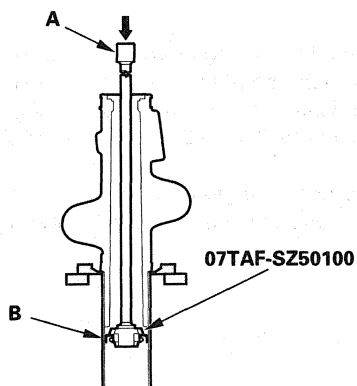
22. Turn the cylinder end seal remover attachment so it will fit through the rack guide hole of the steering gearbox, then position the seal remover on the cylinder end seal (A). Make sure that the seal remover is securely positioned on the seal edges.



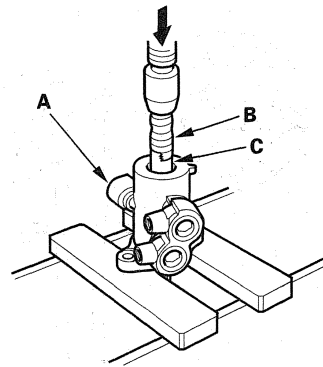
23. Insert a 24 " long 3/8 " drive extension (A), on the cylinder end seal remover attachment. Place the gearbox housing in a press, then remove the cylinder end seal (B) from the gearbox housing by pressing on the 24 " long 3/8 " drive extension.

Note these items when pressing the cylinder end seal:

- Keep the tool straight to avoid damaging the cylinder wall. Check the tool angle, and correct it if necessary, when removing the cylinder end seal.
- Use a press to remove the cylinder end seal. Do not try to remove the seal by striking the tool; striking the tool would break the cylinder end seal, and the seal would remain in the gearbox housing.

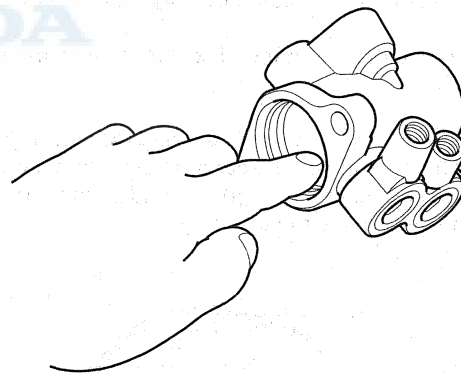


24. Before removing the valve housing (A), apply vinyl tape (B) to the splines on the pinion shaft (C).



25. Separate the valve housing from the pinion shaft/valve using a press.
26. With your finger, check the inner wall of the valve housing where the seal ring slides. If there is a step in the wall, the housing is worn. Replace it.

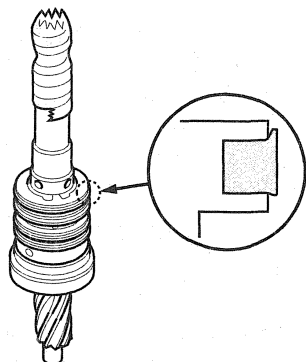
NOTE: There may be sliding marks from the seal ring on the wall of the valve housing. Replace the valve housing only if the wall is stepped.



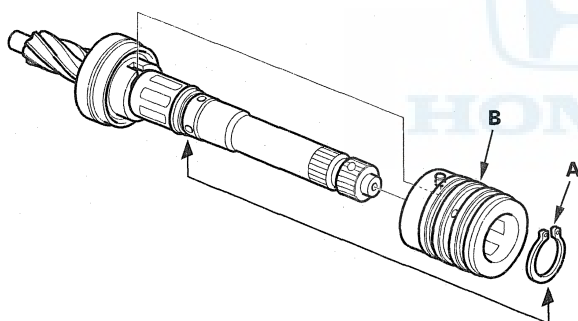


27. Check for wear, burrs and other damage to the edges of the grooves in the sleeve.

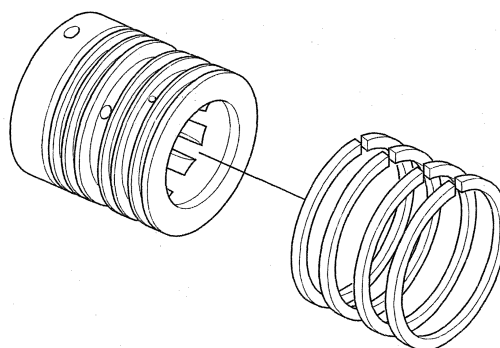
NOTE: The pinion shaft and sleeve are a precision matched set. If either the pinion shaft or sleeve must be replaced, replace both parts as a set.



28. Remove the snap ring (A) and sleeve (B) from the pinion shaft.



29. Using a cutter or an equivalent tool, cut and remove the four seal rings from the sleeve. Be careful not to damage the edges of the sleeve grooves and outer surface when removing the seal rings.

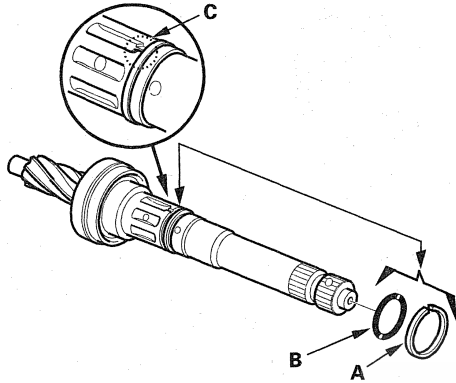


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Power Steering

Steering Gearbox Overhaul (cont'd)

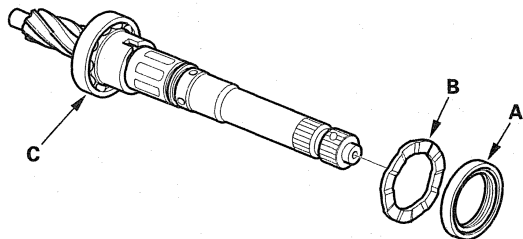
30. Using a cutter or an equivalent tool, cut the valve seal ring (A) and O-ring (B) at the cutting groove position (C) in the pinion shaft. Remove the valve seal ring and O-ring. Be careful not to damage the edges of the pinion shaft groove and outer surface when removing the valve seal ring and O-ring.



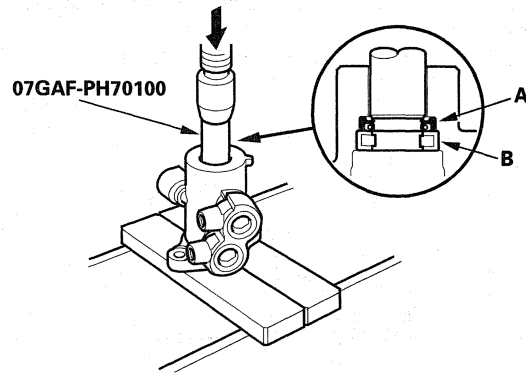
31. Remove the valve oil seal (A) and wave washer (B) from the pinion shaft.

Note these items during disassembly:

- Inspect the ball bearing (C) by rotating the outer race slowly. If there is any excessive play or wear, replace the pinion shaft and sleeve as an assembly.
- The pinion shaft and sleeve are a precise fit; do not intermix old and new pinion shafts and sleeves.



32. Remove the valve oil seal (A) and roller bearing (B) out of the valve housing using a hydraulic press and pilot collar.

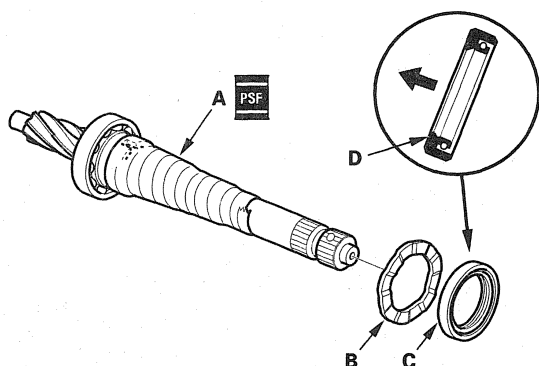


33. Clean the disassembled parts with solvent, and dry them with compressed air. Do not dip rubber parts in the solvent.

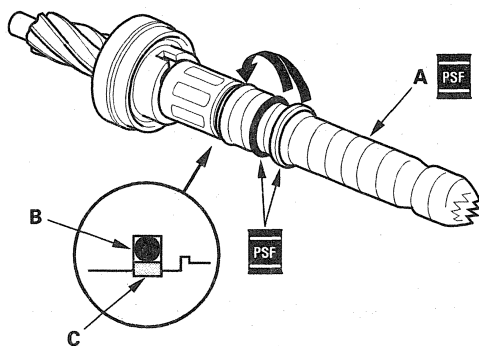


Reassembly

34. Apply vinyl tape (A) to the stepped portion of the pinion shaft, and coat the surface of the vinyl tape with power steering fluid.

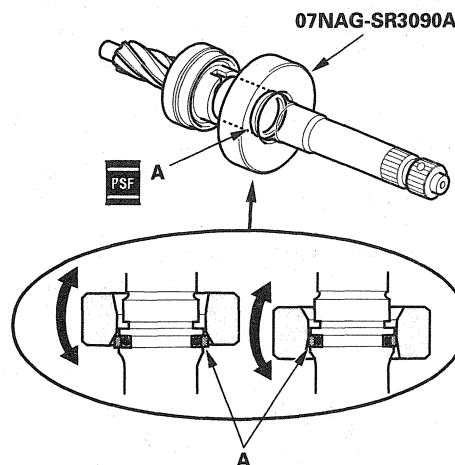


35. Install the wave washer (B).
36. Coat the inside surface of the new valve oil seal (C) with power steering fluid, and install the seal with its grooved side facing opposite the bearing, then slide it over the pinion shaft, being careful not to damage its sealing lip (D).
37. Apply vinyl tape (A) to the splines and stepped portion of the shaft, and coat the surface of the vinyl tape with power steering fluid.



38. Fit the new O-ring (B) in the groove of the pinion shaft. Then slide the new valve seal ring (C) over the shaft and in the groove on the pinion shaft.

39. Remove the tape, and apply power steering fluid to the surface of the valve seal ring (A).



40. Apply power steering fluid to the inside of the valve seal ring sizing tool. Set the larger diameter end of the sizing tool over the valve seal ring, and move the sizing tool up and down several times to make the valve seal ring fit in the pinion shaft groove.
41. Remove the sizing tool, turn it over, slide the smaller diameter end over the valve seal ring. Move it up and down several times to make sure the valve seal ring fits snugly in the pinion shaft groove.

(cont'd)

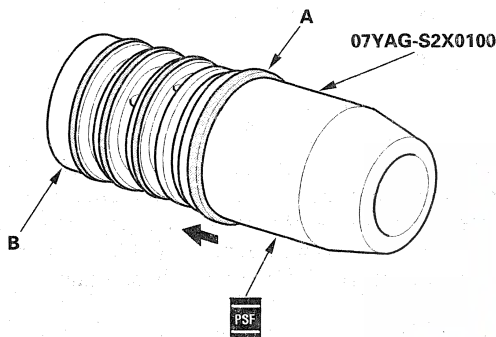
Power Steering

Steering Gearbox Overhaul (cont'd)

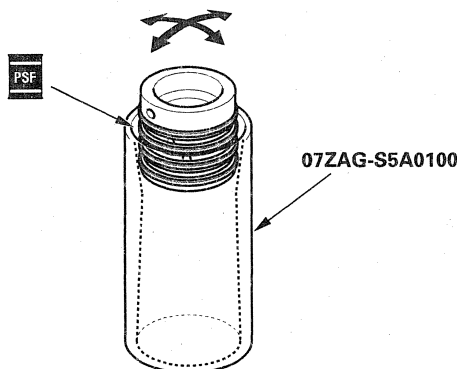
42. Apply power steering fluid to the surface of the sleeve seal ring guide. Slip two new seal rings (A) over the ring guide from the smaller diameter end, and expand them. Install only two rings at a time from each end of the pinion shaft sleeve (B).

Note these items when installing the seal ring:

- Do not over-expand the seal ring. Install the resin seal rings with care so as not to damage them. After installation, make sure you contract the seal rings using the sizing tool.
- There are two types of sleeve seal rings; black and brown. Do not mix the different types of rings as they are not compatible.

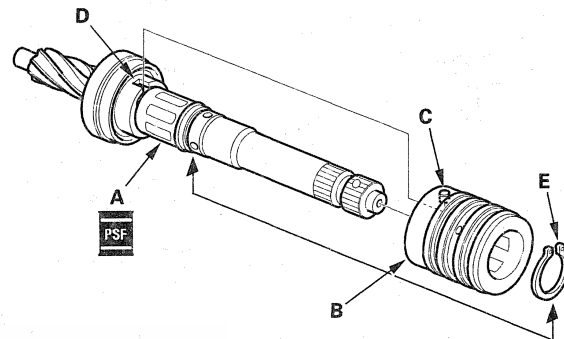


43. Align the ring guide with each groove in the sleeve, and slide a sleeve seal ring into each groove. After installation, compress the seal rings with your fingers temporarily.
44. Apply power steering fluid to the seal rings on the sleeve, and to the entire inside surface of the sleeve seal ring sizing tool, then slowly insert the sleeve into the sizing tool.

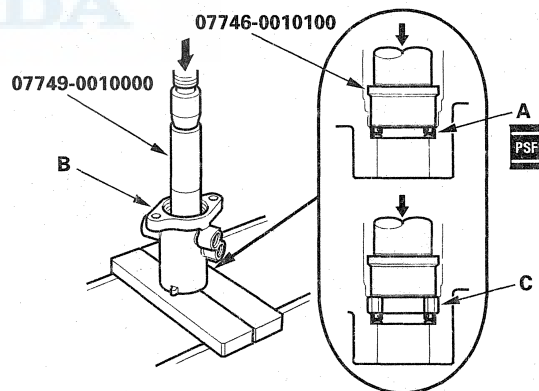


45. Move the sleeve back and forth several times to make the seal rings fit snugly in the sleeve. Make sure the seal rings are not twisted.

46. Apply power steering fluid to the surface of the pinion shaft (A). Slide the sleeve (B) onto the pinion shaft by aligning the locating pin (C) on the inside of the sleeve with the cutout (D) in the shaft. Then install the new snap ring (E) securely in the pinion shaft groove. Be careful not to damage the valve seal ring when inserting the sleeve.



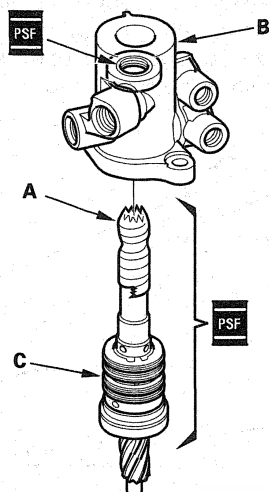
47. Apply power steering fluid to the seal ring lip of the new valve oil seal (A), then install the seal in the valve housing (B) using a hydraulic press, driver, and attachment. Install the seal with its grooved side facing the tool.



48. Press the roller bearing (C) into the valve housing with a hydraulic press, driver, and attachment.



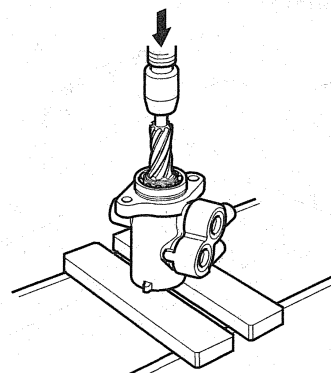
49. Apply vinyl tape (A) to the pinion shaft, then coat the vinyl tape with power steering fluid.



50. Insert the pinion shaft into the valve housing (B). Be careful not to damage the valve seal rings (C).

51. Remove the vinyl tape from the pinion shaft, then remove any residue from the tape adhesive.

52. Press the pinion shaft/sleeve into the valve housing with a hydraulic press. Check that the pinion shaft/sleeve turns smoothly by hand after installing it.

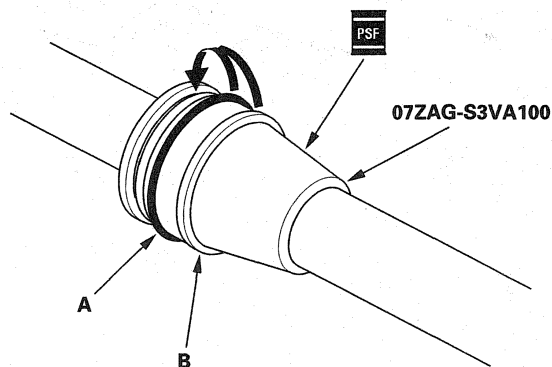


53. Coat the piston seal ring guide with power steering fluid, then slide it onto the rack, big end first.

54. Position the new O-ring (A) and new piston seal ring (B) on the piston seal ring guide, then slide them down toward the big end of the tool.

Note these items during reassembly:

- Do not over expand the resin seal rings. Install the resin seal rings with care so as not to damage them. After installation, make sure you contract the seal ring using the sizing tool.
- Replace piston's O-ring and seal ring as a set.



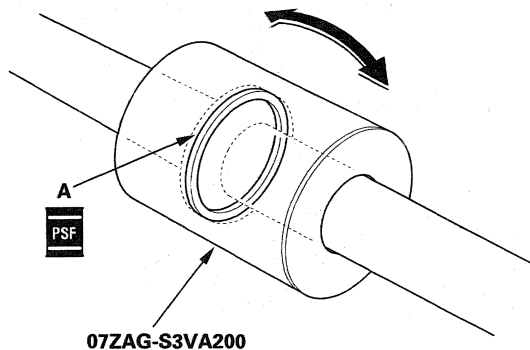
55. Pull the O-ring off into the piston groove, then pull the piston seal ring off into the piston groove on top of the O-ring.

(cont'd)

Power Steering

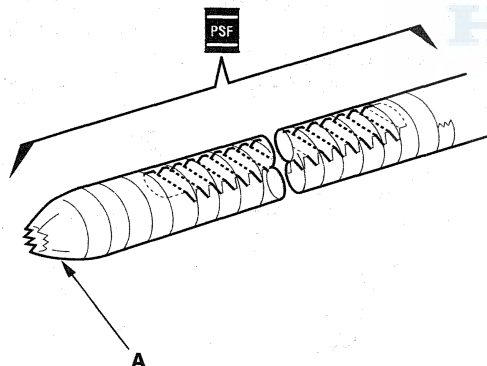
Steering Gearbox Overhaul (cont'd)

56. Coat the piston seal ring (A) and the inside of the piston seal ring sizing tool with power steering fluid, then carefully slide the tool onto the rack and over the piston seal ring.

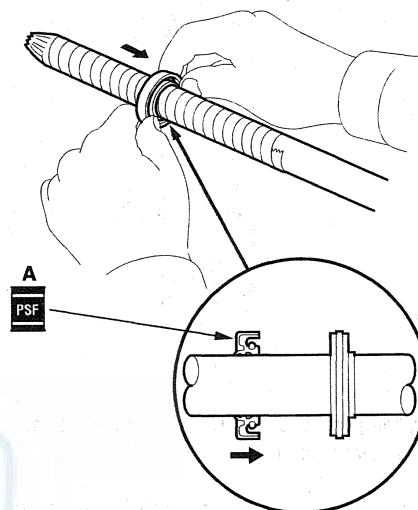


57. Move the sizing tool back and forth several times to make sure the piston seal ring fit snugly in the piston.

58. Wrap vinyl tape (A) around the rack teeth and rack end edges, then coat the surface of the tape with power steering fluid. Make sure that the vinyl tape is wrapped carefully so there is no stepped portion.

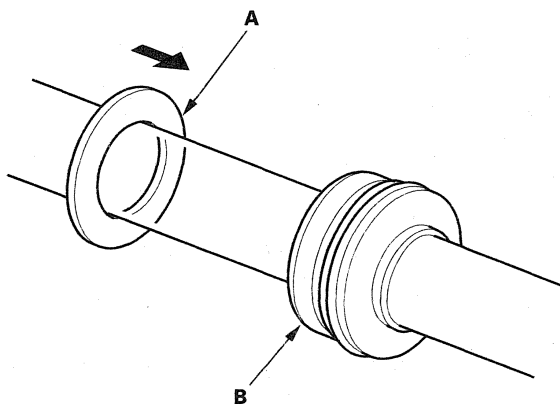


59. Coat the inside surface of the new cylinder end seal (A) with power steering fluid, then install it onto the steering rack with its grooved side toward the piston. When installing the cylinder end seal, be careful not to damage the lip of the seal with the edges or teeth of the steering rack.



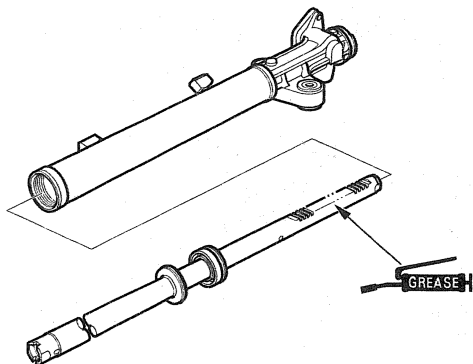
60. Remove the vinyl tape from the steering rack, then remove any adhesive residue.

61. Install the new backup ring (A) on the steering rack, then place the cylinder end seal (B) against the piston.

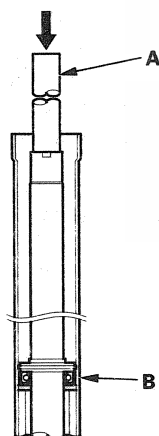




62. Apply multipurpose grease to the steering rack teeth, then insert the steering rack into the gearbox housing. Be careful not to damage the inner surface of the cylinder wall with the rack edges.



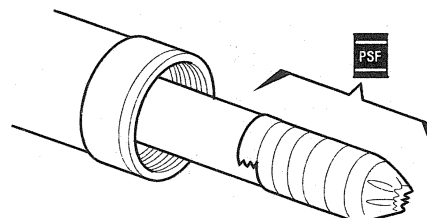
63. Insert an appropriate size deep socket wrench (A) onto the steering rack as shown.



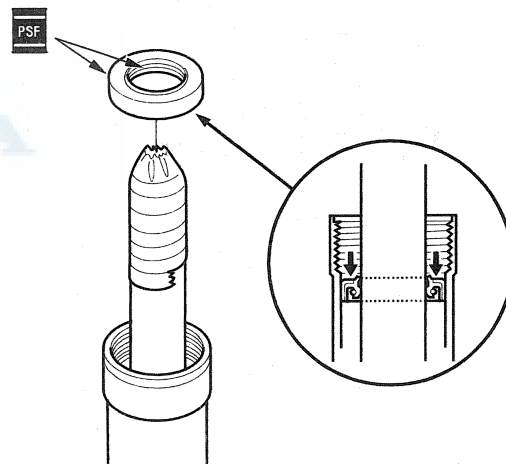
64. Install the cylinder end seal (B) into the bottom of the cylinder by pressing on the tool with a press. Do not push on the tool with excessive force as it may damage the cylinder end seal.

65. Remove the tool, and center the steering rack.

66. Wrap vinyl tape around the rack end edges, and coat the surface of the tape with the power steering fluid. Make sure that the vinyl tape is wrapped carefully so there is no stepped portion.



67. Coat the inside surface of the new cylinder end seal with power steering fluid, then install the seal onto the steering rack with its grooved side toward the piston.



68. Push in the cylinder end seal on with your finger. Be careful not to damage the face of the seal with the threads and burrs at the staked position of the cylinder housing.

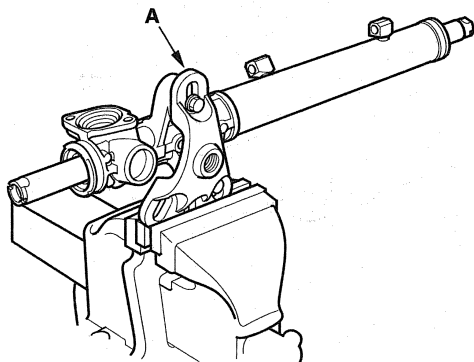
69. Remove the vinyl tape from the steering rack, then remove any adhesive residue.

(cont'd)

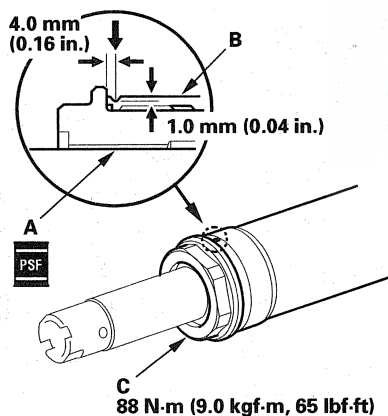
Power Steering

Steering Gearbox Overhaul (cont'd)

70. Attach the yoke of a universal puller (commercially available) (A) to the gearbox housing mounts with bolts, then clamp the yoke in a vise with soft jaws. Do not clamp the cylinder housing or gearbox housing in the vise.

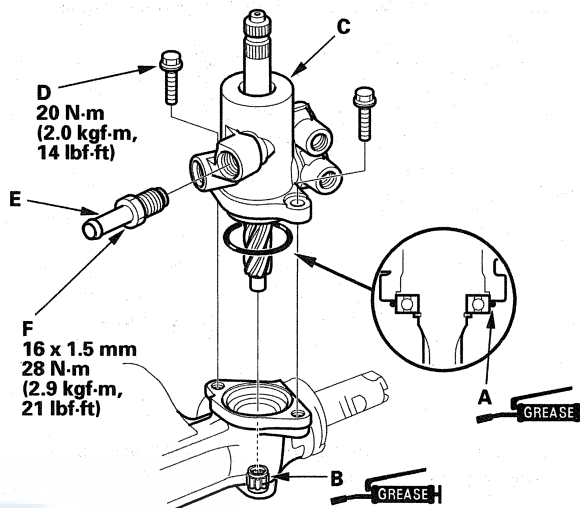


71. Coat the inside surface of the cylinder end (A) with power steering fluid, then install the cylinder end by screwing it into the cylinder (B). Tighten the cylinder end to the specified torque.



72. Remove the yoke from the gearbox housing. After tightening the cylinder end (C), stake the point of the cylinder shown (opposite from where the stake was removed during disassembly).

73. Coat the new O-ring (A) with steering grease (08C35-B0534L), and carefully fit it on the valve housing.



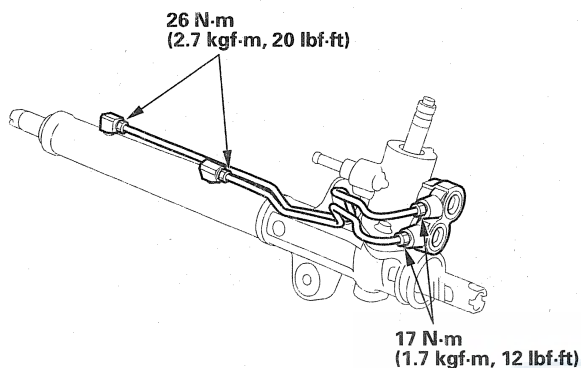
74. Apply multipurpose grease to the needle bearing (B) in the gearbox housing, then install the valve body unit (C) by engaging the gears. Note the valve body unit installation position (direction of the line connections).
75. Tighten the flange bolts (D) to the specified torque.
76. Install the return line joint (E), and tighten the 16 mm flare nut (F).



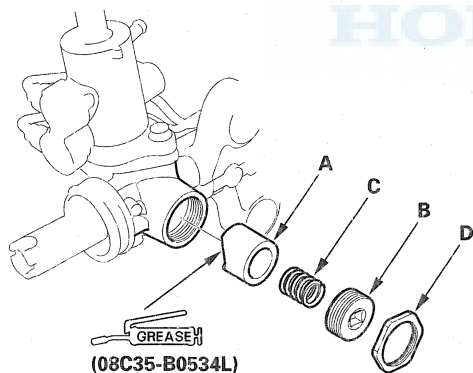
77. Install the cylinder lines.

Note these items during reassembly:

- Thoroughly clean the joints of the cylinder lines. The joints must be free of foreign material.
- Install the cylinder lines by tightening the flare nuts by hand first, then tighten the flare nuts to the specified torque.



78. Apply steering grease to the sliding surface of the rack guide (A), and install it onto the gearbox housing. Wipe the grease off the threaded section of the housing.

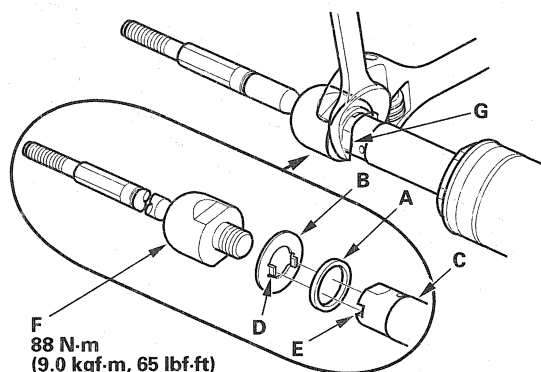


79. Remove the old sealant from the rack guide screw (B), then apply new sealant (Three Bond 1215 or Loctite 5699) all around the threads. Install the spring (C), rack guide screw and locknut (D).

80. Adjust the rack guide screw (see page 17-30). After adjusting, check that the rack moves smoothly by sliding it right and left.

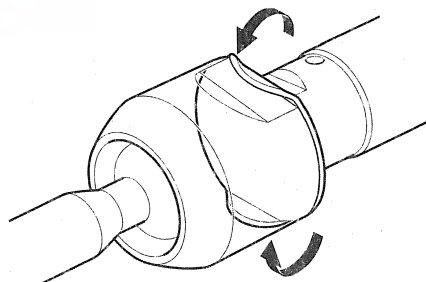
NOTE: If more than 5 minutes has passed after applying the sealant, remove the old sealant and residue, and reapply new sealant.

81. Install a new rubber stop (A) and a new lock washer (B) on the rack end (C) in the rack. Align the lock washer tabs (D) with the slots (E). Install the rack end (F) while holding the lock washer in place. Repeat this step for the other side of the rack.



82. Hold the flat surface sections (G) of the steering rack with a wrench, and tighten both rack ends. Be careful not to damage the rack surface with the wrench.

83. Bend the lock washer back against the flat spots on the rack end joint housing.

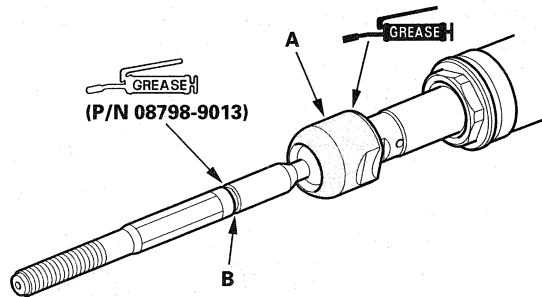


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Power Steering

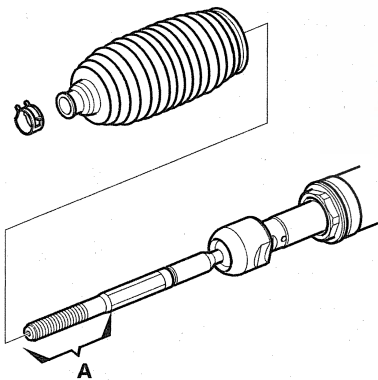
Steering Gearbox Overhaul (cont'd)

84. Apply multipurpose grease to the circumference of the rack end joint housing (A).

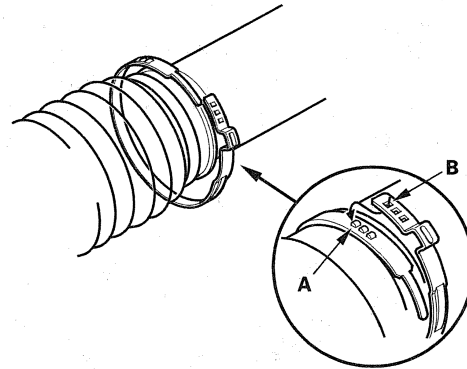


85. Apply a light coat of silicone grease (P/N 08798-9013) to the boot grooves (B) on the rack end.

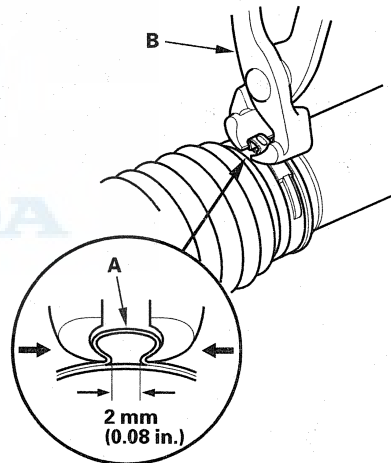
86. Center the steering rack within its stroke. Install the boots on the rack ends with the tie-rod clips. After installing the boots, wipe the grease off the threaded section (A) of the rack end.



87. Install the new boot bands by aligning the tabs (A) with the holes (B) on the band.



88. Close the ear portion (A) of the band with commercially available Oetiker 1098 pincer or equivalent (B).



89. Slide the rack right and left to be certain that the boots are not deformed or twisted.

90. Install the tie-rod ends.

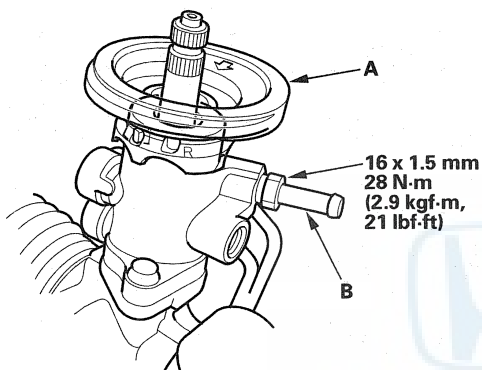
91. Reinstall the steering gearbox (see page 17-53).



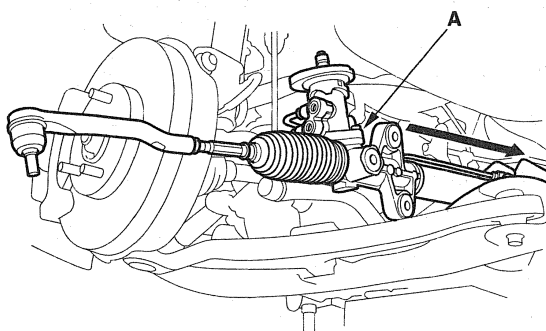
Steering Gearbox Installation

1. Before installing the steering gearbox, make sure that no power steering fluid is on the mating surface of the steering gearbox and front subframe. To prevent the gearbox mounting bolts from loosening after the installation, remove any power steering fluid from the mount cushions and bolt holes.
2. Install the pinion shaft grommet (A) on the valve housing.

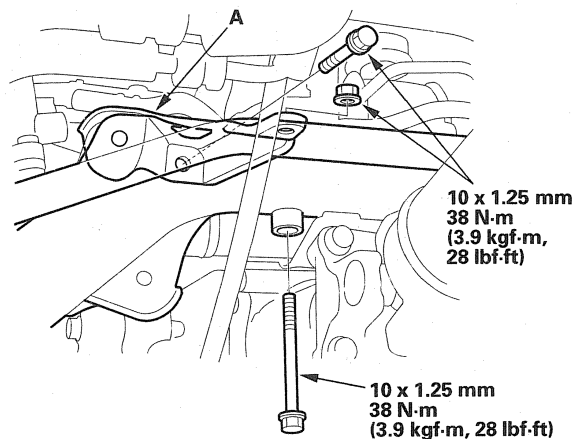
NOTE: If the return line (B) was removed previously, install it.



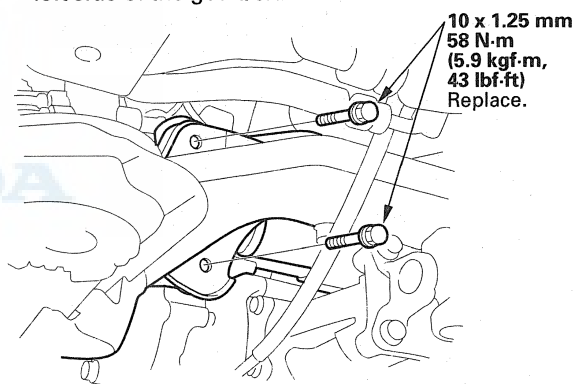
3. Slide the steering gearbox (A) between the front suspension subframe and body from the driver's side. Place the gearbox in position on the front suspension subframe.



4. Install the gearbox stiffener bracket (A) on the front suspension subframe, and tighten the bolts and nut to the specified torque.



5. Loosely install the new 10 mm flange bolts on the left side of the gearbox.

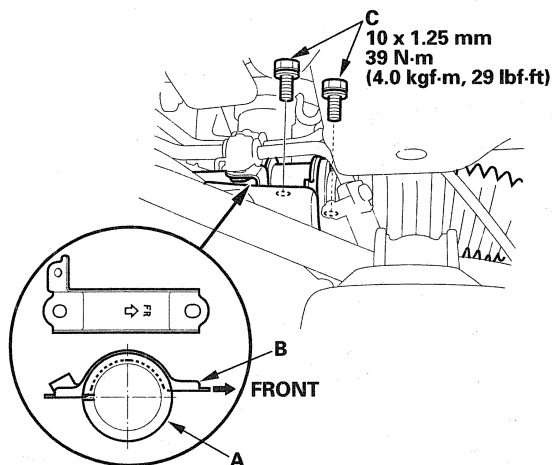


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Power Steering

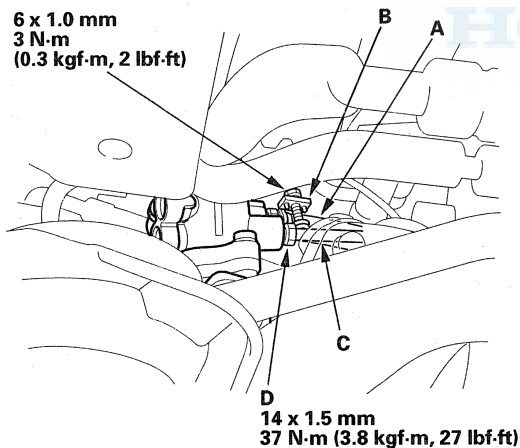
Steering Gearbox Installation (cont'd)

6. Install the mounting cushion (A) on the right side of the gearbox.



7. Install the gearbox mounting bracket (B) over the mounting cushion, then install the two 10 mm flange bolts (C). Tighten the four 10 mm flange bolts for the gearbox to the specified torque.

8. Connect the return hose (A) securely, and tighten the adjustable hose clamp (B) (see page 17-14).

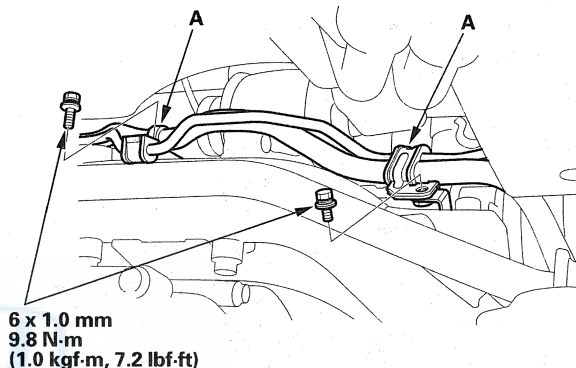


9. Connect the inlet line (C), and tighten the 14 mm flare nut (D) to the specified torque.

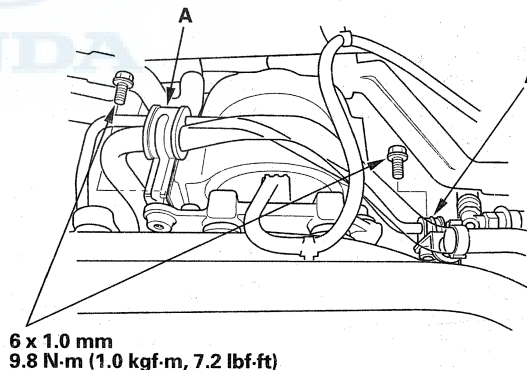
10. Carefully raise the front suspension subframe with the front subframe adapter and the transmission jack or the powertrain lift until the subframe is in position (see page 20-173).

11. Install the P/S line mounting brackets (A) on the front suspension subframe and gearbox mounting bracket.

4WD model:

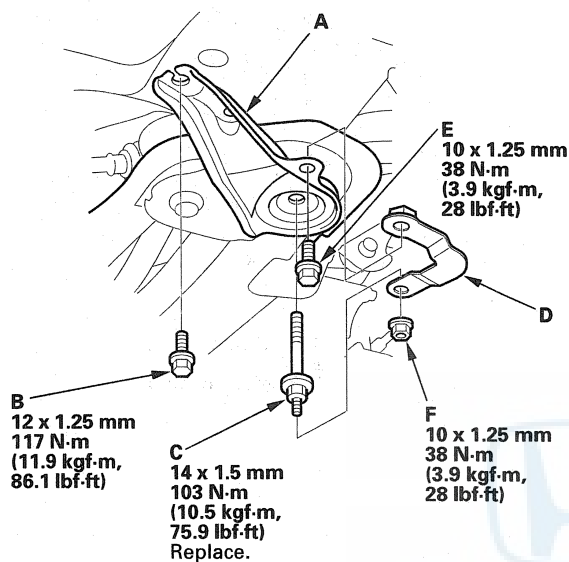


2WD model:

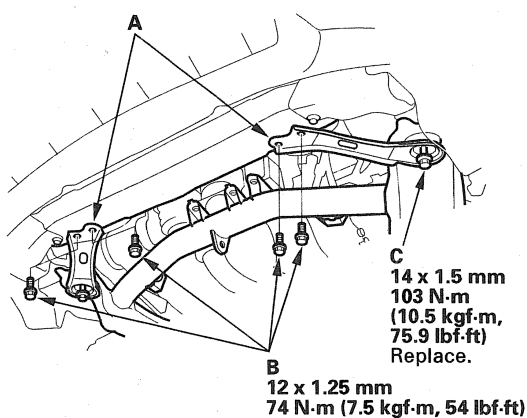




12. Install the front suspension subframe rear brackets (A). Tighten the 12 mm flange bolts (B) and new 14 mm special bolts (C) on the right and left of the vehicle to the specified torque. Then install the subframe bolt retainers (D). Tighten the two flange bolts (E) and nuts (F) to the specified torque.

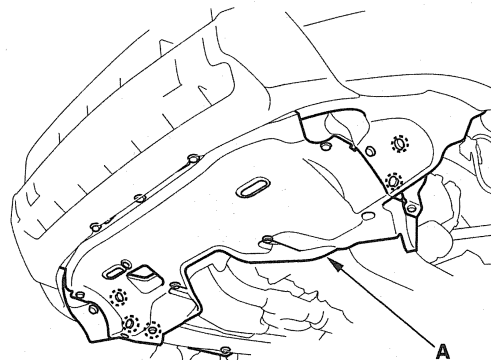


13. Install the front suspension subframe front brackets (A) with 12 mm flange bolts (B) and new 14 mm special bolts (C), and tighten to the specified torque.

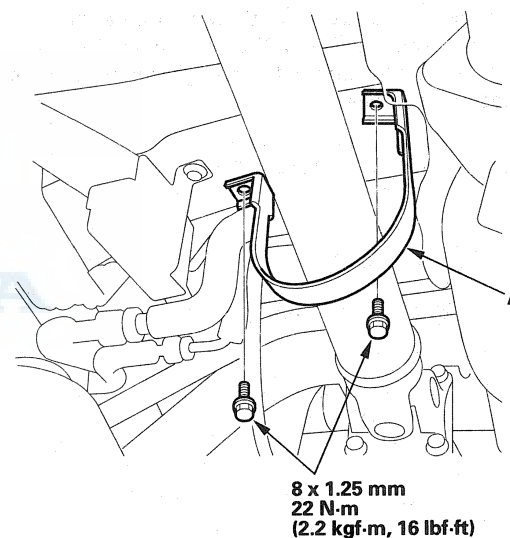


14. Lower the front suspension subframe support that is attached to the transmission jack or the powertrain lift.

15. Install the splash shield (A).



16. 4WD model: Install the propeller shaft protector (A).

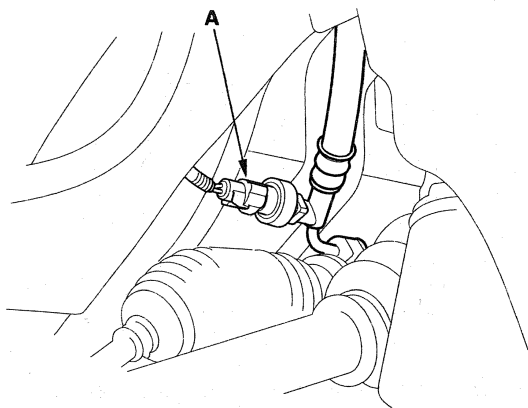


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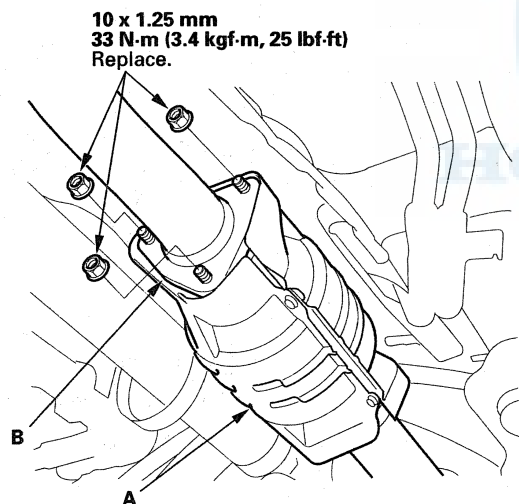
Power Steering

Steering Gearbox Installation (cont'd)

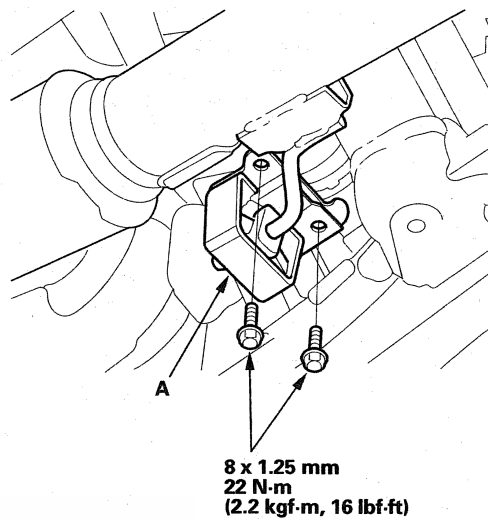
17. Connect the power steering pressure switch connector (A).



18. Connect the under floor three-way catalytic converter (A) to the muffler (B). Install the new 10 mm self-locking nuts and tighten them to the specified torque.

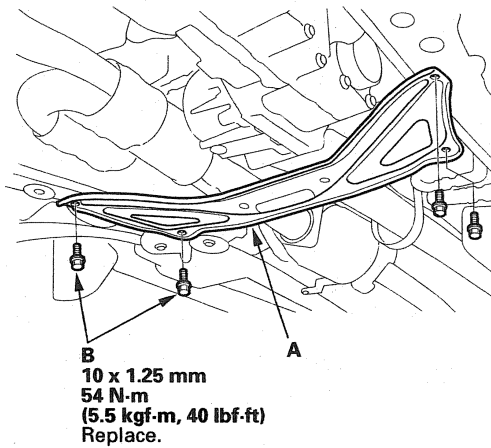


19. Install the exhaust rubber mount (A) on the frame.

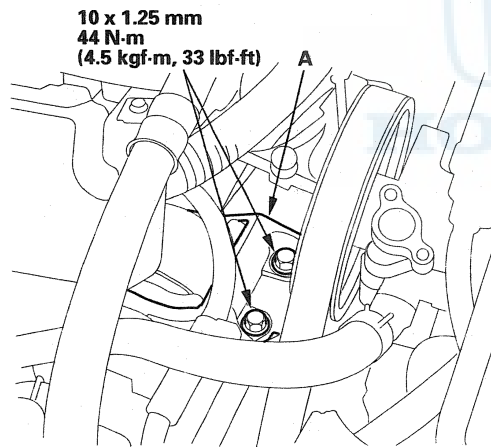




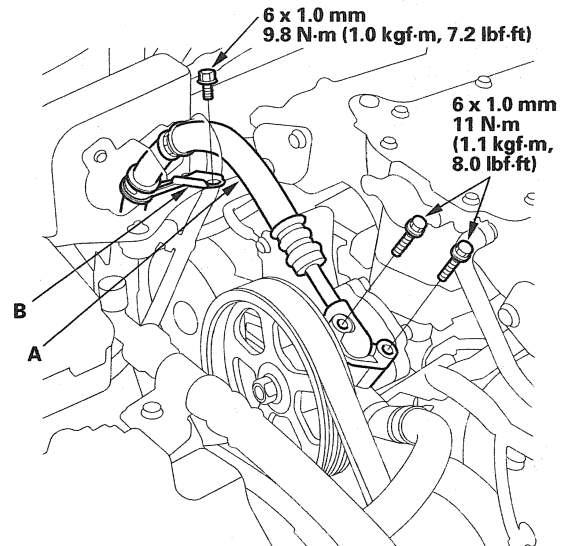
20. Install the front suspension subframe stiffener plate (A) with new mounting bolts (B), and tighten to the specified torque.



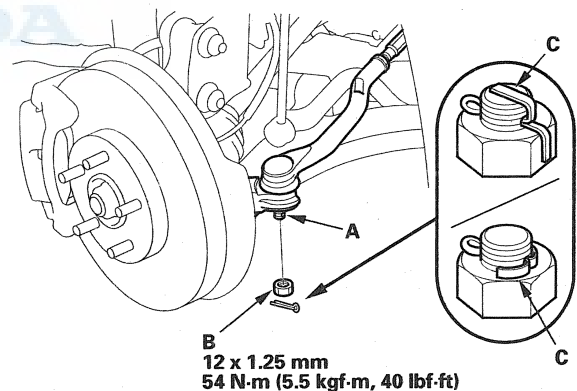
21. Install the 10 mm flange bolts on the engine side mount bracket (A).



22. Connect the pump outlet hose (A) to the power steering pump, and install the inlet hose clamp (B).



23. Wipe off any grease contamination from the ball joint tapered section and threads. Reconnect the tie rod ball joints (A) to the knuckles. Install the 12 mm nut (B) and tighten it to the specified torque.



24. Install the new cotter pin (C) and bend it as shown.
25. Remove the engine support hanger, the hanger balance bar, and the hanger adapter set.

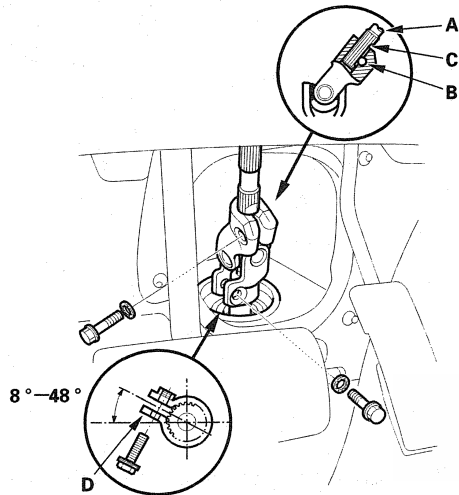
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Power Steering

Steering Gearbox Installation (cont'd)

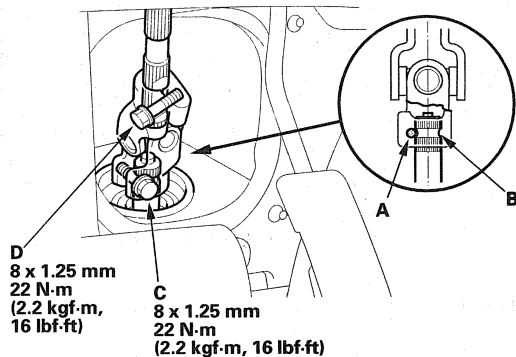
26. Center the steering rack within its stroke.

27. Insert the upper end of the steering joint onto the steering shaft (A) (line up the bolt hole (B) with the flat portion (C) on the shaft), and loosely install the upper joint bolt.



28. Slip the lower end of the steering joint onto the pinion shaft taking care to align the gap (D) within the angle.

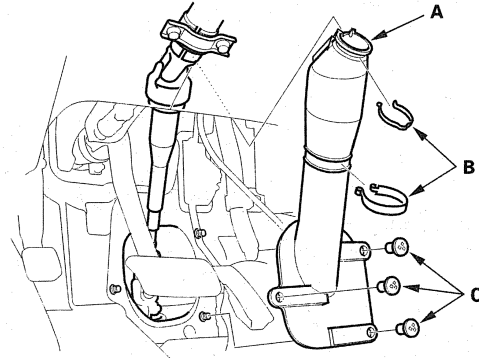
29. Align the bolt hole (A) on the steering joint with the groove (B) around the pinion shaft then loosely install the lower joint bolt (C).



30. Pull on the steering joint to make sure that the steering joint is fully seated, then tighten the lower joint bolt to the specified torque.

31. Tighten the upper joint bolt (D) to the specified torque.

32. Install the steering joint cover (A) with the clamps (B) and clips (C).



33. Install the front wheel, then set the wheels in the straight ahead position.

NOTE: Before installing the wheel, clean the mating surfaces of the brake disc and the inside of the wheel.

34. Install the steering wheel (see page 17-24).

35. Reconnect the negative battery cable to the battery, and do these tasks:

- Do the power window control unit reset procedure (see page 22-255).
- Enter the anti-theft codes for the audio system or the navigation system (if equipped), then enter the customer's audio preset.
- Set the clock (without navigation).
- Make sure the steering wheel is centered.
- Make sure the steering wheel switches work properly.

36. Fill the system with power steering fluid, and bleed air from the system (see page 17-13).

37. After installation, do these checks.

- Start the engine, allow it to idle, and turn the steering wheel from lock-to-lock several times to warm up the fluid. Check the gearbox for leaks (see page 17-12).
- Do the front toe inspection (see page 18-5).
- Check the steering wheel spoke angle. If steering spoke angles to the right and left are not equal (steering wheel and rack are not centered), correct the engagement of the joint/pinion shaft serrations, then adjust the front toe by turning the tie-rod ends, if necessary.

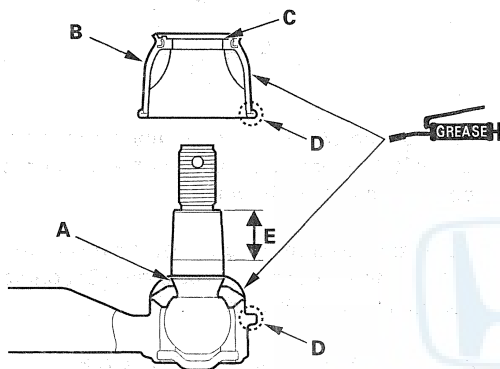


Tie-rod Ball Joint Boot Replacement

Special Tools Required

Front hub dis/assembly tool 07965-SA50500

1. Disconnect the tie-rod ball joint from the knuckle (see step 15 on page 17-33).
2. Remove the tie-rod end from the rack end.
3. Remove the tie-rod ball joint boot from the tie-rod end, and wipe the old grease off the ball pin.
4. Pack the lower area of the ball pin (A) with fresh multipurpose grease.

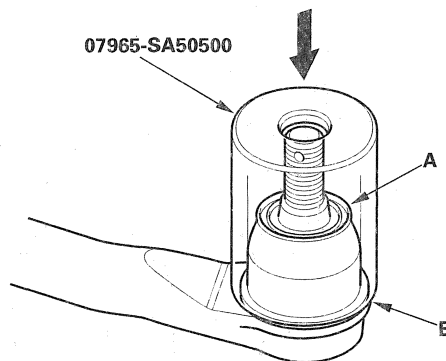


5. Pack the interior of a new tie-rod ball joint boot (B) and lip (C) with fresh multipurpose grease.

Note these items when installing new grease:

- Keep grease off the boot mounting area (D) and the tapered section (E) of the ball pin.
- Do not allow dust, dirt, or other foreign materials to enter the boot.

6. Install a new tie-rod ball joint boot (A) using the front hub dis/assembly tool. The boot must not have a gap at the boot installation sections (B). After installing the boot, check the ball pin tapered section for grease contamination, and wipe it if necessary.

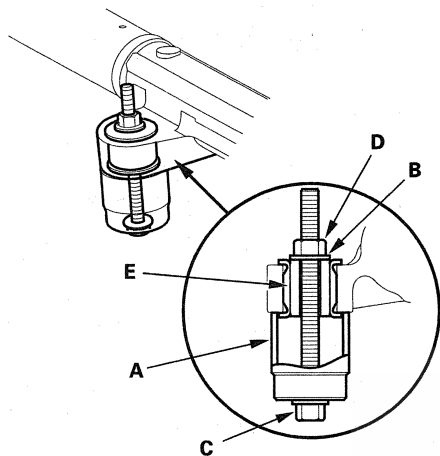


7. Install the tie-rod end to the rack end.
8. Connect the tie-rod ball joint to the knuckle (see step 23 on page 17-57).
9. Check the wheel alignment, and adjust it if necessary (see page 18-5).

Power Steering

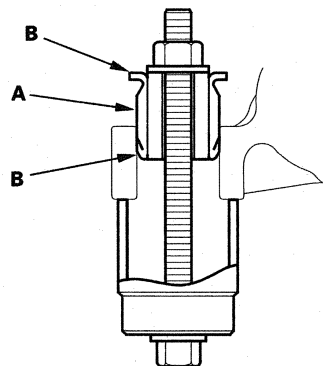
Gearbox Mount Cushion Replacement

1. Remove the steering gearbox (see page 17-31).
2. Position the 34 mm socket wrench (A) on the flange part of the gearbox housing with a washer (B), a 10 x 105 mm flange bolt (C) and a 10 mm nut (D) as shown.



3. Hold the flange bolt with a wrench, and tighten the nut with a wrench. Remove the gearbox mount cushion (E).

4. Apply a mild soap and water solution to the new gearbox mount cushion surface (A), then place it on the gearbox mounting cushion hole.



5. Position the 34 mm socket wrench on the flange part of the gearbox housing with a washer, a flange bolt, and a nut as shown.
6. Install the gearbox mount cushion by tightening the nut until the mount cushion edges (B) contact the gearbox flange surface.
7. Install the steering gearbox (see page 17-53).

Suspension

Front and Rear Suspension

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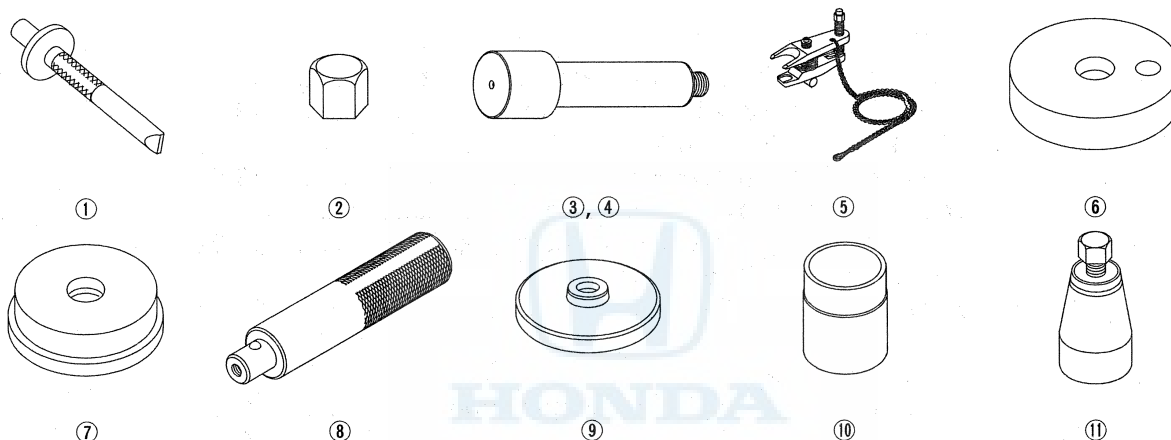
TPMS (Tire Pressure Monitoring System)	18-45
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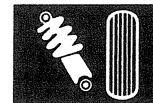


Front and Rear Suspension

Special Tools

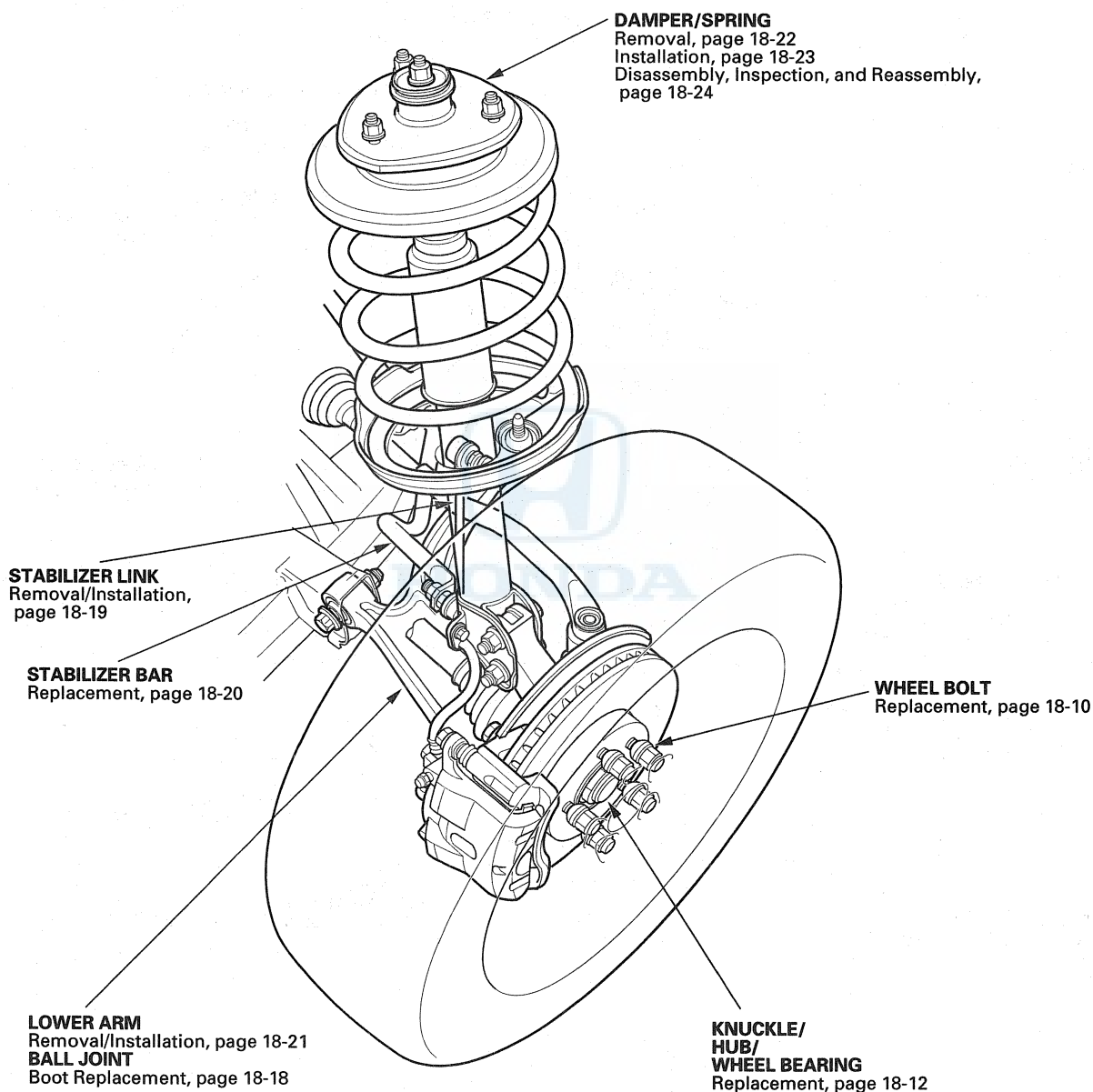
Ref. No.	Tool Number	Description	Qty
①	071AD-S3VA000	Ball Joint Striker Tool	1
②	071AF-S3VA000	Ball Joint Thread Protector, 14 mm	1
③	07GAF-SD40100	Hub Dis/Assembly Tool, 42 mm	1
④	07GAF-SE00100	Hub Dis/Assembly Tool, 40 mm	1
⑤	07MAC-SL0A202	Ball Joint Remover, 28 mm	1
⑥	07VAD-P8A010A	Attachment, 80 mm	1
⑦	07746-0010500	Attachment, 62 x 68 mm	1
⑧	07749-0010000	Driver	1
⑨	07948-SB00101 or 07ZAD-PNA0100	Attachment, 96 mm	1
⑩	07965-SD90100	Support Base	1
⑪	07974-SA50700	Ball Joint Boot Clip Guide	1





Component Location Index

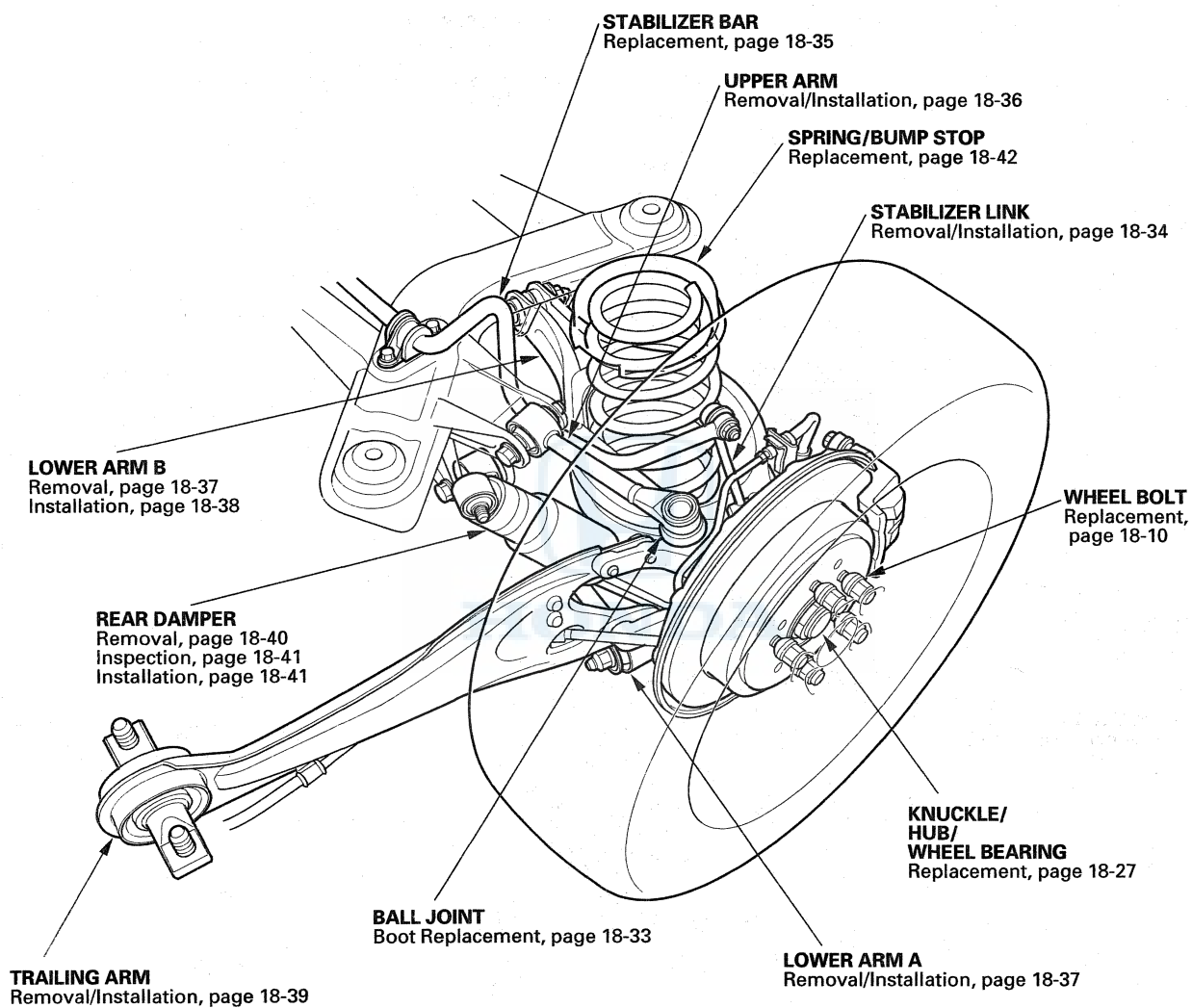
Front Suspension

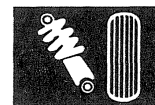


Front and Rear Suspension

Component Location Index (cont'd)

Rear Suspension





Wheel Alignment

The suspension can be adjusted for front camber, front toe, and rear toe. However, each of these adjustments are related to each other. For example, when you adjust camber, the toe will change. Therefore, you must adjust the front wheel alignment whenever you adjust camber or toe.

Pre-Alignment Checks

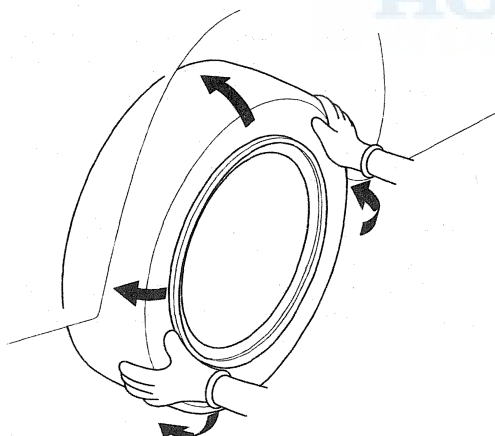
For proper inspection and adjustment of the wheel alignment, do these checks:

1. Release the parking brake to avoid an incorrect measurement.
2. Make sure the suspension is not modified.
3. Check the tire size and pressure.

Tire size: P235/70R16 104S

Tire pressure: 220 kPa (2.2 kgf/cm², 32 psi), cold

4. Check the runout of the wheels and tires (see page 18-9).
5. Check the suspension ball joints. (Hold a tire with your hands, and move it up and down and right and left to check for wobbling.)



6. Bounce the vehicle up and down several times to stabilize the suspension.

Caster Inspection

Use commercially available computerized four wheel alignment equipment to measure wheel alignment (caster, camber, toe, and turning angle). Follow the equipment manufacturer's instructions.

Check the caster angle.

Caster angle:

2WD: 1°59' ±1°

4WD: 1°53' ±1°

- If the measurement is within specifications, measure the camber angle.
- If the measurement is not within specifications, check for bent or damaged suspension components.

(cont'd)

Front and Rear Suspension

Wheel Alignment (cont'd)

Camber Inspection

Use commercially available computerized four wheel alignment equipment to measure wheel alignment (caster, camber, toe, and turning angle). Follow the equipment manufacturer's instructions.

Check the camber angle.

Camber angle:

Front:

2WD: $-0^{\circ}40' \pm 1^{\circ}$

4WD: $-0^{\circ}30' \pm 1^{\circ}$

Rear:

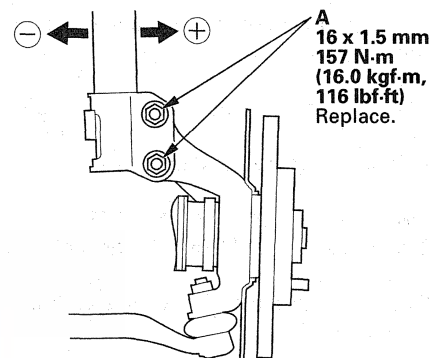
2WD: $-0^{\circ}40' \pm 45'$

4WD: $-0^{\circ}30' \pm 45'$

- If the measurement for the front camber is outside the specification, go to front camber adjustment.
- If the measurement for the rear camber is outside the specification, check for bent or damaged suspension components.

Front Camber Adjustment

1. Raise the front of the vehicle, and support it with safety stands in the proper locations (see page 1-13).
2. Remove the front wheels.
3. Loosen the flange nuts and bolts (A), and adjust the camber angle by moving the bottom of the damper within the range of the damper pinch bolt free play.



4. Tighten the damper pinch bolts to the specified torque.
5. Reinstall the front wheels. Lower the front of the vehicle to the ground, and move the front of the vehicle up and down several times to stabilize the suspension.
6. Measure the camber angle.
 - If the measurement is within specification, measure the toe-in.
 - If the measurement is not within specification, check for bent or damaged suspension components.



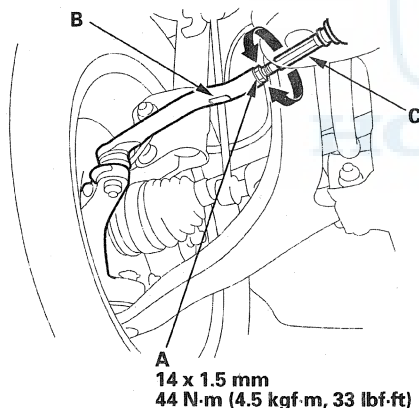
Front Toe Inspection/Adjustment

Use commercially available computerized four wheel alignment equipment to measure wheel alignment (caster, camber, toe, and turning angle). Follow the equipment manufacturer's instructions.

1. Center the steering wheel spokes, and install a steering wheel holder tool.
2. Check the toe. The left and right side should be equal.

Front toe-in: 0 ± 2 mm (0 ± 0.08 in.)

- If adjustment is required, go to step 3.
 - If no adjustment is required, go to rear toe inspection/adjustment.
3. Loosen the tie-rod locknuts (A) while holding the flat surface sections (B) of the tie-rod end with a wrench, and turn both rack ends (C) until the front toe is within specifications.



4. After adjusting, tighten the tie-rod locknuts. Reposition the rack-rod boot if it is twisted or displaced.
5. Go to rear toe inspection/adjustment.

Rear Toe Inspection/Adjustment

Use commercially available computerized four wheel alignment equipment to measure wheel alignment (caster, camber, toe, and turning angle). Follow the equipment manufacturer's instructions.

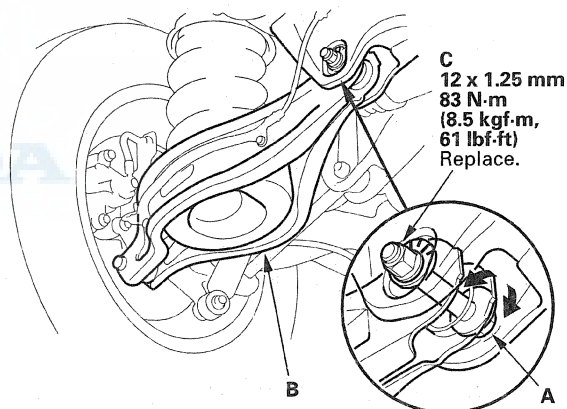
1. Release the parking brake to avoid an incorrect measurement.
2. Check the toe.

Rear toe-in:

2WD: 2 ± 2 mm (0.08 ± 0.08 in.)

4WD: 0 ± 2 mm (0 ± 0.08 in.)

- If adjustment is required, go to step 3.
 - If no adjustment is required, remove the alignment equipment.
3. Hold the adjusting bolt (A) on the rear lower arm B, and loosen the self-locking nut (C).



4. Replace the self-locking nut with a new one, and lightly tighten it.

NOTE:

- Always use a new self-locking nut whenever it has been loosened.
 - Assemble the adjusting bolt and cam plate with the eccentric facing up.
5. Adjust the rear toe by turning the adjusting bolt until the toe is correct.
 6. Tighten the self-locking nut while holding the adjusting bolt.

(cont'd)

Front and Rear Suspension

Wheel Alignment (cont'd)

Turning Angle Inspection

Use commercially available computerized four wheel alignment equipment to measure wheel alignment (caster, camber, toe, and turning angle). Follow the equipment manufacturer's instructions.

1. Turn the wheel right and left while applying the brake, and measure the turning angle of both wheels.

Turning angle:

Inward:

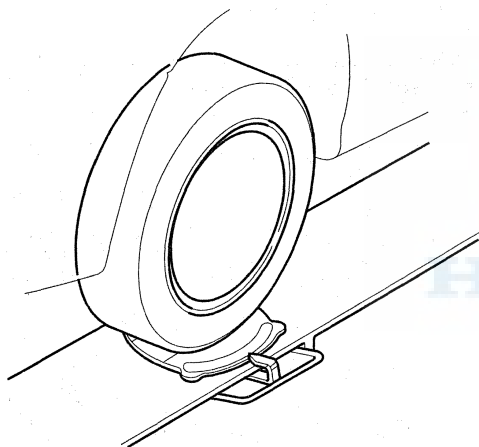
2WD: 37°52'

4WD: 38°08'

Outward (reference):

2WD: 30°10'

4WD: 30°19'

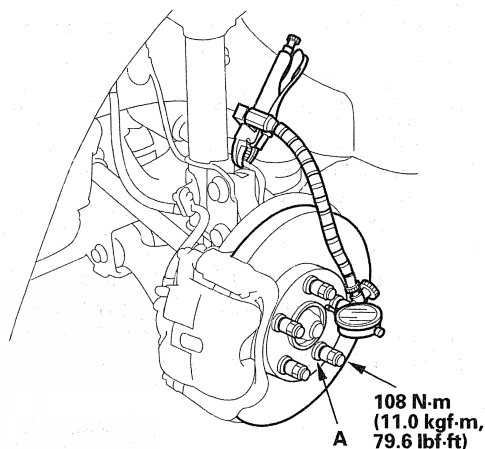


2. If the turning angle is not within the specifications, check for bent or damaged suspension components.

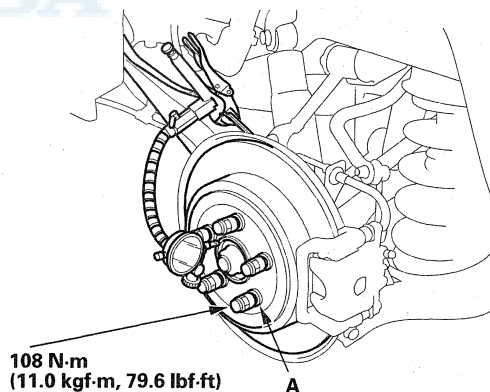
Wheel Bearing End Play Inspection

1. Raise the vehicle, and support it with safety stands in the proper locations (see page 1-13).
2. Remove the wheels.
3. Install suitable washers (A) and the wheel nuts, and torque to the specified torque.

Front:



Rear:

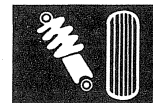


4. Attach the dial gauge. Place the dial gauge against the hub flange.
5. Measure the bearing end play moving the brake disc or the brake disc/drum inward or outward.

Front/Rear:

Standard: 0—0.05 mm (0—0.002 in.)

6. If the bearing end play measurement is more than the standard, replace the wheel bearing.



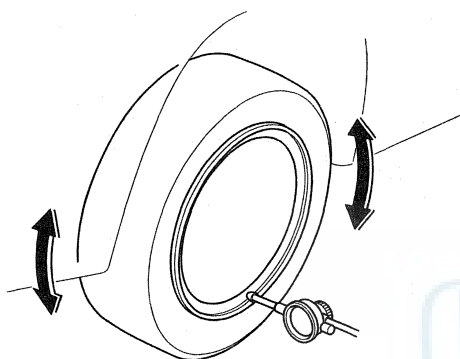
Wheel Runout Inspection

1. Raise the vehicle, and support it with safety stands in the proper locations (see page 1-13).
2. Check for bent or deformed wheels.
3. Set up the dial gauge as shown, and measure axial runout by turning the wheel.

Front and rear wheel axial runout:

Standard: 0–0.7 mm (0–0.03 in.)

Service limit: 2.0 mm (0.08 in.)

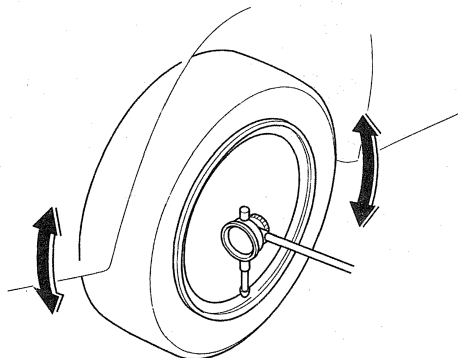


4. Readjust the dial gauge to the position shown, and measure radial runout.

Front and rear wheel radial runout:

Standard: 0–0.7 mm (0–0.03 in.)

Service limit: 1.5 mm (0.06 in.)



5. If the wheel runout is not within the specification, check the wheel bearing end play (see page 18-8), and make sure the mating surfaces on the brake disc or the brake disc/drum and the inside of the wheel are clean.
6. If the bearing end play is within the specification but the wheel runout is more than the service limit, replace the wheel.

Front and Rear Suspension

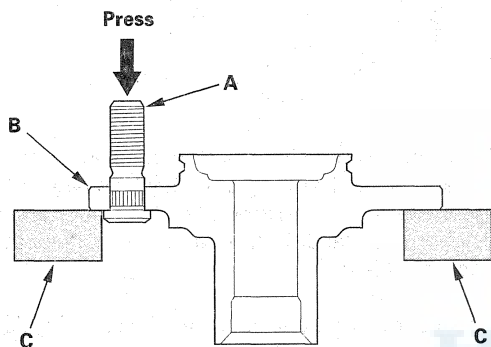
Wheel Bolt Replacement

NOTICE

- Do not use a hammer or air or electric impact tools to remove and install the wheel bolts.
- Be careful not to damage the threads of the wheel bolts.

1. Remove the front or rear hub: front (see page 18-12), rear (see page 18-27).
2. Separate the wheel bolt (A) from the hub (B) using a hydraulic press. Support the hub with hydraulic press attachments (C) or equivalent tools.

NOTE: Before installing the new wheel bolt, clean the mating surfaces on the bolt and the hub.



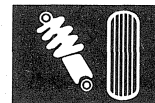
3. Insert the new wheel bolt into the hub while aligning the splined surfaces on the hub hole with the wheel bolt.

NOTE:

- Degrease all around the wheel bolt.
- Make sure the wheel bolt is installed vertically in relation to the hub disc surface.

4. Install the wheel bolt using a hydraulic press until the wheel bolt shoulder is fully seated.
5. Install the front or rear hub: front (see page 18-12), rear (see page 18-27).

NOTE: If you can not tighten the wheel nut to the specified torque value when installing the wheel, replace the front or rear hub as an assembly.



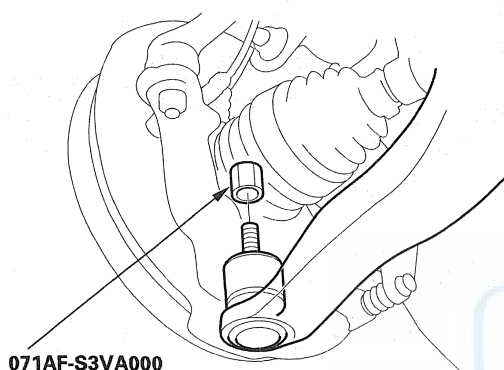
Ball Joint Removal

Special Tools Required

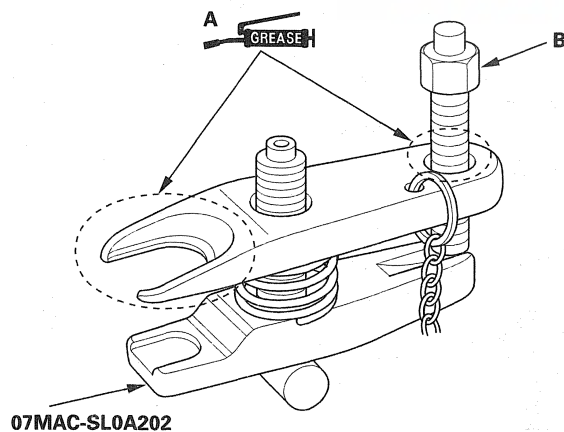
- Ball joint striker tool 071AD-S3VA000
- Ball joint thread protector, 14 mm 071AF-S3VA000
- Ball joint remover, 28 mm 07MAC-SL0A202

NOTE: The front lower arm ball joint is not replaceable separately. If the ball joint is worn or damaged, replace the lower arm and ball joint as an assembly.

1. Screw the ball joint thread protector all the way onto the ball joint stud.

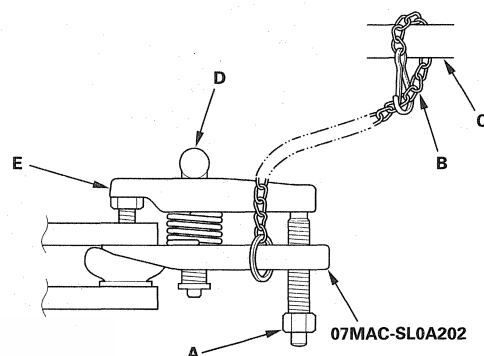


2. Apply grease to the ball joint remover on the areas shown (A). This will ease installation of the tool and prevent damage to the pressure bolt (B) threads.



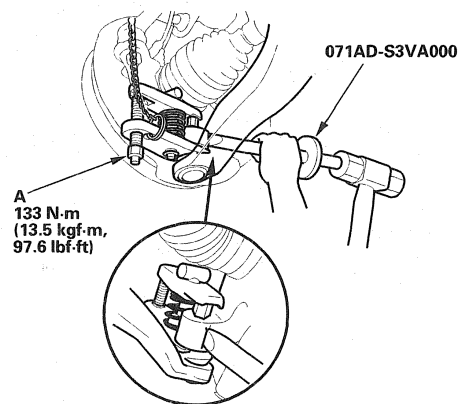
3. Install the ball joint remover as shown. Insert the jaws carefully, making sure not to damage the ball joint boot. Adjust the jaw spacing by turning the pressure bolt (A).

NOTE: Fasten the safety chain (B) securely to a suspension arm or the subframe (C). Do not fasten it to a brake line or wire harness.



4. After adjusting the adjusting bolt, make sure the head of the adjusting bolt (D) is in the position shown to allow the jaw (E) to pivot.
5. Tighten the pressure bolt (A) to 133 N·m (13.5 kgf·m, 97.6 lbf·ft). If the ball joint does not pop loose, strike the side of the knuckle with a hammer and the ball joint remover to dislodge the ball joint.

NOTE: Do not use pneumatic or electric tools on the pressure bolt.

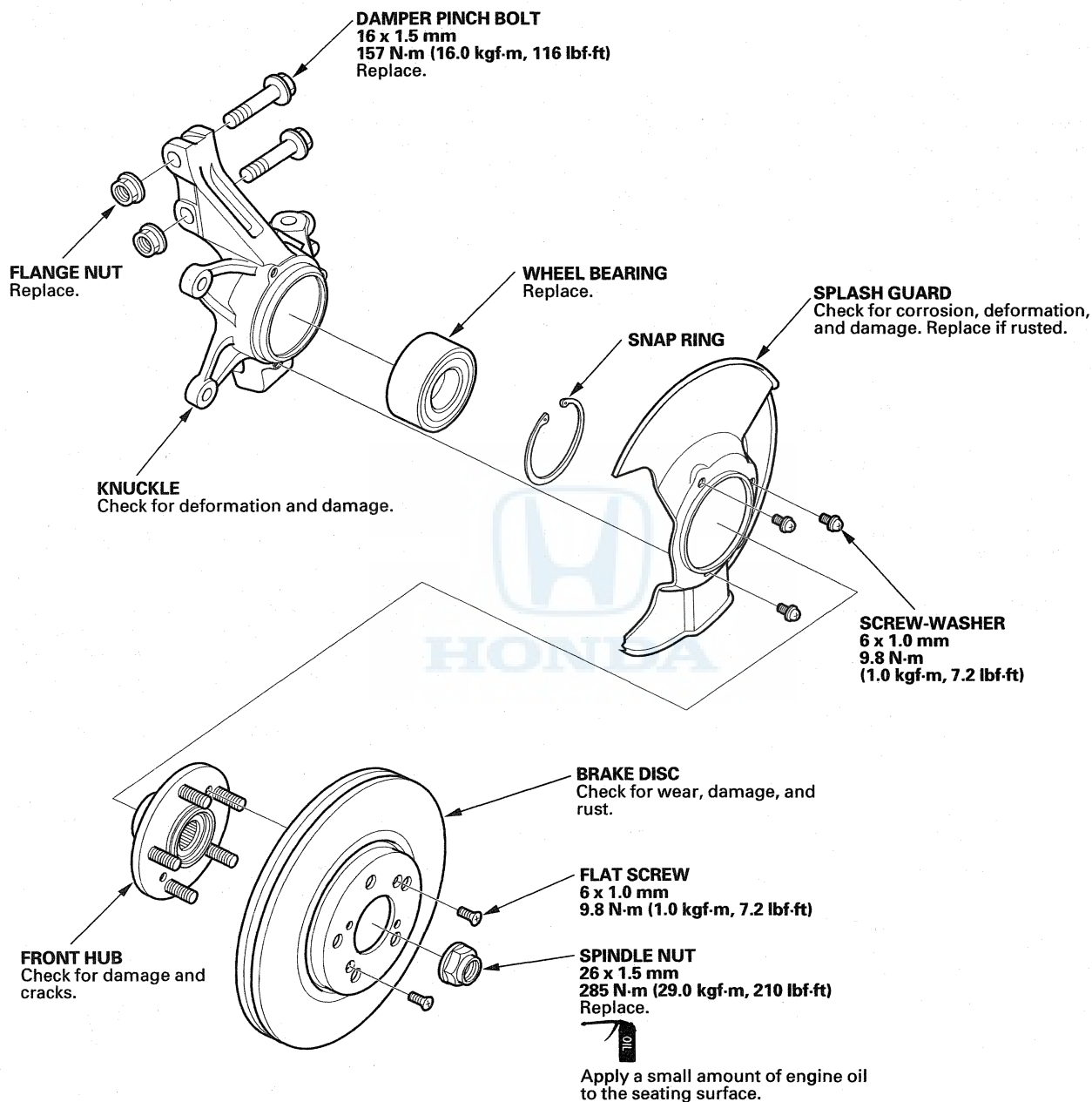


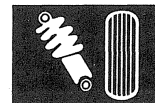
6. Remove the ball joint remover. Then remove the thread protector from the end of the ball joint, and pull the ball joint out of the steering/suspension arm. Inspect the ball joint boot, and replace it if damaged.

Front Suspension

Knuckle/Hub/Wheel Bearing Replacement

Exploded View



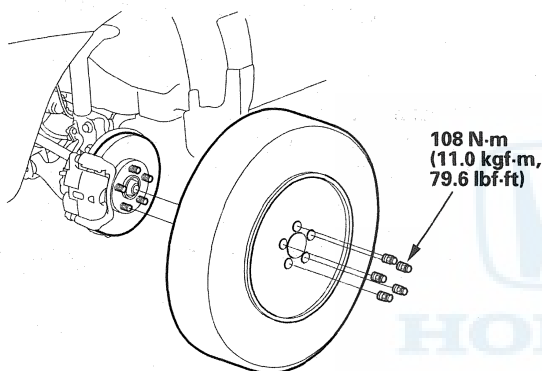


Special Tools Required

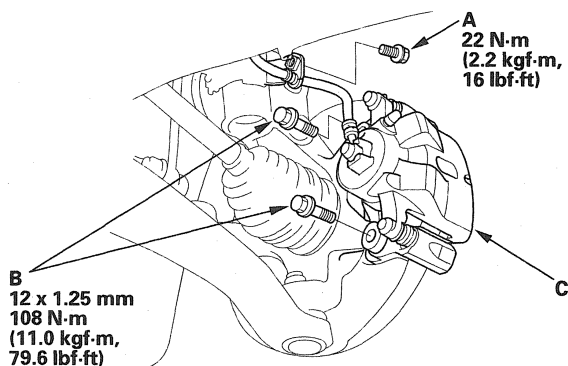
- Ball joint thread protector, 14 mm 071AF-S3VA000
- Ball joint remover, 28 mm 07MAC-SL0A202
- Hub dis/assembly tool, 40 mm 07GAF-SE00100
- Attachment, 62 x 68 mm 07746-0010500
- Driver 07749-0010000
- Support base 07965-SD90100
- Attachment, 96 mm 07948-SB00101 or 07ZAD-PNA0100
- Attachment, 80 mm 07VAD-P8A010A

1. Raise the front of the vehicle, and support it with safety stands in the proper locations (see page 1-13).

2. Remove the wheel nuts and front wheel.



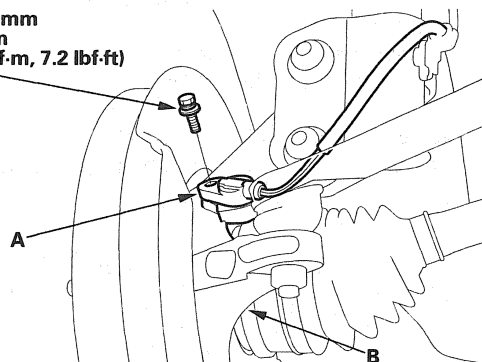
3. Remove the brake hose mounting bolt (A).



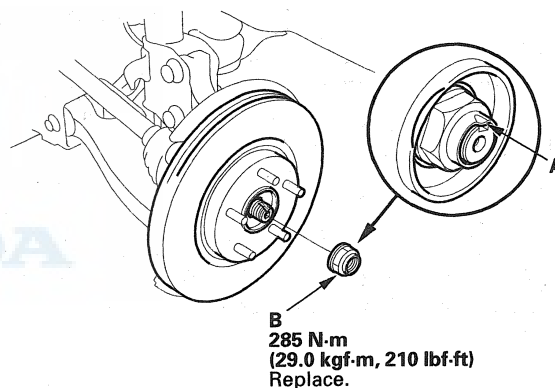
4. Remove the brake caliper mounting bolts (B), then remove the caliper assembly (C) from the knuckle. To prevent damage to the caliper assembly or brake hose, use a short piece of wire to hang the caliper assembly from the undercarriage. Do not twist the brake hose with force.

5. Remove the wheel sensor (A) from the knuckle (B). Do not disconnect the wheel sensor connector.

6 x 1.0 mm
9.8 N-m
(1.0 kgf-m, 7.2 lbf-ft)



6. Raise the stake (A) of the spindle nut (B), then remove and discard the nut.



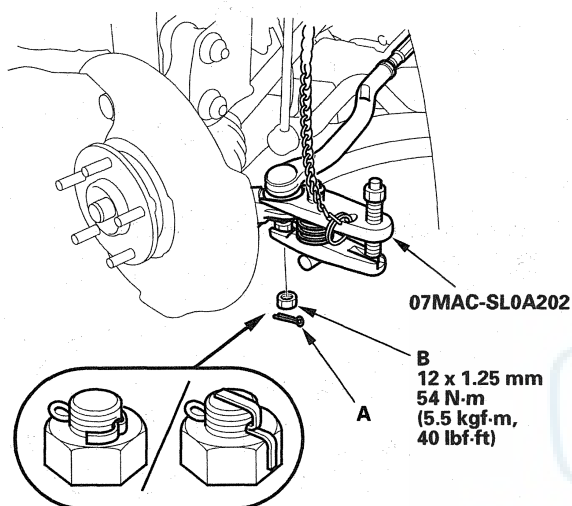
(cont'd)

Front Suspension

Knuckle/Hub/Wheel Bearing Replacement (cont'd)

7. Remove the brake disc (see page 19-14).
8. Check the front hub for damage and cracks.
9. Remove the cotter pin (A) from the tie-rod end ball joint, then loosen the nut (B).

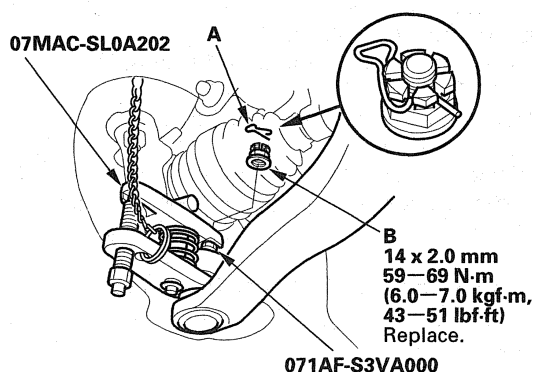
NOTE: During installation, install the new cotter pin after tightening the nut, and bend its end as shown.



10. Disconnect the tie-rod ball joint from the knuckle using the ball joint remover (see page 18-11).

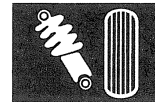
11. Remove the lock pin (A) from the lower arm ball joint, then remove the castle nut (B).

NOTE: During installation, install the lock pin after tightening the new castle nut.



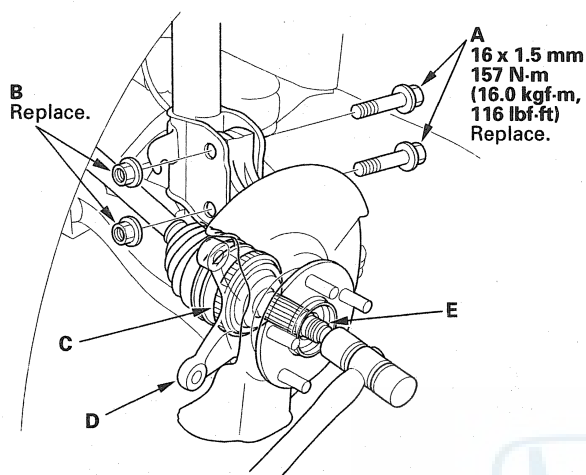
12. Disconnect the lower arm ball joint from the knuckle using the ball joint thread protector, and the ball joint remover (see page 18-11).

NOTE: Do not force or hammer on the lower arm, or pry between the lower arm and the knuckle. You could damage the ball joint.



13. Remove the damper pinch bolts (A) and flange nuts (B) from the damper.

NOTE: During installation, install the new damper pinch bolts and new flange nuts.

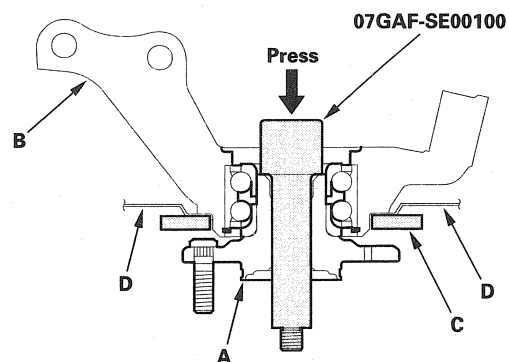


14. Remove the driveshaft outboard joint (C) from the knuckle (D) by tapping the driveshaft end (E) with a plastic hammer, then remove the knuckle.

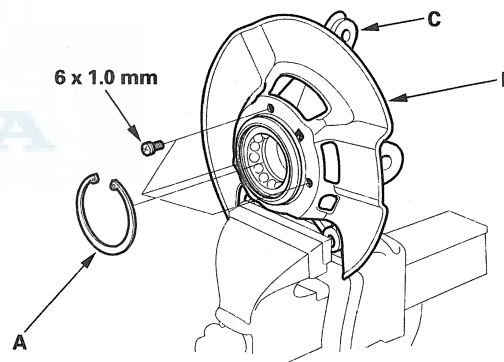
NOTE:

- Do not pull the driveshaft end outward. The driveshaft inboard joint may come apart.
- During installation, apply grease to the mating surfaces of the wheel bearing and driveshaft outboard joint (see step 1 on page 16-18).

15. Separate the hub (A) from the knuckle (B) using the hub dis/assembly tool and a hydraulic press. Hold the knuckle with the attachment (C) of the hydraulic press or equivalent tool. Be careful not to deform the splash guard (D). Hold onto the hub to keep it from falling when pressed clear.



16. Remove the snap ring (A) and the splash guard (B) from the knuckle (C).

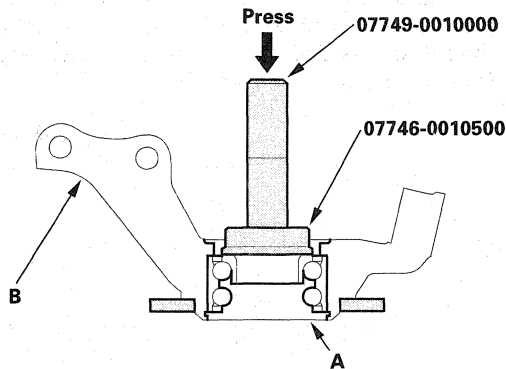


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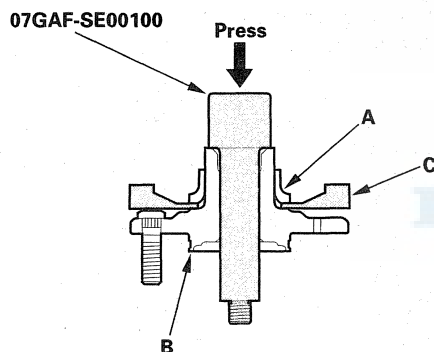
Front Suspension

Knuckle/Hub/Wheel Bearing Replacement (cont'd)

17. Press the wheel bearing (A) out of the knuckle (B) using the attachment, the driver, and a press.

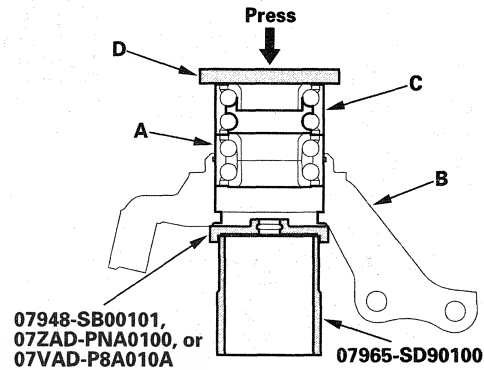


18. Press the wheel bearing inner race (A) from the hub (B) using the hub dis/assembly tool, commercially available bearing separator (C), and a press.

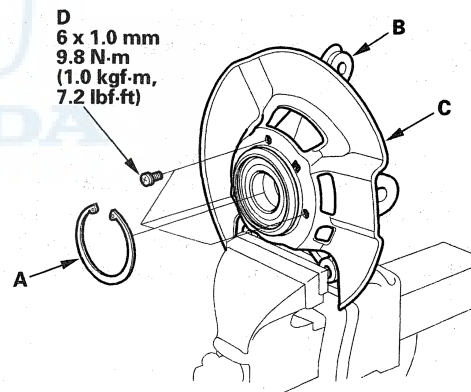


19. Wash the knuckle and hub thoroughly in high flash point solvent before reassembly.

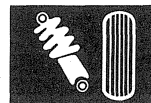
20. Press a new wheel bearing (A) into the knuckle (B) using the old bearing (C), a steel plate (D), the attachment, the support base, and a press. Be careful not to damage the sleeve of the pack seal.



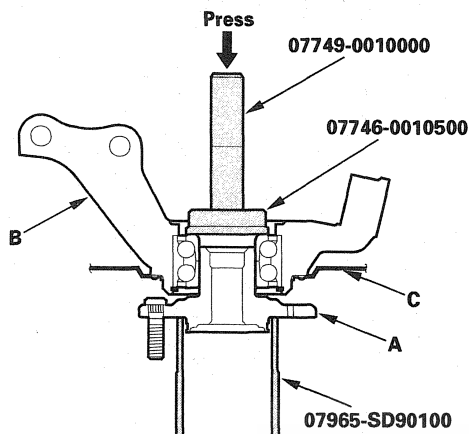
21. Install the snap ring (A) securely in the knuckle (B).



22. Install the splash guard (C), and tighten the screws (D) to the specified torque value.



23. Install the hub (A) onto the knuckle (B) using the attachment, the driver, the support base, and a hydraulic press. Be careful not to deform the splash guard (C).



24. Install the knuckle in the reverse order of removal, and note these items:

- First install all the components, and lightly tighten the bolts and nuts, then raise the suspension to load it with the vehicle's weight before fully tightening to the specified torque values. Do not place the jack against the ball joint pin of the knuckle.
- Be careful not to damage the ball joint boots when installing the knuckle.
- Before connecting the lower ball joint to the knuckle, degrease the threaded section and tapered portion of the ball joint pin, the ball joint connecting hole, the threaded section, and mating surfaces of the castle nut.
- Torque the castle nut to the lower torque specification, then tighten it only far enough to align the slot with the ball joint pin hole. Do not align the castle nut by loosening it.
- Use a new spindle nut on reassembly.
- Before installing the spindle nut, apply a small amount of engine oil to the seating surface of the nut. After tightening, use a drift to stake the spindle nut shoulder against the driveshaft.
- Before installing the brake disc, clean the mating surfaces of the front hub and the inside of the brake disc.
- Before installing the wheel, clean the mating surfaces of the brake disc and the inside of the wheel.
- Check the front wheel alignment, and adjust it if necessary (see page 18-5).

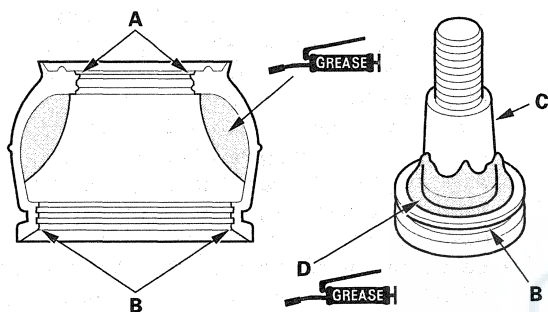
Front Suspension

Ball Joint Boot Replacement

Special Tools Required

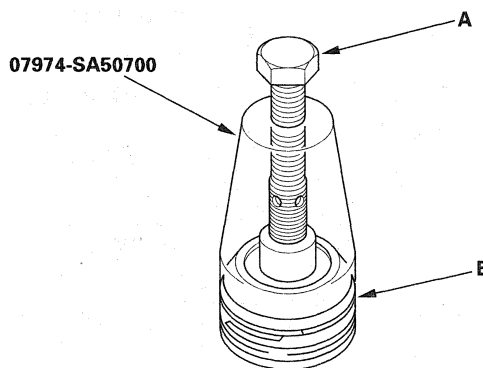
Ball joint boot clip guide 07974-SA50700

1. Remove the lower arm (see page 18-21).
2. Remove the boot clip and the boot.
3. Pack the interior and lip (A) of a new boot with grease. Do not contaminate the lower collar of the boot (B) with grease.

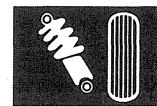


4. Wipe the grease off the tapered section (C) of the pin, and pack fresh grease into the base (D). Do not let dirt or other foreign materials get into the boot.
5. Install the boot onto the ball joint, then squeeze it gently to force out any air.

6. Adjust the ball joint boot clip guide with the adjusting bolt (A) until its base is just above the groove around the bottom of the boot. Then slide the clip (B) over the ball joint boot clip guide and into position on the boot.

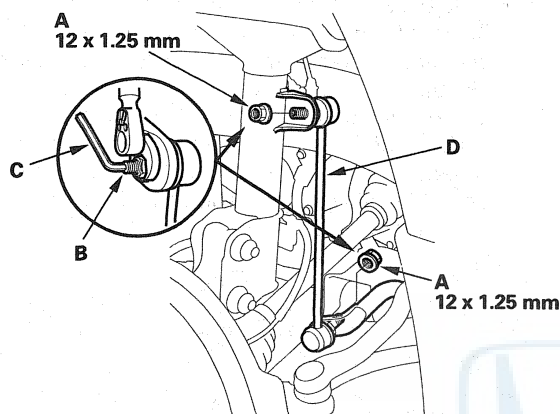


7. After installing a boot, wipe any grease off the exposed portion of the ball joint pin.
8. Install the lower arm (see page 18-21).

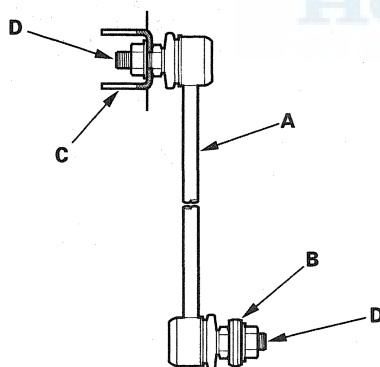


Stabilizer Link Removal/Installation

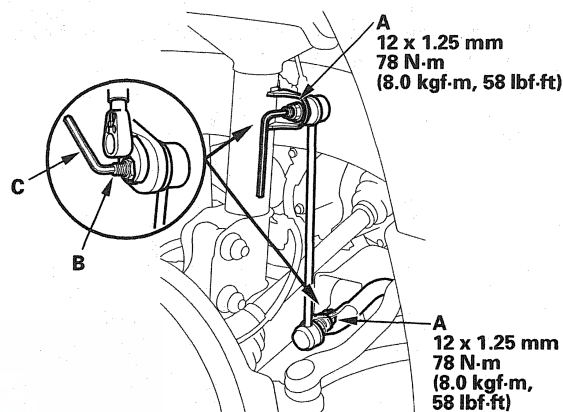
1. Raise the front of the vehicle, and support it with safety stands in the proper locations (see page 1-13).
2. Remove the front wheel.
3. Remove the flange nuts (A) while holding the respective joint pin (B) with a hex wrench (C), and remove the stabilizer link (D).



4. Install the stabilizer link (A) on the stabilizer bar (B) and damper (C) with the joint pins (D) set at the center of each moving range.



5. Install the flange nuts, and lightly tighten them.
6. Place a jack under the lower arm, and raise the suspension to load it with the vehicle's weight.
7. Tighten the flange nuts (A) to the specified torque values while holding the respective joint pin (B) with a hex wrench (C).

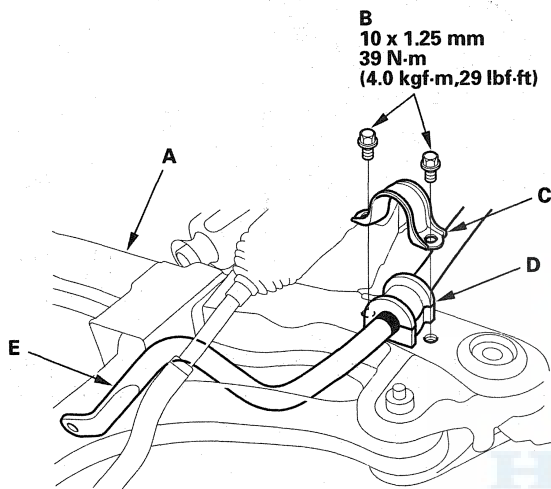


8. Clean the mating surfaces of the brake disc and the inside of the wheel, then install the front wheel.

Front Suspension

Stabilizer Bar Replacement

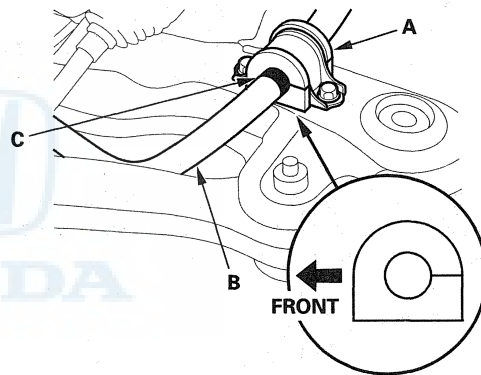
1. Raise the front of the vehicle, and support it with safety stands in the proper locations (see page 1-13).
2. Remove the front wheels.
3. Disconnect the stabilizer links from the stabilizer bar on the right and left sides (see page 18-19).
4. Remove the front suspension subframe (A) from the body (see page 20-173).

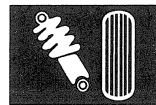


5. Remove the flange bolts (B) and the bushing holders (C), then remove the bushings (D) and the stabilizer bar (E).

6. Install the stabilizer bar in the reverse order of removal, and note these items:

- Note the right and left direction of the stabilizer bar.
- Do not set the bushing (A) on the bent or curved part of the stabilizer bar (B).
- Align the ends of the paint marks (C) on the stabilizer bar with each end of the bushings.
- Note the front to rear direction of the bushings.
- Refer to Stabilizer Link Removal/Installation to connect the stabilizer bar to the links (see page 18-19).
- Before installing the wheel, clean the mating surfaces of the brake disc and the inside of the wheel.
- Check the wheel alignment, and adjust it if necessary (see page 18-5).





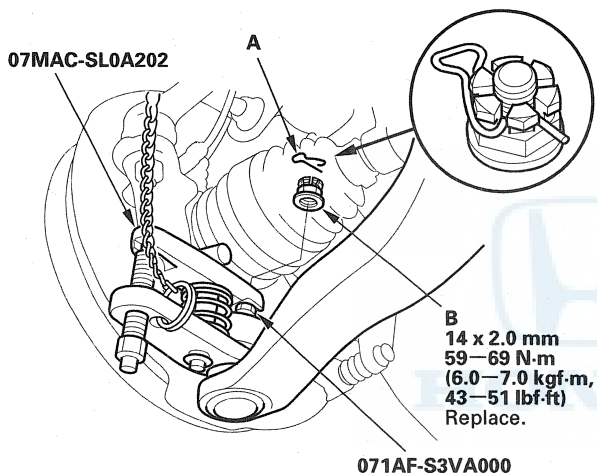
Lower Arm Removal/Installation

Special Tools Required

- Ball joint thread protector, 14 mm 071AF-S3VA000
- Ball joint remover, 28 mm 07MAC-SL0A202

1. Raise the front of vehicle, and support it with safety stands in the proper locations (see page 1-13).
2. Remove the front wheel.
3. Remove the lock pin (A) from the lower arm ball joint, then remove the castle nut (B).

NOTE: During installation, install the lock pin after tightening the new castle nut.



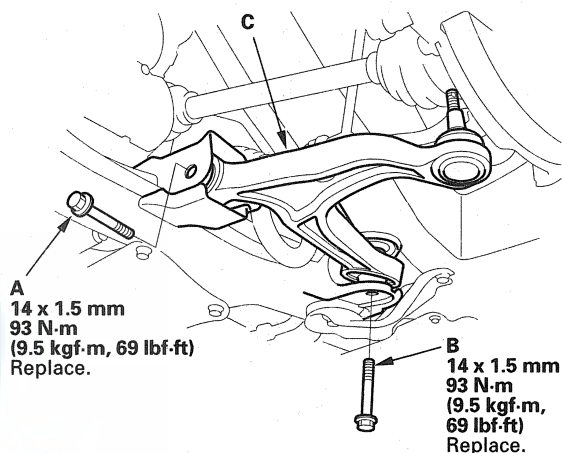
4. Disconnect the lower arm ball joint from the knuckle using the ball joint thread protector, and the ball joint remover (see page 18-11).

NOTE: Do not force or hammer on the lower arm, or pry between the lower arm and the knuckle. You could damage the ball joint.

5. Remove the lower arm.

- 1 Remove the forward lower arm mounting bolt (A).
- 2 Remove the rearward lower arm mounting bolt (B).
- 3 Remove the lower arm (C) from the front suspension subframe.

NOTE: During installation, install the new mounting bolts.



6. Install the lower arm in the reverse order of removal, and note these items:

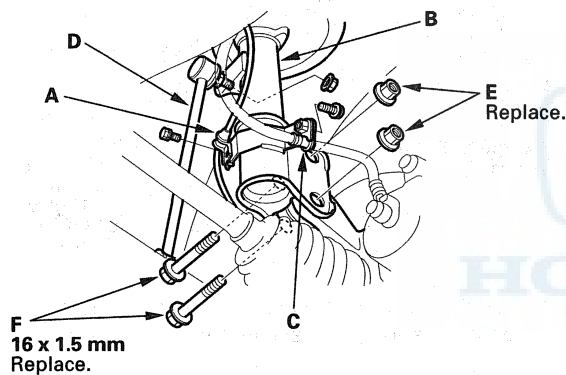
- First install all the components, and lightly tighten the bolts and nuts, then raise the suspension to load it with the vehicle's weight before fully tightening to the specified torque values.
- Be careful not to damage the ball joint boot when connecting the lower arm to the knuckle.
- Before connecting the lower ball joint to the knuckle, degrease the threaded section and tapered portion of the ball joint pin, the ball joint connecting hole, the threaded section, and mating surfaces of the castle nut.
- Torque the castle nut to the lower torque specification, then tighten it only far enough to align the slot with the ball joint pin hole. Do not align the castle nut by loosening it.
- Before installing the wheel, clean the mating surfaces of the brake disc and the inside of the wheel.
- Check the front wheel alignment, and adjust it if necessary (see page 18-5).

Front Suspension

Damper/Spring Removal and Installation

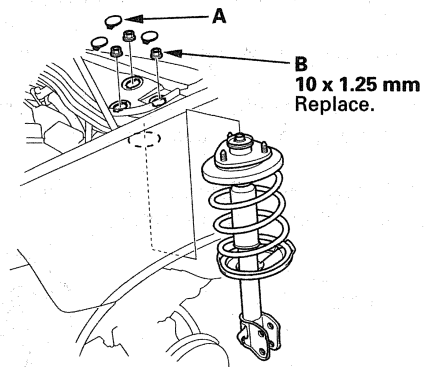
Removal

1. Raise the vehicle, and support it with safety stands in the proper locations (see page 1-13).
2. Remove the front wheel.
3. Remove the damper.
 - 1 Remove the wheel sensor harness (A) from the damper (B). Do not disconnect the wheel sensor connector.
 - 2 Remove the brake hose bracket (C) from the damper.
 - 3 Disconnect the stab ilizer link (D) from the damper.
 - 4 Remove the flange nuts (E) and damper pinch bolts (F) from the damper.



4. Remove the service caps (A), and remove the damper by removing the three flange nuts (B).

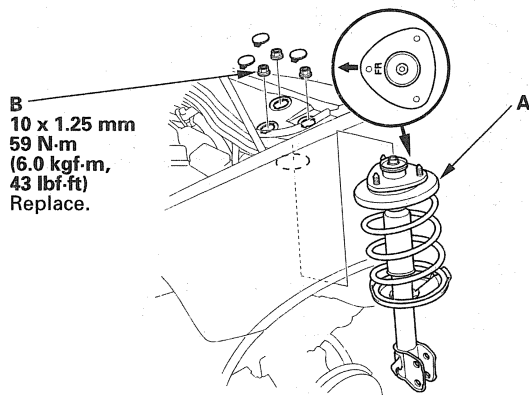
NOTE: Damper springs are different, left and right. Mark the springs L and R before you continue.





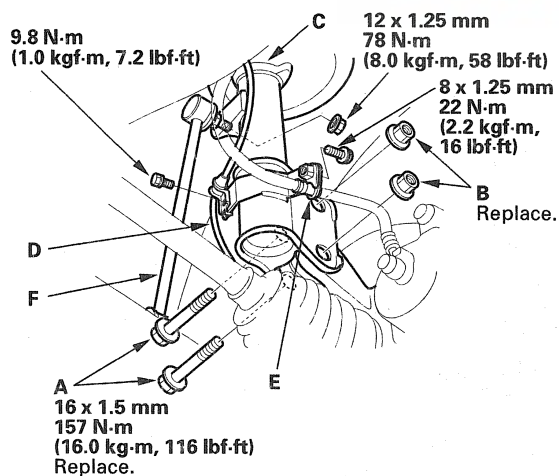
Installation

1. Loosely install the damper (A) onto the frame, then loosely install three new flange nuts (B).



2. Install the damper onto the knuckle.

- 1 Loosely install the new damper pinch bolts (A) and new flange nuts (B) to the damper (C).
- 2 Install the wheel sensor harness (D) to the damper.
- 3 Install the brake hose bracket (E) to the damper.
- 4 Loosely install the stabilizer link (F) to the damper.

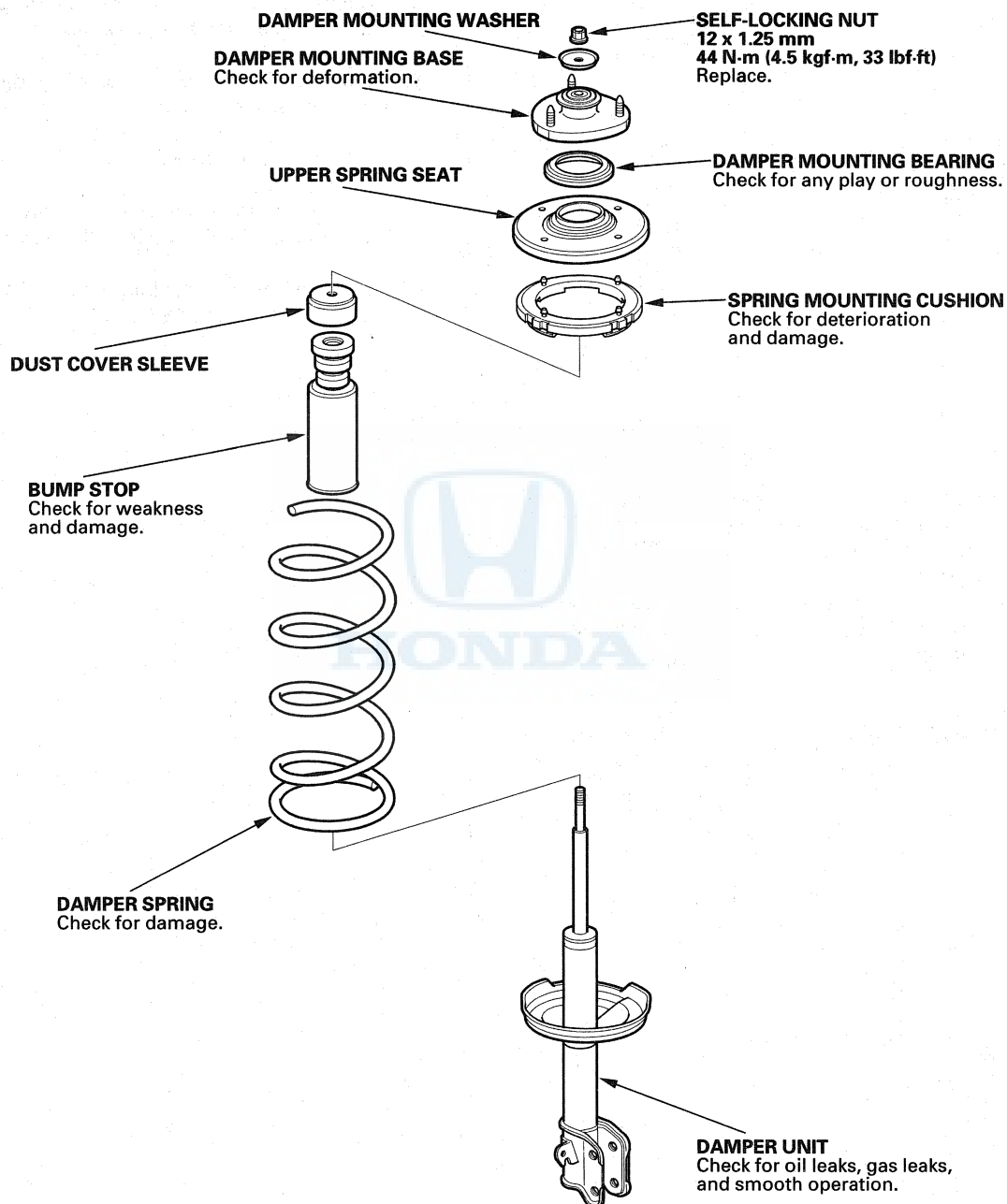


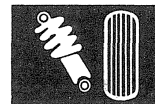
3. Raise the front suspension with a floor jack to load the suspension with the vehicle's weight.
4. Tighten the damper pinch bolts holding the flange nut to the specified torque value.
5. Tighten the flange nuts on top of the damper to the specified torque value.
6. Install the service caps.
7. Clean the mating surfaces of the brake disc and the inside of the wheel, then install the front wheel.
8. Check the front wheel alignment, and adjust it if necessary (see page 18-5).

Front Suspension

Damper/Spring Disassembly, Inspection, and Reassembly

Exploded View

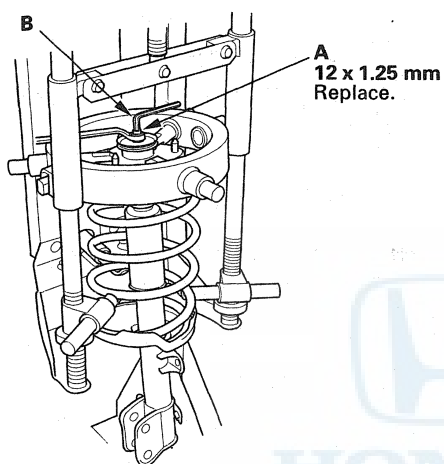




NOTE: When compressing the damper spring, use a commercially available strut spring compressor (Branick MST-580A or Model 7200, or equivalent) according to the manufacturer's instructions.

Disassembly

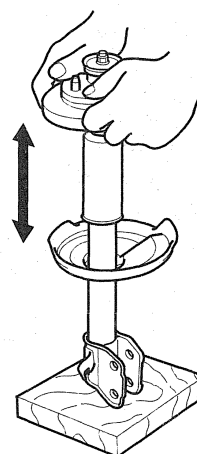
1. Compress the damper spring, then remove the self-locking nut (A) while holding the damper shaft with a hex wrench (B). Do not compress the spring more than necessary to remove the nut.



2. Release the pressure from the strut spring compressor, then disassemble the damper as shown in the Exploded View.

Inspection

1. Reassemble all parts, except for the spring.
2. Compress the damper assembly by hand, and check for smooth operation through a full stroke, both compression and extension. The damper should extend in a smooth, continuous motion when the compression is released. If it does not (no compression or no extension), the gas is leaking, and the damper should be replaced.



3. Check for oil leaks, abnormal noises, or binding during these tests.

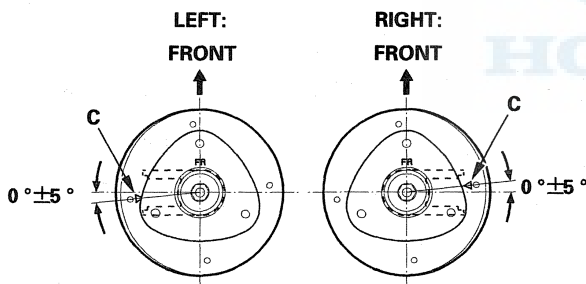
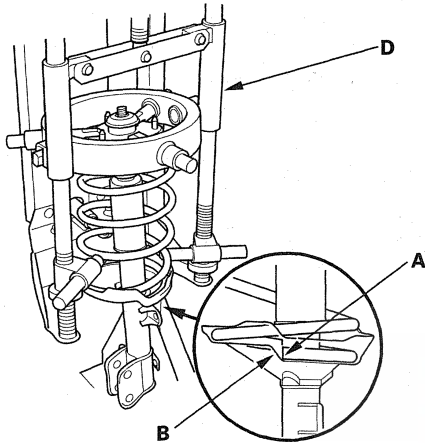
(cont'd)

Front Suspension

Damper/Spring Disassembly, Inspection, and Reassembly (cont'd)

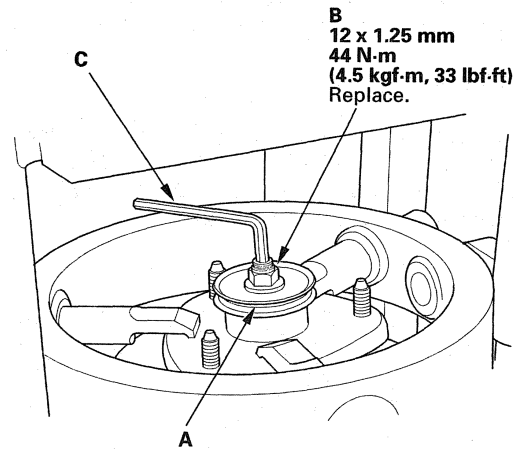
Reassembly

1. Install all the parts except the damper mounting washer and self-locking nut onto the damper unit by referring to the Exploded View. Align the bottom of the spring (A) and the stepped part of the lower spring seat (B).



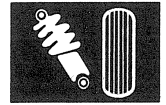
2. Align the mark (C) on the upper spring seat with the spring mounting cushion as shown. Install the damper assembly using a commercially available strut spring compressor (D).
3. Compress the damper spring with the spring compressor. Do not compress the spring excessively.

4. Install the damper mounting washer (A) and a new self-locking nut (B).



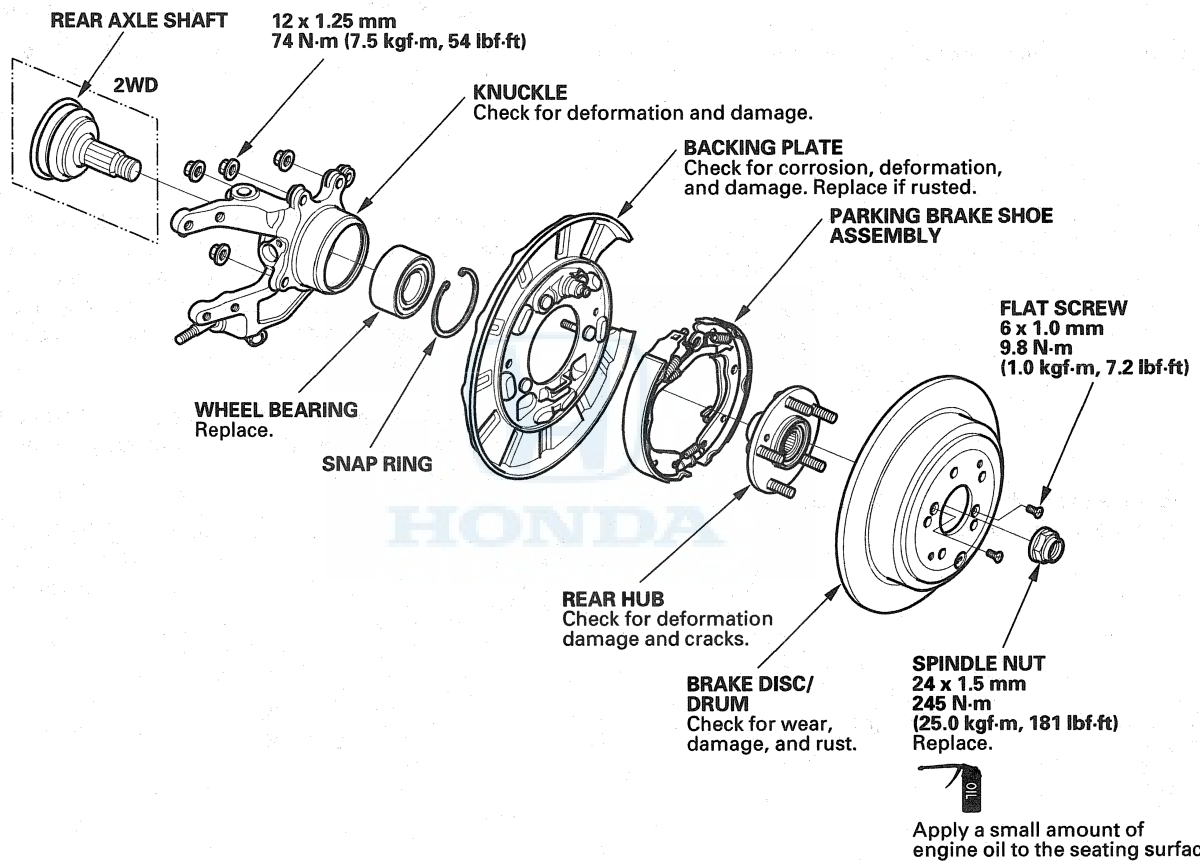
5. Hold the damper rod using a hex wrench (C), and tighten the self-locking nut.

Rear Suspension



Knuckle/Hub/Wheel Bearing Replacement

Exploded View



(cont'd)

Rear Suspension

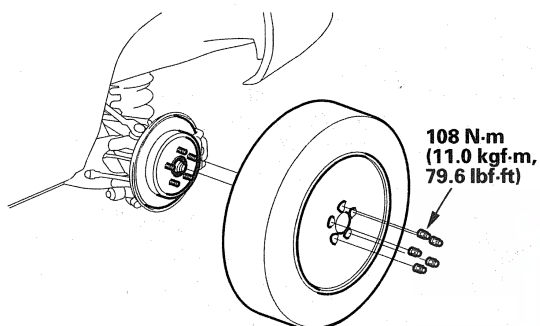
Knuckle/Hub/Wheel Bearing Replacement (cont'd)

Special Tools Required

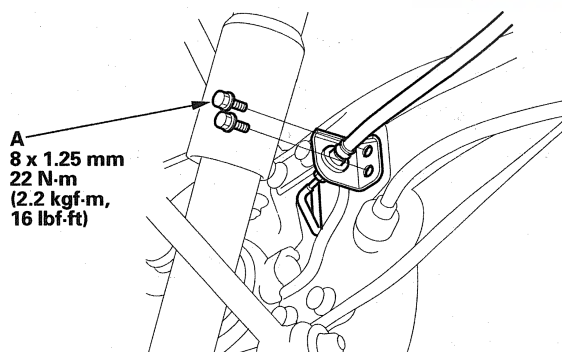
- Ball joint remover, 28 mm 07MAC-SL0A202
- Hub dis/assembly tool, 42 mm 07GAF-SD40100
- Attachment, 62 x 68 mm 07746-0010500
- Driver 07749-0010000
- Support base 07965-SD90100

1. Raise the rear of the vehicle, and support it with safety stands in the proper locations (see page 1-13).

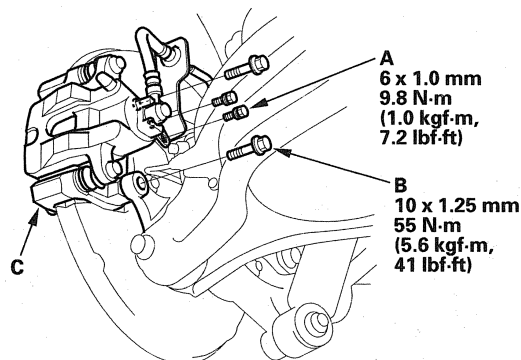
2. Remove the wheel nuts and rear wheel.



3. Remove the brake hose bracket mounting bolts (A) from the trailing arm.

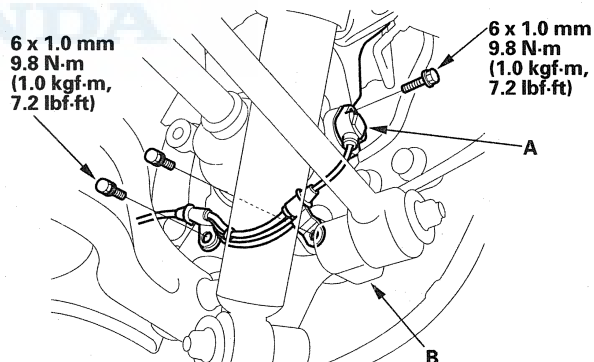


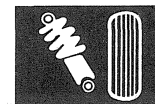
4. Remove the brake hose bracket mounting bolts (A) from the knuckle.



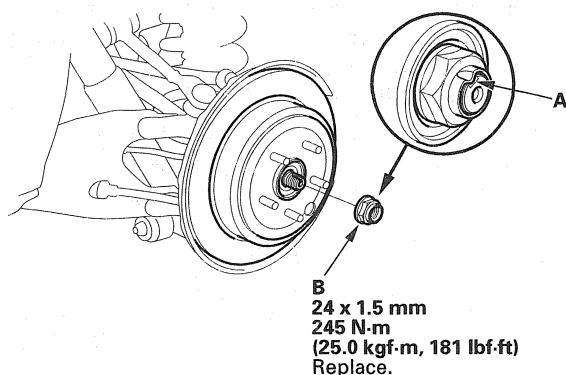
5. Remove the brake caliper mounting bolts (B), then remove the caliper assembly (C) from the knuckle. To prevent damage to the caliper assembly or brake hose, use a short piece of wire to hang the caliper assembly from the undercarriage. Do not twist the brake hose excessively.

6. Remove the wheel sensor (A) and sensor harness from the knuckle (B). Do not disconnect the wheel sensor connector.





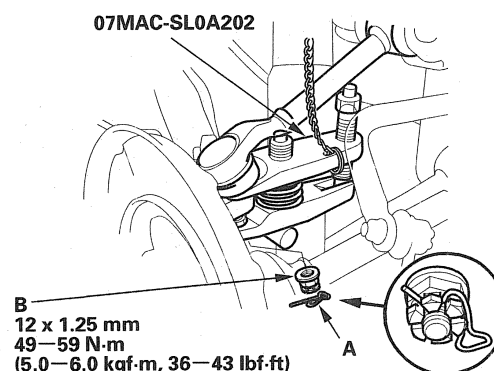
7. Raise the stake (A) of the spindle nut (B), then remove and discard the nut.



8. For 2WD: Remove the rear axle shaft from the knuckle.
9. Release the parking brake, and remove the brake disc/drum from the rear hub (see page 19-22).
10. Check the rear hub for damage and cracks.
11. Remove the parking brake shoes (see page 19-26), and parking brake cable (see page 19-33).

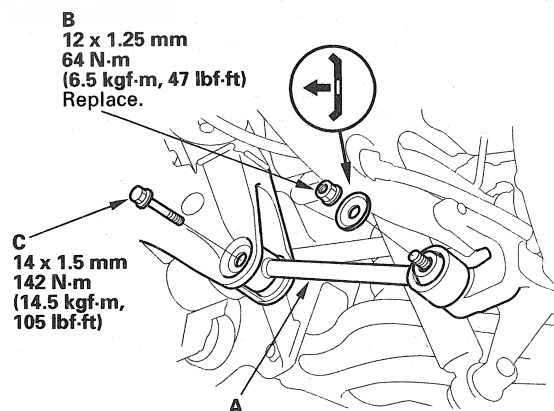
12. Remove the lock pin (A) from the upper arm ball joint, then remove the castle nut (B).

NOTE: During installation, install the lock pin after tightening the nut.



13. Disconnect the upper arm ball joint from the knuckle using the ball joint remover (see page 18-11).
14. Remove the self-locking nut (B), washer, and flange bolt (C), then remove the lower arm A.

NOTE: During installation, install a new self-locking nut.



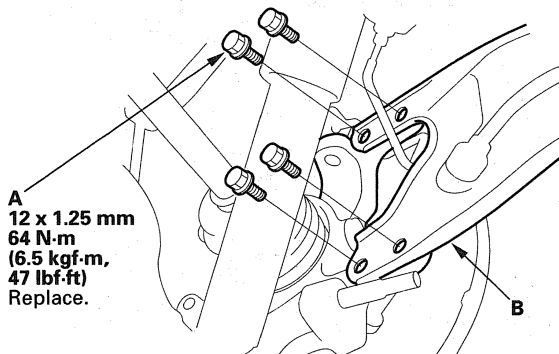
(cont'd)

Rear Suspension

Knuckle/Hub/Wheel Bearing Replacement (cont'd)

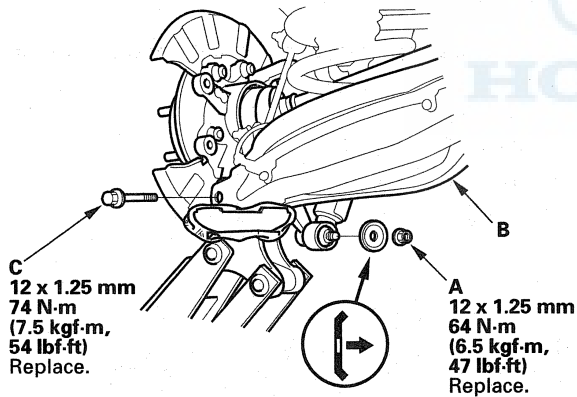
15. Remove the flange bolts (A), and separate the knuckle from the trailing arm (B).

NOTE: During installation, install the new flange bolts.



16. Place a floor jack under lower arm B. Remove the self-locking nut (A), washer, and flange bolt (C).

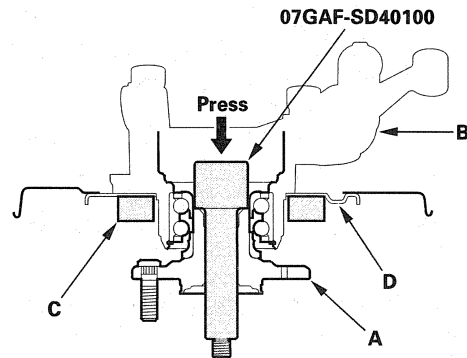
NOTE: During installation, install new flange bolt, and new self-locking nut.



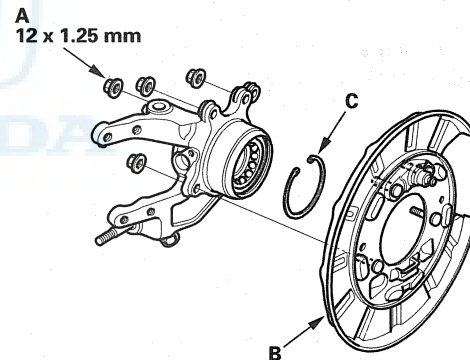
17. For 4WD: Remove the knuckle while pushing in the driveshaft and holding the driveshaft outboard joint.

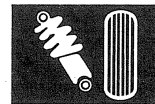
NOTE: Do not pull the driveshaft end outward. The driveshaft inboard joint may come apart.

18. Separate the hub (A) from the knuckle (B) using the hub dis/assembly tool and a hydraulic press. Hold the knuckle with the attachment (C) of the hydraulic press or equivalent tool. Be careful not to deform the backing plate (D). Hold onto the hub to keep it from falling when pressed clear.

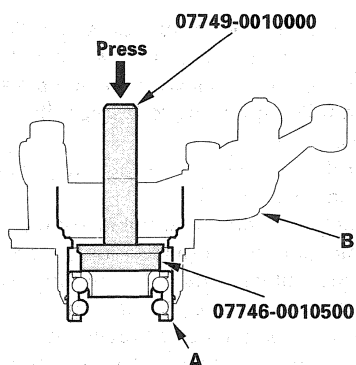


19. Remove the flange nuts (A), backing plate (B), and snap ring (C).

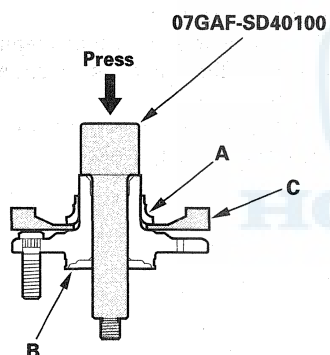




20. Press the wheel bearing (A) out of the knuckle (B) using the attachment, the driver and a press.

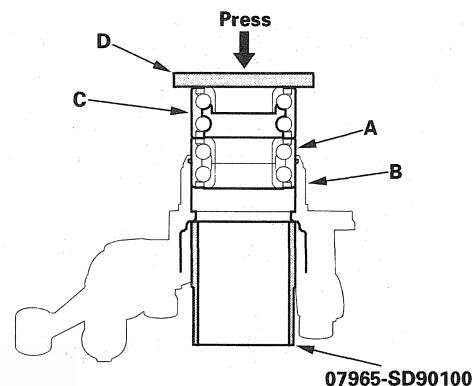


21. Press the wheel bearing inner race (A) from the hub (B) using the hub dis/assembly tool, commercially available bearing separator (C), and a press.

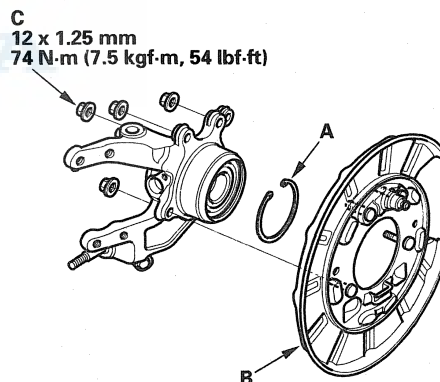


22. Wash the knuckle and hub thoroughly in high flash point solvent before reassembly.

23. Press a new wheel bearing (A) into the knuckle (B) using the old bearing (C), a steel plate (D), the support base, and a press. Be careful not to damage the sleeve of the pack seal.



24. Install the snap ring (A), backing plate (B), and flange nuts (C). Tighten the flange nuts to the specified torque.

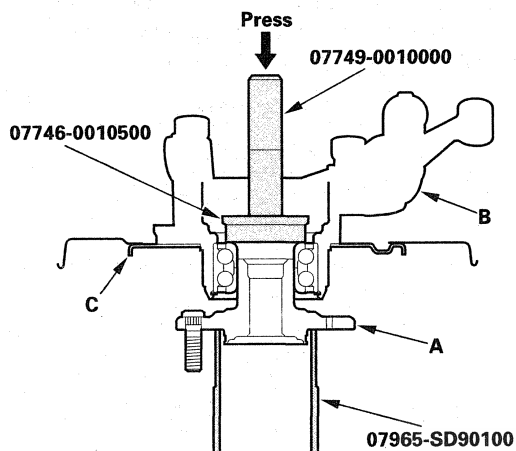


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Rear Suspension

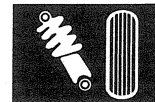
Knuckle/Hub/Wheel Bearing Replacement (cont'd)

25. Install the hub (A) on the knuckle (B) using the attachment, the driver, the support base, and a hydraulic press. Be careful not to deform the backing plate (C).



26. Install the knuckle in the reverse order of removal, and note these items:

- First install all the components, and lightly tighten the bolts and nuts, then raise the suspension to load it with the vehicle's weight before fully tightening to the specified torque values.
- Be careful not to damage the ball joint boot when installing the knuckle.
- Torque the castle nut to the lower torque specification, then tighten it only far enough to align the slot with the ball joint pin hole. Do not align the castle nut by loosening it.
- Use a new spindle nut on reassembly.
- Before installing the spindle nut, apply a small amount of engine oil to the seating surface of the nut. After tightening, use a drift to stake the spindle nut shoulder against the driveshaft.
- Before installing the brake disc/drum, clean the mating surfaces of the rear hub and the inside of the brake disc/drum.
- Before installing the wheel, clean the mating surfaces of the brake disc/drum and the inside of the wheel.
- Check the rear wheel alignment, and adjust it if necessary (see page 18-5).

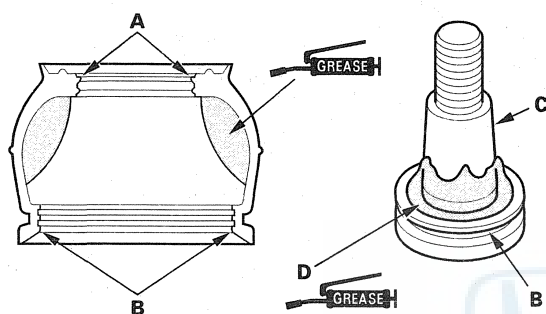


Ball Joint Boot Replacement

Special Tools Required

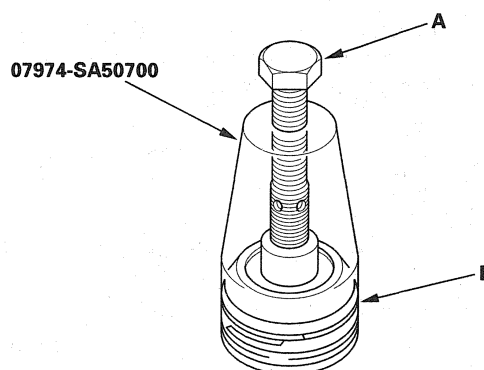
Ball joint boot clip guide 07974-SA50700

1. Remove the upper arm (see page 18-36).
2. Remove the boot clip and the boot.
3. Pack the interior and lip (A) of a new boot with grease. Do not contaminate the lower collar of the boot (B) with grease.



4. Wipe the grease off the tapered section (C) of the pin, and pack fresh grease into the base (D). Do not let dirt or other foreign materials get into the boot.
5. Install the boot onto the ball joint, then squeeze it gently to force out any air.

6. Adjust the ball joint boot clip guide with the adjusting bolt (A) until its base is just above the groove around the bottom of the boot. Then slide the clip (B) over the ball joint boot clip guide and into position on the boot.

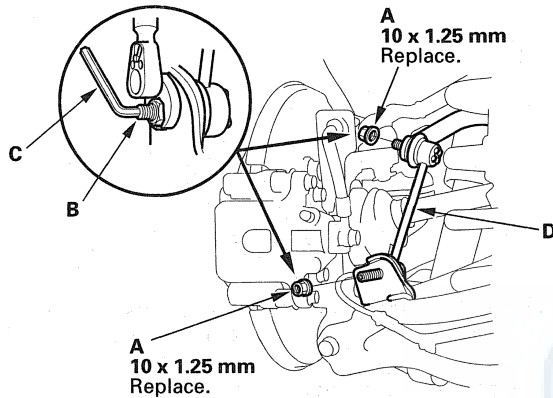


7. After installing a boot, wipe any grease off the exposed portion of the ball joint pin.
8. Install the upper arm (see page 18-36).

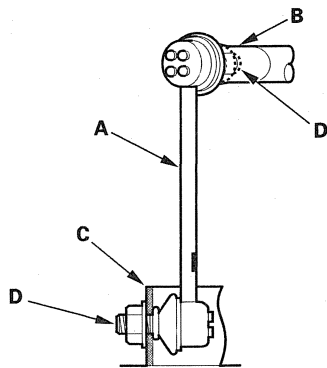
Rear Suspension

Stabilizer Link Removal/Installation

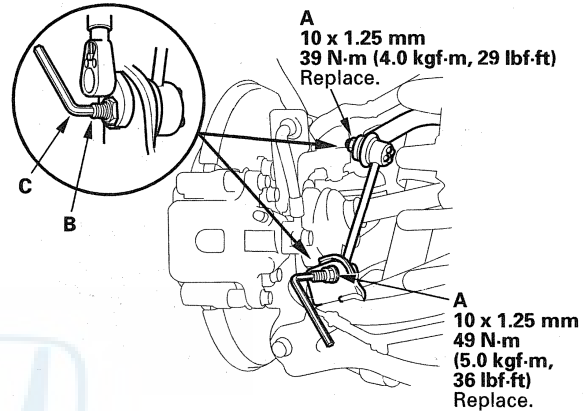
1. Raise the rear of the vehicle, and support it with safety stands in the proper locations (see page 1-13).
2. Remove the rear wheel.
3. Remove the flange nuts (A) while holding the respective joint pin (B) with a hex wrench (C), and remove the stabilizer link (D).



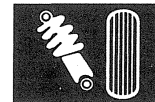
4. Install the stabilizer link (A) on the stabilizer bar (B) and stabilizer link bracket (C) with the joint pins (D) set at the center of each moving range.



5. Install the new flange nuts, and lightly tighten them.
6. Place a jack at the connecting point of lower arm B and the knuckle, and raise the suspension to load it with the vehicle's weight.
7. Tighten the flange nuts (A) to the specified torque values while holding the respective joint pin (B) with a hex wrench (C).

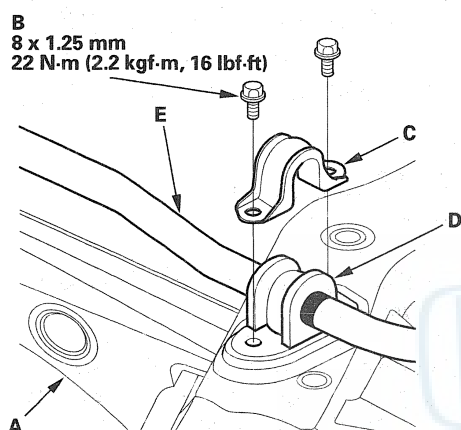


8. Clean the mating surfaces of the brake disc/drum and the inside of the wheel, then install the rear wheel.



Stabilizer Bar Replacement

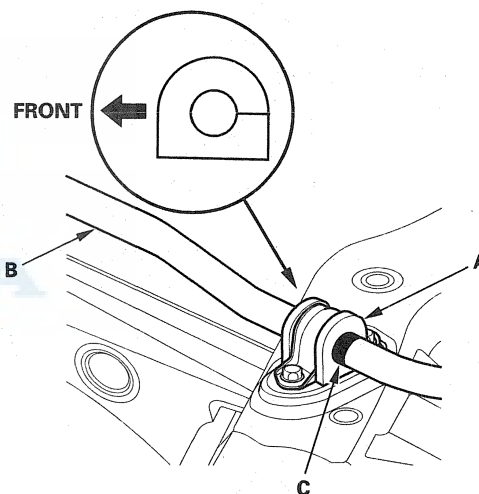
1. Raise the rear of the vehicle, and support it with safety stands in the proper locations (see page 1-13).
2. Remove the rear wheels.
3. Disconnect the stabilizer links from the stabilizer bar on the right and left sides (see page 18-34).
4. Remove the rear suspension subframe (A) from the body (see page 20-174).



5. Remove the flange bolts (B) and the bushing holders (C), then remove the bushings (D) and the stabilizer bar (E).

6. Install the stabilizer bar in the reverse order of removal, and note these items:

- Note the right and left direction of the stabilizer bar.
- Do not set the bushing (A) on the bent or curved part of the stabilizer bar (B).
- Align the ends of the paint marks (C) on the stabilizer bar with each end of the bushings.
- Note the front to rear direction of the bushings.
- Refer to Stabilizer Link Removal/Installation to connect the stabilizer bar to the links (see page 18-34).
- Before installing the wheel, clean the mating surfaces of the brake disc/drum and inside of the wheel.
- Check the wheel alignment, and adjust it if necessary (see page 18-5).



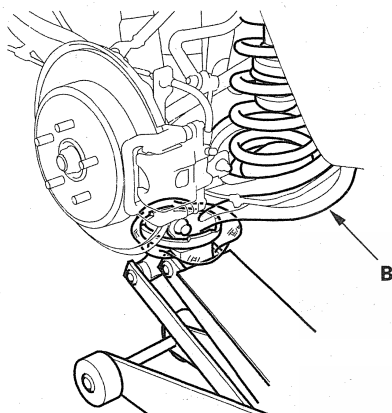
Rear Suspension

Upper Arm Removal/Installation

Special Tools Required

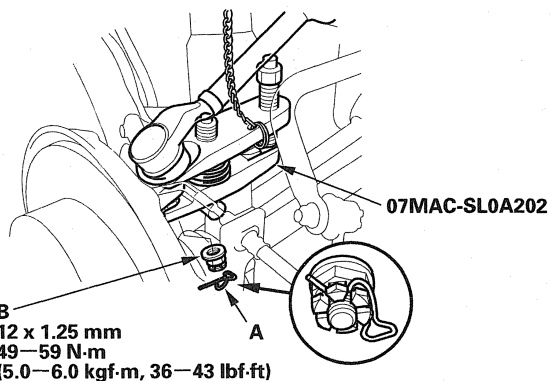
Ball joint remover, 28 mm 07MAC-SL0A202

1. Raise the rear of the vehicle, and support it with safety stands in the proper locations (see page 1-13).
2. Remove the rear wheel.
3. Place a floor jack at the connecting point of lower arm B and the knuckle.



4. Remove the lock pin (A) from the upper arm ball joint, then remove the castle nut (B).

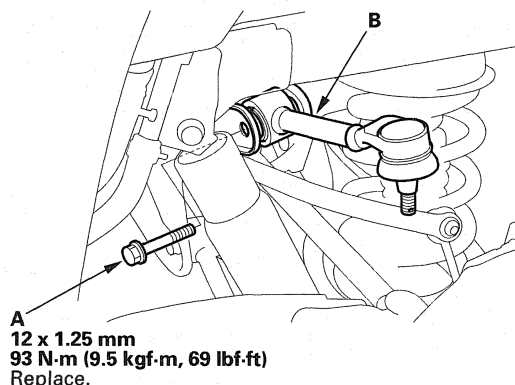
NOTE: During installation, install the lock pin after tightening the nut.



5. Disconnect the upper arm ball joint from the knuckle using the ball joint remover (see page 18-11).

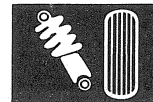
6. Remove the upper arm bolt (A). Remove the upper arm (B) from the vehicle.

NOTE: During installation, install the new mounting bolt.



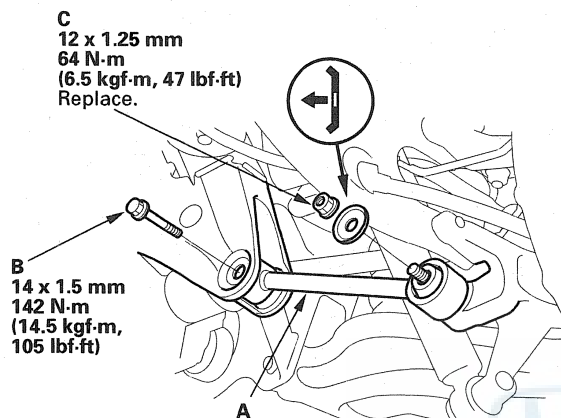
7. Install the upper arm in the reverse order of removal, and note these items:

- First install all the components, and lightly tighten the bolts and nuts, then raise the suspension to load it with the vehicle's weight before fully tightening to the specified torque values.
- Be careful not to damage the ball joint boot when connecting the upper arm to the knuckle.
- Torque the castle nut to the lower torque specification, then tighten it only far enough to align the slot with the ball joint pin hole. Do not align the castle nut by loosening it.
- Before installing the wheel, clean the mating surfaces of the brake disc/drum and the inside of the wheel.
- Check the rear wheel alignment, and adjust it if necessary (see page 18-5).



Lower Arm A Removal/Installation

1. Raise the rear of the vehicle, and support it with safety stands in the proper locations (see page 1-13).
2. Remove the rear wheel.
3. Remove lower arm A mounting bolt (B).



4. Remove lower arm A self-locking nut (C).

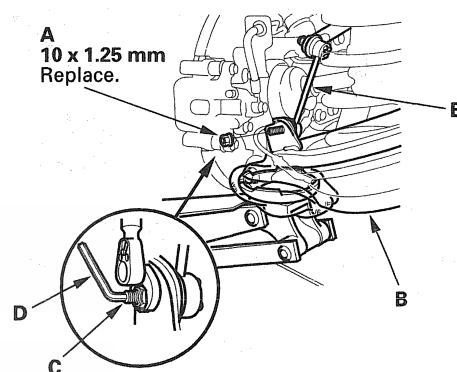
NOTE: During installation, install the new self-locking nut.

5. Remove lower arm A from the vehicle.
6. Install lower arm A in the reverse order of removal, and note these items:
 - First install all the components, and lightly tighten the bolts and nuts, then raise the suspension to load it with the vehicle's weight before fully tightening to the specified torque values.
 - Before installing the wheel, clean the mating surfaces of the brake disc/drum and the inside of the wheel.
 - Check the rear wheel alignment, and adjust it if necessary (see page 18-5).

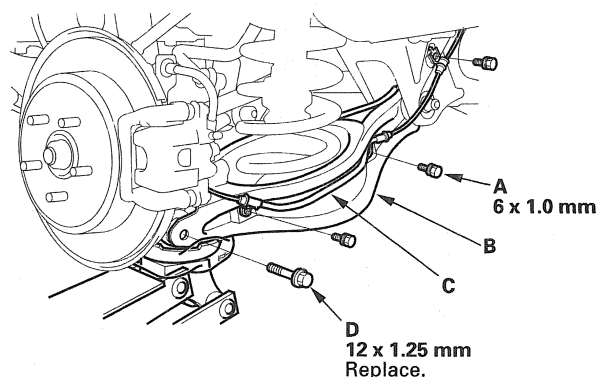
Lower Arm B Removal and Installation

Removal

1. Raise the rear of the vehicle, and support it with safety stands in the proper locations (see page 1-13).
2. Remove the rear wheel.
3. Place a floor jack at the connecting point of lower arm B and the knuckle.



4. Remove the flange nut (A) while holding the joint pin (C) with a hex wrench (D), and disconnect the stabilizer link (E) from lower arm B.
5. Remove the three flange bolts (A) and the wheel sensor harness (C) from lower arm B. Do not disconnect the wheel sensor connector.



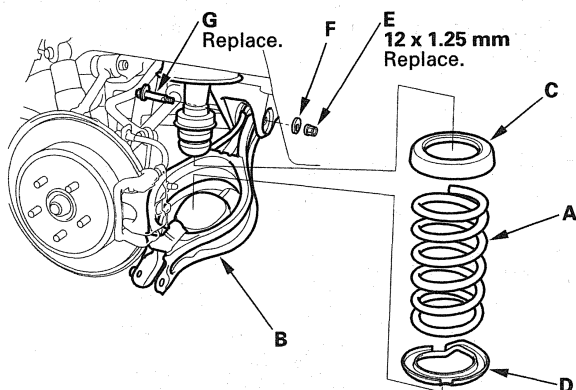
6. Remove the flange bolt (D) that connects lower arm B and the knuckle.

(cont'd)

Rear Suspension

Lower Arm B Removal and Installation (cont'd)

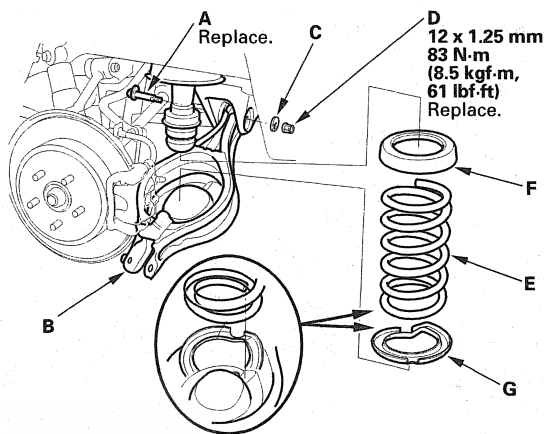
7. Lower the floor jack gradually.
8. Remove the spring (A), upper spring seat (C), and lower spring seat (D).



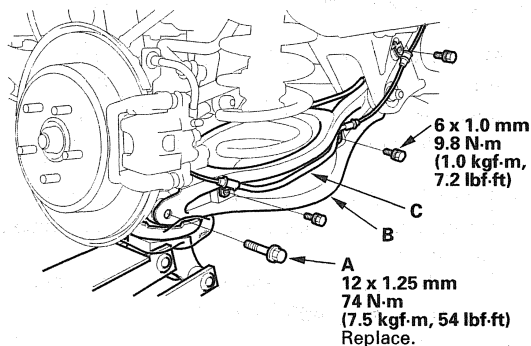
9. Remove the self-locking nut (E), adjusting cam plate (F), and adjusting bolt (G), then remove lower arm B.

Installation

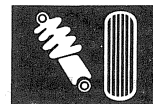
1. Position lower arm B, install the adjusting bolt (A), adjusting cam plate (C), and loosely install the new self-locking nut (D).



2. Install the spring (E), and upper spring seat (F). Align the bottom of the spring and the lower spring seat (G) with lower arm B as shown.
3. Place a floor jack at the connecting point of lower arm B and the knuckle.
4. Raise the jack slowly until you can align the bolt holes of lower arm B and the knuckle, then loosely install the new flange bolt (A).

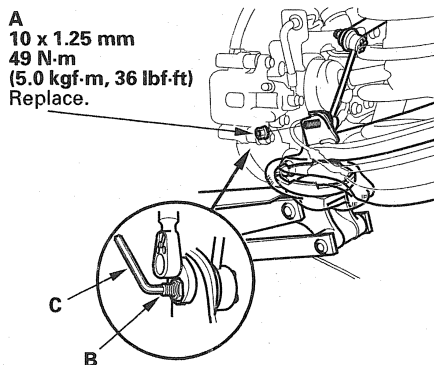


5. Raise the rear suspension with a floor jack to load it with the vehicle's weight.
6. Tighten the flange bolt and self-locking nut on the adjusting bolt to the specified torque values.
7. Install the wheel sensor harness (C).



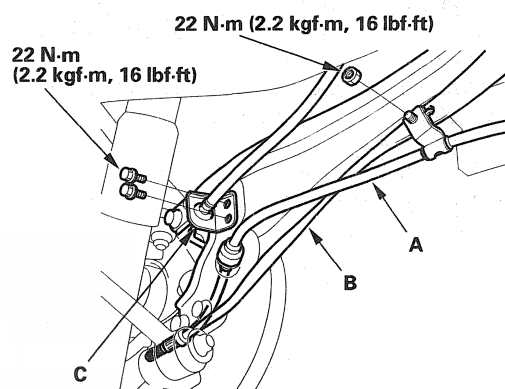
Trailing Arm Removal/Installation

8. Connect the stabilizer link to the lower arm B, then tighten the new flange nut (A) to the specified torque value while holding the joint pin (B) with a hex wrench (C).



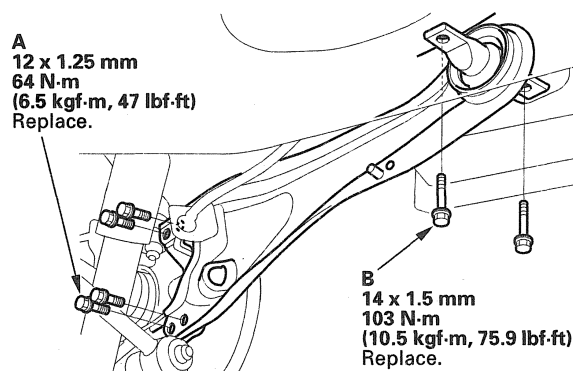
9. Install the rear wheel.
10. Check the rear wheel alignment, and adjust it if necessary (see page 18-5).
 - First install all the components, and lightly tighten the bolts and nuts, then raise the suspension to load it with the vehicle's weight before fully tightening to the specified torque values.
 - Align the cam positions of the adjusting bolt and the adjusting cam plate with the marked positions when tightening.
 - Before installing the wheel, clean the mating surfaces of the brake disc/drum and the inside of the wheel.

1. Raise the rear of the vehicle, and support it with safety stands in the proper locations (see page 1-13).
2. Remove the rear wheel.
3. Remove the parking brake shoes (see page 19-26), and parking brake cable (see page 19-33).
4. Remove the parking brake cable (A) from the trailing arm (B).



5. Remove the brake hose bracket (C) from the trailing arm.
6. Place a floor jack at the connecting point of lower arm B and the knuckle.
7. Remove the flange bolts (A) and trailing arm mounting bolts (B) from the trailing arm, then remove the trailing arm.

NOTE: During installation, install the new bolts.



(cont'd)

Rear Suspension

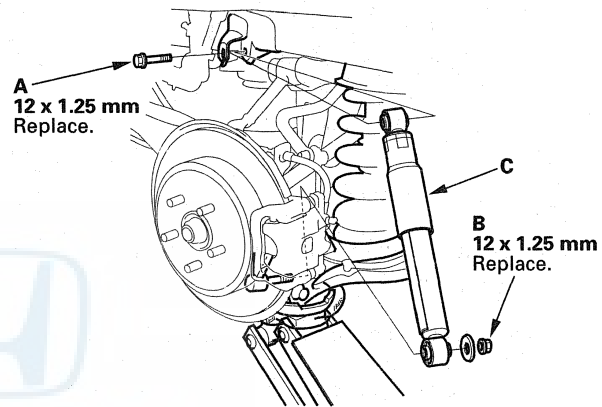
Trailing Arm Removal/Installation (cont'd)

8. Install the trailing arm in the reverse order of removal, and note these items:
 - First install all the components, and lightly tighten the bolts and nuts, then raise the suspension to load it with the vehicle's weight before fully tightening to the specified torque values.
 - Check the brake hose and line joint for leaks, and tighten if necessary.
 - Check the brake hose for interference and twisting.
 - Before installing the wheel, clean the mating surfaces of the brake disc/drum and the inside of the wheel.
 - Check the rear wheel alignment, and adjust it if necessary (see page 18-5).

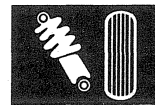
Damper Removal and Installation

Removal

1. Raise the rear of the vehicle, and support it with safety stands in the proper locations (see page 1-13).
2. Remove the rear wheel.
3. Place a floor jack at the connecting point of lower arm B and the knuckle.
4. Remove the flange bolt (A) from the body.

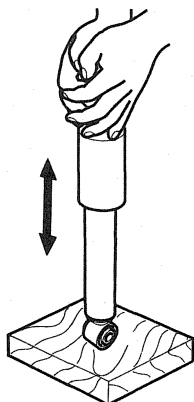


5. Remove the self-locking nut (B) and washer from the knuckle.
6. Compress the damper (C) by hand, and remove it from the vehicle.



Inspection

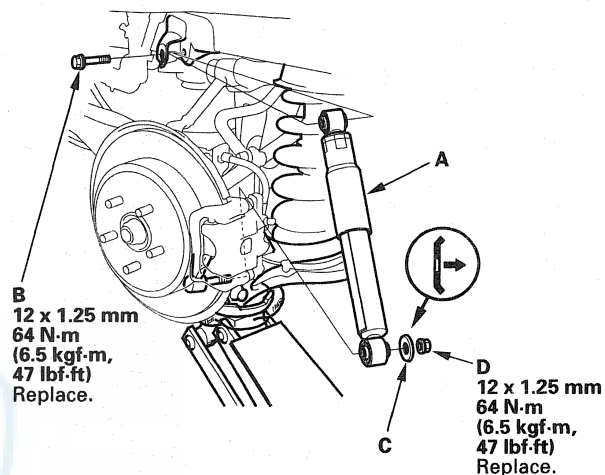
1. Push on the damper by hand as shown.



2. Compress the damper assembly by hand, and check for smooth operation through a full stroke, both compression and extension. The damper should extend in a smooth, continuous motion when the compression is released. If it does not (no compression or no extension), the gas is leaking, and the damper should be replaced.
3. Check for oil leaks, abnormal noises, or binding during these tests.

Installation

1. Place a floor jack at the connecting point of lower arm B and the knuckle.
2. Compress the damper (A) by hand, and move it into position. Loosely install the new flange bolt (B), washer (C), and new self-locking nut (D).

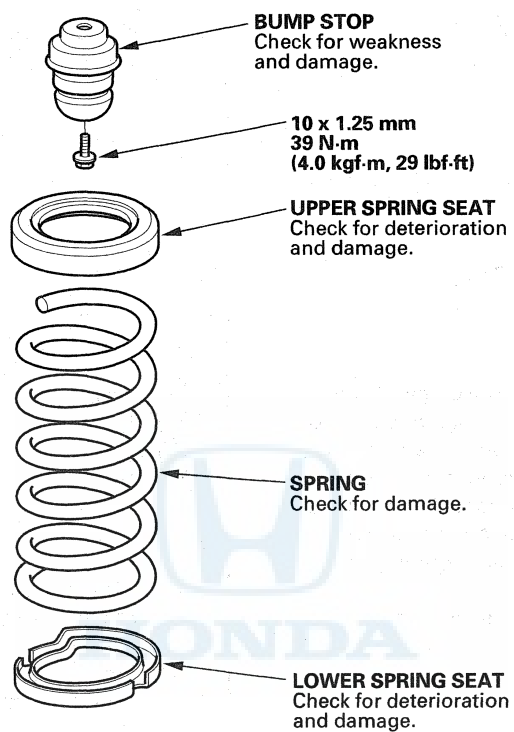


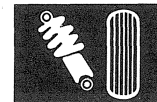
3. Raise the rear suspension with a floor jack to load it with the vehicle's weight.
4. Tighten the flange bolt and self-locking nut to the specified torque values.
5. Clean the mating surfaces of the brake disc/drum and the inside of the wheel, then install the rear wheel.
6. Check the rear wheel alignment, and adjust it if necessary (see page 18-5).

Rear Suspension

Spring/Bump Stop Replacement

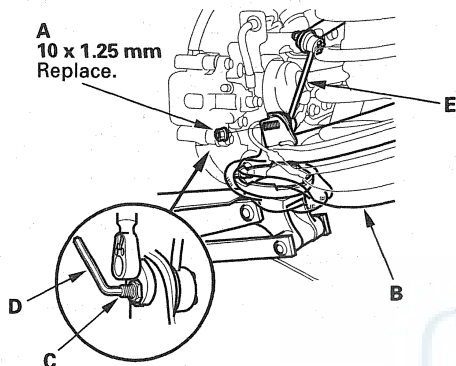
Exploded View



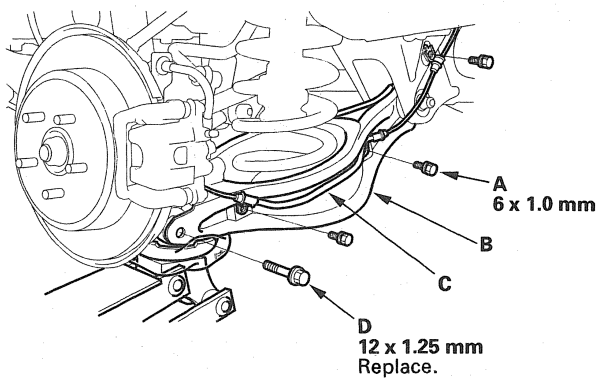


Removal

1. Raise the rear of the vehicle, and support it with safety stands in the proper locations (see page 1-13).
2. Remove the rear wheel.
3. Place a floor jack at the connecting point of lower arm B and the knuckle.



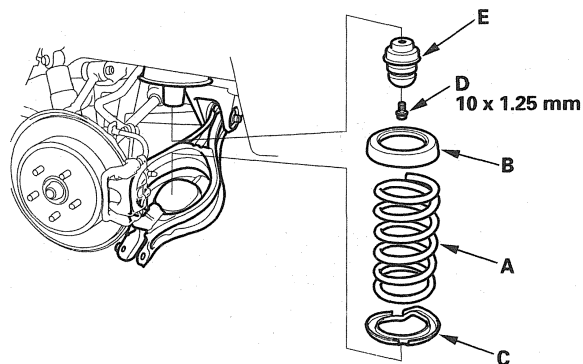
4. Remove the flange nut (A) while holding the joint pin (C) with a hex wrench (D), and disconnect the stabilizer link (E) from lower arm B.
5. Remove the three flange bolts (A) and the wheel sensor harness (C) from lower arm B. Do not disconnect the wheel sensor connector.



6. Remove the flange bolt (D) that connects lower arm B and the knuckle.

7. Lower the floor jack gradually.

8. Remove the spring (A), upper spring seat (B), and lower spring seat (C).



9. Remove the flange bolt (D) and bump stop (E).

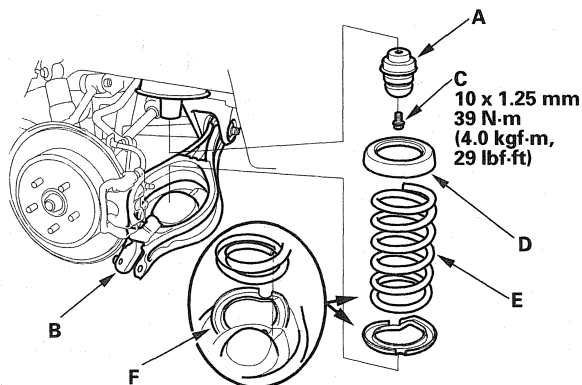
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Rear Suspension

Spring/Bump Stop Replacement (cont'd)

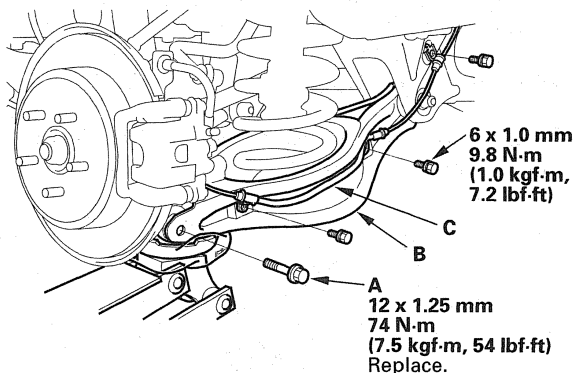
Installation

1. Install the bump stop (A), and tighten the flange bolt (C) to the specified torque value.

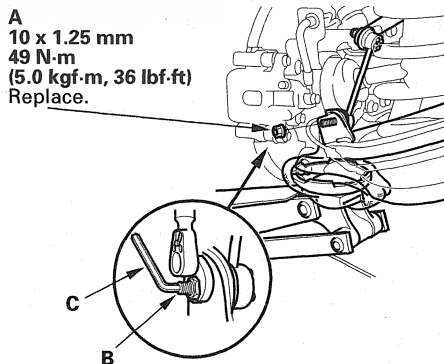


2. Install the upper spring seat (D) and spring (E). Align the bottom of the spring and the lower spring seat (F) with lower arm B as shown.
3. Place a floor jack at the connecting point of lower arm B and the knuckle.

4. Slowly raise the jack until you can align the bolt holes of lower arm B and the knuckle, then install the new flange bolt (A).



5. Raise the rear suspension with a floor jack to load it with the vehicle's weight.
6. Tighten the flange bolt to the specified torque value.
7. Install the wheel sensor harness (C).
8. Connect the stabilizer link to the lower arm B, then tighten the new flange nut (A) to the specified torque value while holding the joint pin (B) with a hex wrench (C).



9. Clean the mating surfaces of the brake disc/drum and the inside of the wheel, then install the rear wheel.
10. Check the rear wheel alignment, and adjust it if necessary (see page 18-5).

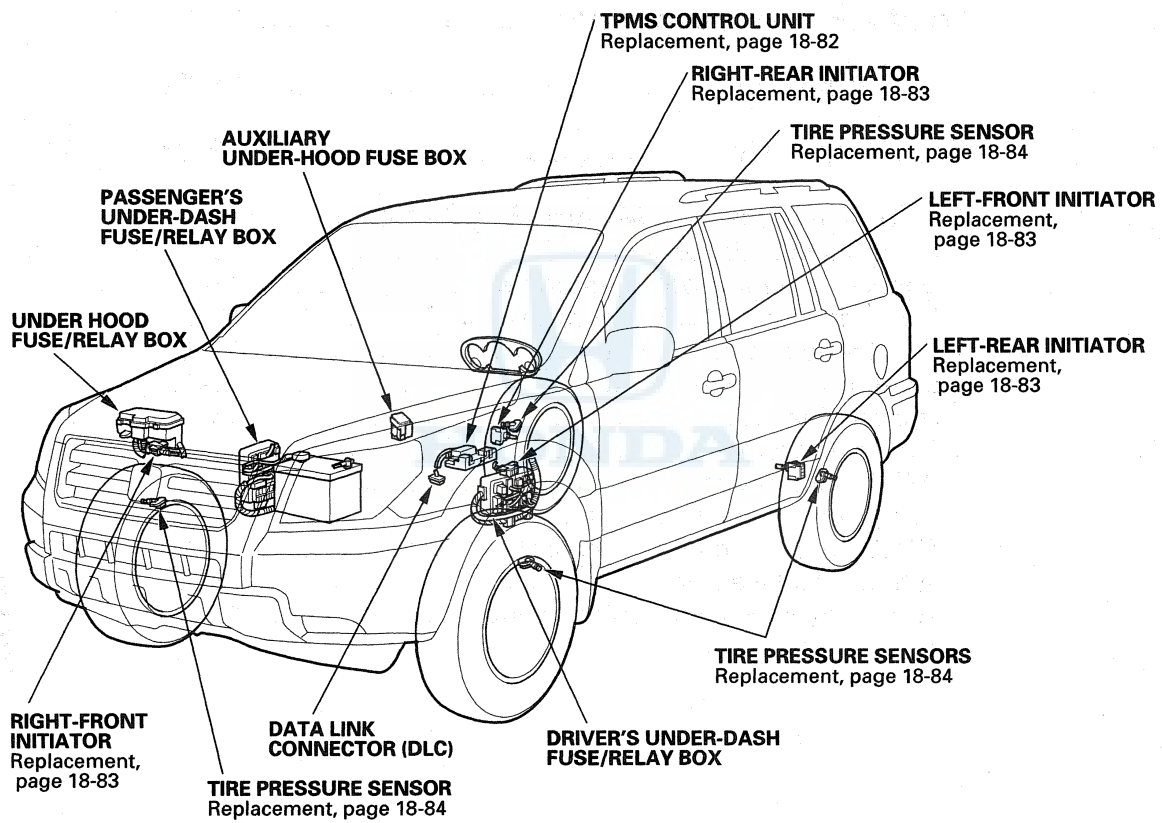
Suspension

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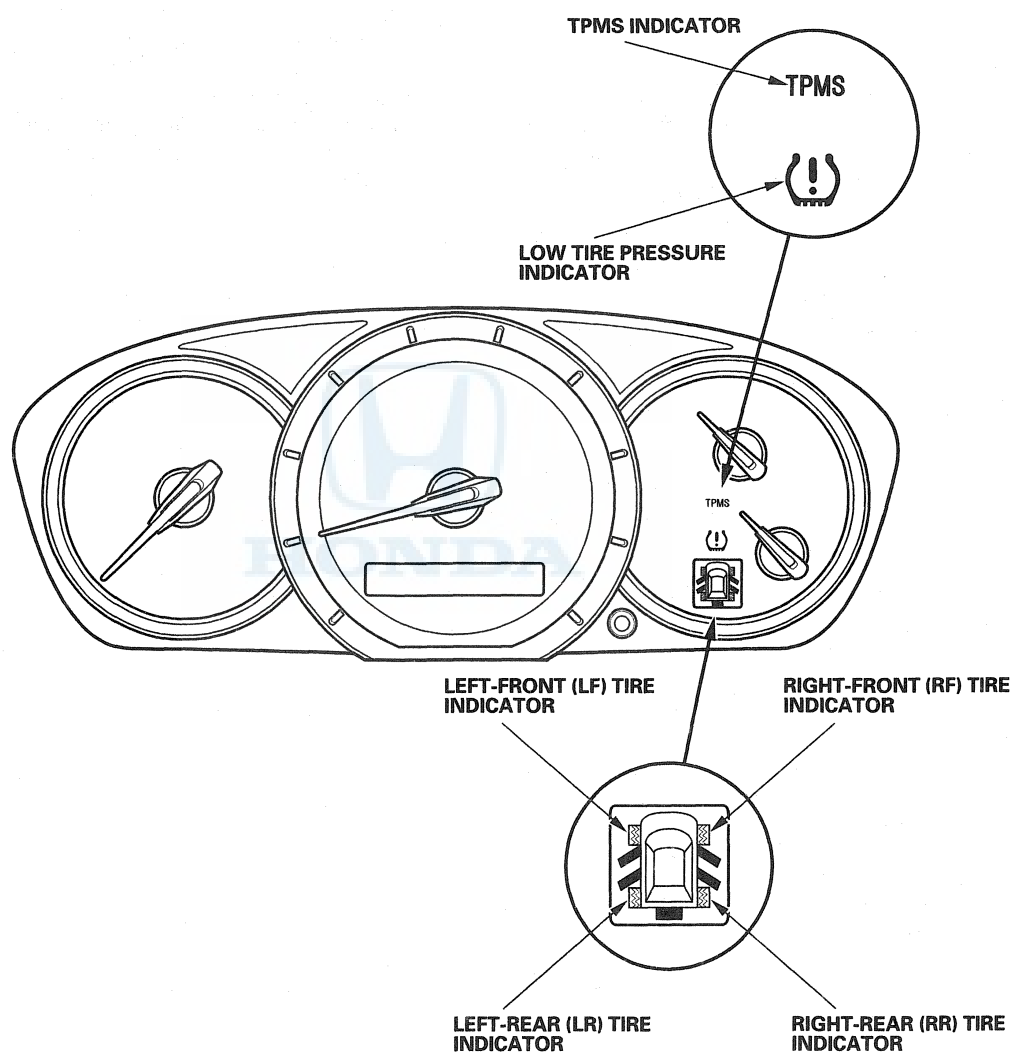
TPMS

Component Location Index



General Troubleshooting Information

System Indicator Location



(cont'd)

General Troubleshooting Information (cont'd)

How TPMS Works

The TPMS (Tire Pressure Monitoring System) has six indicators; four tire indicators, a low tire pressure indicator, and a TPMS indicator. When the TPMS control unit detects low pressure in a tire or a problem in the system, it turns on the appropriate indicator(s).

- If low tire pressure is detected, the low tire pressure indicator and the appropriate tire indicator come on.
- If a problem in the system is detected, the TPMS indicator comes on.
- If low tire pressure and a problem in the system are detected, only the TPMS indicator comes on.

If the system is OK, the TPMS indicator, the low tire pressure indicator, and the four tire indicators should come on when you turn the ignition switch ON (II), and then go off 2 seconds later. If they don't, there is a problem with the system.

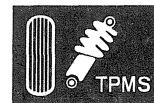
If the system detects low pressure in any of the four tires, the low tire pressure indicator and the appropriate tire indicator(s) will come on, and the control unit will set one or more of these codes:

DTC 11, 13, 15, 17. When the tire pressure returns to normal, the control unit will turn off the indicators and store the DTC(s). However, if the control unit detects a problem in the system during an indication of low tire pressure, it will turn off the low tire pressure and tire indicators, store the DTC(s), and turn on the TPMS indicator.

NOTE: Tire pressures will increase as the temperature in the tires rises during driving at highway speeds. Pressures will also increase or decrease with changes in outside air temperature. A temperature change of about 18 °F (10 °C) will change tire pressure by about 10 kPa (0.1 kgf/cm², 1.5 psi). If the temperature drops and then rises, tire pressure could decrease just enough to turn on the low tire pressure and tire indicator(s), but later increase enough to turn them off. To resolve a complaint of such intermittent indications, confirm and clear the stored DTC(s) and check the tire pressures when the tires are cold. Then explain to the customer how temperature changes can affect the system, especially when tire pressures are near the low end of the TPMS normal range - 168 to 220 kPa (1.7 to 2.2 kgf/cm², 24 to 32 psi).

If a problem is detected in the system, the TPMS indicator will come on and stay on until the system returns to normal with most DTCs. If DTC 45, 81, 83 or 85 is set, the TPMS indicator will go off only when the ignition switch is turned off.

If a flat tire is replaced with the spare tire, and the flat tire is stored in the cargo area, the low tire pressure indicator will stay on but the appropriate tire indicator will go off. This prevents the customer from thinking there is a problem with the spare tire. When the flat tire is taken out of the vehicle for repair, the TPMS indicator will come on (DTC 32, 34, 36 or 38) because the system is no longer receiving the signal from the tire's transmitter.



Problems That are Not System Faults

- **Tire Sealant**
Fluid sealant used to repair a punctured tire can permanently damage the tire pressure sensor mounted on each wheel. It can prevent the system from detecting the correct tire pressure, which sets a DTC 11, 13, 15 or 17 even though the system is normal.
- **Cold Weather**
When the weather is extremely cold - about -40°F (-40°C) or colder - the output of the lithium battery in each tire pressure sensor may drop far enough that the control unit sets a DTC for low battery voltage (31, 33, 35, or 37) even though the system is normal.
- **Non-TPMS Wheels**
Vehicles equipped with TPMS must use wheels made for the system. Every TPMS wheel is marked with the letters TPMS; do not use any other type of wheel.

How a Diagnostic Trouble Code (DTC) is Set

- When the system detects a problem, the TPMS control unit sets a code, but shifts to fail-safe mode, and will not alert the driver to low tire pressures.
- If the TPMS control unit loses power, or fails, the TPMS indicator will come on, but no DTC will be set.
- The memory can hold all the DTCs that could possibly be set. However, when the same DTC is detected more than once, the most recent one overwrites the previous one, so only the latest DTC of each type is stored.
- DTCs are indicated in ascending order, not in the order they occurred.
- Set DTCs are stored in the EEPROM (nonvolatile memory), they cannot be cleared by disconnecting the battery. To clear a DTC, connect the HDS (Honda Diagnostic System) to the data link connector (DLC), and follow the screen prompts.

How to Troubleshoot TPMS DTCs

DTC troubleshooting procedures assume the cause of the problem is still present and the TPMS indicator is still on. (NOTE: The TPMS indicator comes on for DTCs 11, 13, 15, and 17 only if the low tire pressure indication is false, caused by a problem in the system.) Do not use a troubleshooting procedure unless the system has set the DTC listed for it and is still present.

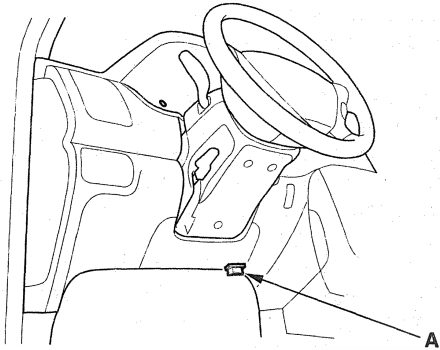
1. Ask the customer to describe the conditions when the indicator came on, and try to reproduce the same conditions for troubleshooting. Find out if the customer checked and/or adjusted tire pressures since the indicator came on.
2. If an indicator does not come on during the test-drive, check for loose terminals, poor contact due to damaged terminals, etc. before you start troubleshooting.
3. After troubleshooting, repair and clear the DTCs, and test-drive the vehicle. Make sure no indicators come on.

(cont'd)

General Troubleshooting Information (cont'd)

How to Retrieve TPMS DTCs

1. With the ignition switch OFF, connect the HDS (Honda Diagnostic System) to the data link connector (DLC) (A) under the driver's side of the dashboard.



2. Turn the ignition switch ON (II), and follow the prompts on the HDS to retrieve any DTC(s) and display them on the screen. Refer to the troubleshooting procedure(s) for the DTC(s) listed.

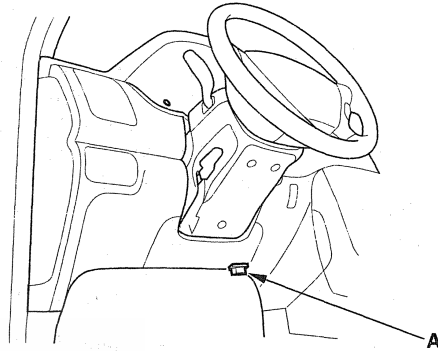
NOTE: See the HDS Help menu for specific instructions.

3. Turn the ignition switch OFF.

How to Clear TPMS DTCs

NOTE: You cannot clear the DTCs manually.

1. With the ignition switch OFF, connect the HDS to the data link connector (DLC) (A) under the driver's side of the dashboard.



2. Turn the ignition switch ON (II), and clear the DTC(s) by following the screen prompts on the HDS.

NOTE: See the HDS Help menu for specific instructions.

3. Turn the ignition switch OFF.

Memorizing the Tire Pressure Sensor ID

Memorizing a Tire Pressure Sensor ID

When a tire pressure sensor is replaced, the sensor ID must be memorized by the TPMS control unit.

NOTE: To ensure the control unit memorizes the correct ID, the vehicle with the new sensor must be at least 10 ft (3 m) from any other TPMS pressure sensor not installed on that vehicle.

Memorizing a Sensor ID Automatically

After rotating the tires or replacing a tire pressure sensor, drive the vehicle for at least 40 seconds at a speed of 15 mph (24 km/h) or more, and all the sensor IDs will be memorized automatically.

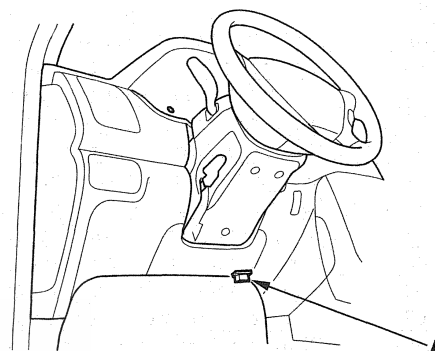
NOTE:

- The automatic ID memorization process will not begin until the ignition switch is turned OFF, so make sure the ignition switch is turned to OFF before the vehicle is driven to memorize the IDs.
- When replacing the TPMS control unit, use the HDS to memorize IDs.
- After the IDs are memorized, reduce the pressure in all four tires to less than the appropriate specification, and check to see that the four tire indicators come on.

Memorize the ID with the HDS

The HDS can memorize the ID of a new tire pressure sensor or a previously memorized ID.

1. With the ignition switch OFF, connect the HDS to the data link connector (DLC) (A) located under the driver's side of the dashboard.



2. Turn the ignition switch ON (II), and memorize the ID of the tire pressure sensor by following the screen prompts on the HDS.

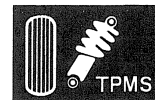
NOTE:

- See the HDS Help menu for specific instructions.
- When replacing the TPMS control unit, use the HDS to memorize IDs.
- After the IDs are memorized, reduce the pressure in all four tires to less than the appropriate specification, and check to see that the four tire indicators come on.

3. Turn the ignition switch OFF.

DTC Troubleshooting Index

DTC	Detection Item	Troubleshooting
11	Right-front tire low air pressure	(see page 18-63)
13	Left-front tire low air pressure	(see page 18-63)
15	Right-rear tire low air pressure	(see page 18-63)
17	Left-rear tire low air pressure	(see page 18-63)
21	Right-front tire pressure sensor abnormally high temperature	(see page 18-64)
22	Left-front tire pressure sensor abnormally high temperature	(see page 18-64)
23	Right-rear tire pressure sensor abnormally high temperature	(see page 18-64)
24	Left-rear tire pressure sensor abnormally high temperature	(see page 18-64)
31	Right-front tire pressure sensor low battery voltage	(see page 18-64)
32	Right-front tire pressure sensor transmission failure	(see page 18-65)
33	Left-front tire pressure sensor low battery voltage	(see page 18-64)
34	Left-front tire pressure sensor transmission failure	(see page 18-65)
35	Right-rear tire pressure sensor low battery voltage	(see page 18-64)
36	Right-rear tire pressure sensor transmission failure	(see page 18-65)
37	Left-rear tire pressure sensor low battery voltage	(see page 18-64)
38	Left-rear tire pressure sensor transmission failure	(see page 18-65)
41	Abnormal signal reception error	(see page 18-68)
45	Initiator circuit short detection	(see page 18-69)
51	Right-front tire pressure sensor registration error	(see page 18-72)
53	Left-front tire pressure sensor registration error	(see page 18-72)
55	Right-rear tire pressure sensor registration error	(see page 18-72)
57	Left-rear tire pressure sensor registration error	(see page 18-72)
81	TPMS control unit failure	(see page 18-75)
83	No VSP signal	(see page 18-76)
85	F-CAN communication failure	(see page 18-76)
91	Right-front tire pressure sensor internal error	(see page 18-77)
93	Left-front tire pressure sensor internal error	(see page 18-77)
95	Right-rear tire pressure sensor internal error	(see page 18-77)
97	Left-rear tire pressure sensor internal error	(see page 18-77)



Symptom Troubleshooting Index

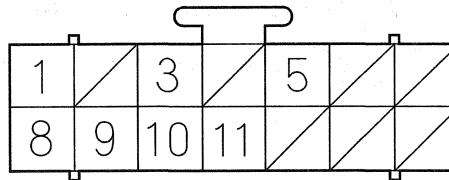
Symptom	Diagnostic procedure	Also check for
Low tire pressure and tire indicators do not come on, and no DTCs are stored	Symptom Troubleshooting (see page 18-78)	
Low tire pressure and tire indicators do not go off, and no DTCs are stored	Symptom Troubleshooting (see page 18-79)	
TPMS indicator does not come on, and no DTCs are stored	Symptom Troubleshooting (see page 18-79)	
TPMS indicator does not go off, and no DTCs are stored	Symptom Troubleshooting (see page 18-80)	



TPMS

System Description

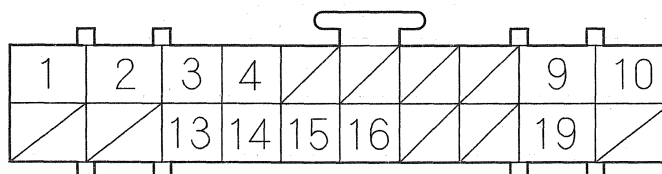
TPMS Control Unit Inputs and Outputs for Connector A (14P)



Wire side of female terminals

Terminal number	Wire color	Terminal sign (Terminal name)	Description	Signal		
				Terminal	Conditions	Voltage
1	RED	+B (Battery positive)	Power source for the TPMS control unit	1—GND	At all times	Battery voltage
3	BLK	GND (Ground)	Ground for the TPMS control unit	3—GND	At all times	Less than 0.1 V
5	YEL	IG1 (Ignition 1)	Power source for activating the system	5—GND	Ignition switch ON (II)	Battery voltage
					Ignition switch OFF	Less than 0.1 V
8	YEL/BLU	LF LF PWR. (LF low frequency power)	Power source for the left-front initiator	8—GND	For 5 seconds with ignition switch ON (II)	About 7 V
					After 5 seconds with ignition switch ON (II)	—
9	PNK	RF LF PWR. (RF low frequency power)	Power source for the right-front initiator	9—GND	For 5 seconds with ignition switch ON (II)	About 7 V
					After 5 seconds with ignition switch ON (II)	—
10	GRN/ORN	LR LF PWR. (LR low frequency power)	Power source for the left-rear initiator	10—GND	For 5 seconds with ignition switch ON (II)	About 7 V
					After 5 seconds with ignition switch ON (II)	—
11	BLU	RR LF PWR. (RR low frequency power)	Power source for the right-rear initiator	11—GND	For 5 seconds with ignition switch ON (II)	About 7 V
					After 5 seconds with ignition switch ON (II)	—

TPMS Control Unit Inputs and Outputs for Connector B (20P)



Wire side of female terminals

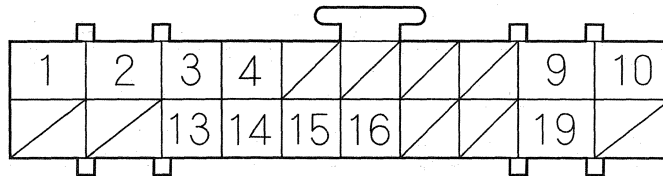
Terminal number	Wire color	Terminal sign (Terminal name)	Description	Signal		
				Terminal	Conditions	Voltage
1	GRY/YEL	RF LF SIG. (RF low frequency signal)	Detects the signal from the right-front initiator	1—GND	For the first 5 seconds after turning the ignition switch ON (II)	Pulses 0—2 V
					With ignition switch ON (II) for more than 5 seconds	Less than 0.1 V
2	WHT/RED	RR LF SIG. (RR low frequency signal)	Detects the signal from the right-rear initiator	2—GND	For the first 5 seconds after turning the ignition switch ON (II)	Pulses 0—2 V
					With ignition switch ON (II) for more than 5 seconds	Less than 0.1 V
3	ORN	LF LF SIG. (LF low frequency signal)	Detects the signal from the left-front initiator	3—GND	For the first 5 seconds after turning the ignition switch ON (II)	Pulses 0—2 V
					With ignition switch ON (II) for more than 5 seconds	Less than 0.1 V
4	PNK/BLK	LR LF SIG. (LR low frequency signal)	Detects the signal from the left-rear initiator	4—GND	For the first 5 seconds after turning the ignition switch ON (II)	Pulses 0—2 V
					With ignition switch ON (II) for more than 5 seconds	Less than 0.1 V
9	GRY	K-LINE (Data link connector)	Communications with HDS	—	—	—
10	RED	CAN L (CAN communication signal low)	Sends the communication signal	—	Ignition switch ON (II)	Pulses

(cont'd)

TPMS

System Description (cont'd)

TPMS Control Unit Inputs and Outputs for Connector B (20P) (cont'd)



Wire side of female terminals

Terminal number	Wire color	Terminal sign (Terminal name)	Description	Signal		
				Terminal	Conditions	Voltage
13	GRN	LF LF GND (LF low frequency ground)	Ground for the left-front initiator	13—GND	Ignition switch ON (II)	Less than 0.1 V
14	RED/BLK	RF LF GND (RF low frequency ground)	Ground for the right-front initiator	14—GND	Ignition switch ON (II)	Less than 0.1 V
15	YEL/GRN	LR LF GND (LR low frequency ground)	Ground for the left-rear initiator	15—GND	Ignition switch ON (II)	Less than 0.1 V
16	RED/ORN	RR LF GND (RR low frequency ground)	Ground for the right-rear initiator	16—GND	Ignition switch ON (II)	Less than 0.1 V
19	WHT	CAN H (CAN communication signal high)	Sends the communication signal	—	Ignition switch ON (II)	Pulses

System Structure

Whenever the engine is running, the TPMS control unit continuously monitors all four tires and the system. If it detects low pressure in a tire, it alerts the driver by turning on the low tire pressure indicator and the appropriate tire indicator. If it detects a problem in the system, it turns on the TPMS indicator.

Initiators

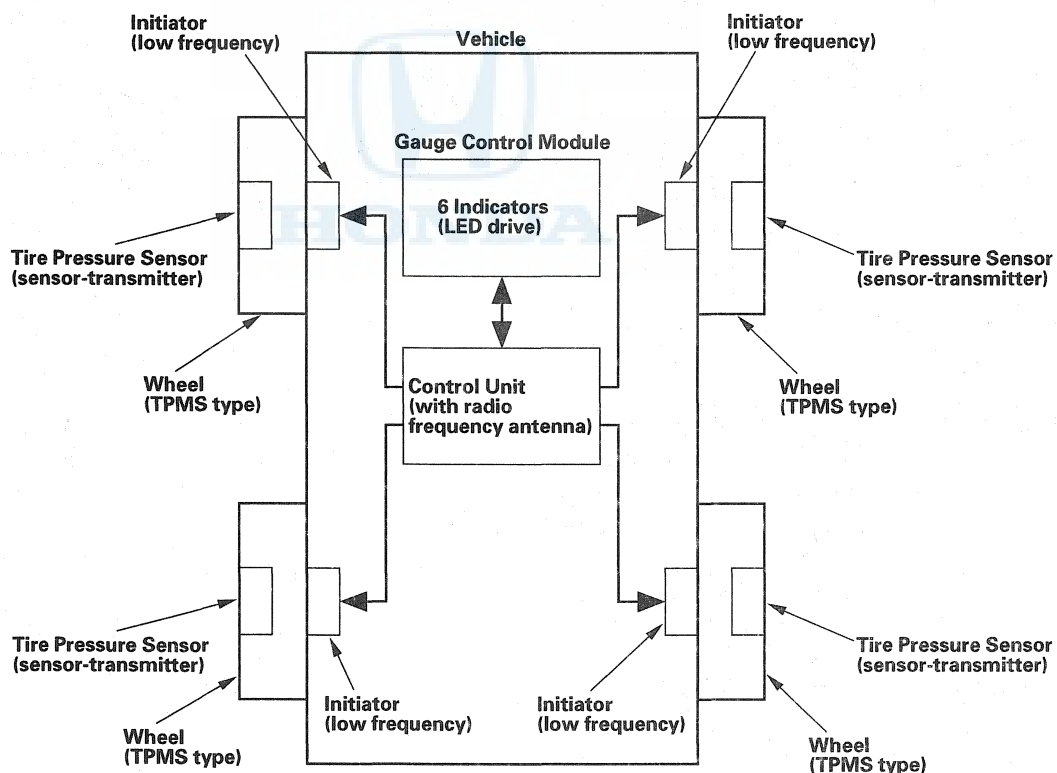
Mounted on each wheel well, each initiator sends a start/stop signal to the tire pressure sensor in the tire below it.

Control unit

Mounted on the left side of the lower dash, the control unit sends signals to the initiators and receives signals from them to verify pressure sensor IDs every time the engine starts. It also receives signals from the transmitters in the tire pressure sensors, and it continuously monitors and controls the system.

Indicators

Six indicators are in the gauge assembly: The low tire pressure indicator, four tire indicators to show which tire is affected, and the TPMS indicator that comes on only if there's a problem with the system. When two or more tire pressures are low, the low tire pressure indicator comes on about 5 seconds before the appropriate tire indicator. Once low pressure is detected, the system scans all four pressure sensors to ensure that it turns on the correct tire indicator.



(cont'd)

TPMS

System Description (cont'd)

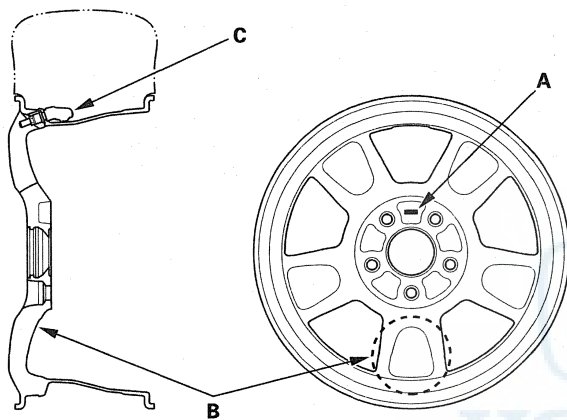
Tire pressure sensor

Each sensor is an integrated unit made up of the tire valve stem, a pressure sensor, and a transmitter. The unit is attached to the inside of the wheel, around the valve stem. The sensor transmits a signal to the control unit when tire pressure is less than 175 kPa (1.8 kgf/cm², 25 psi). The TPMS control unit then turns on the low tire pressure indicator and the appropriate tire indicator(s). When that tire's pressure is increased to more than 200 kPa (2.0 kgf/cm², 29 psi), the transmitter stops sending the signal, and the control unit turns the indicators off.

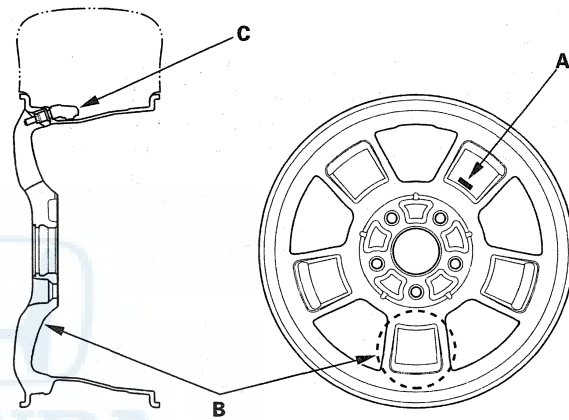
Wheels

TPMS will not work unless TPMS type wheels are installed on the vehicle. There are three different type wheels used. The original equipment wheels have a "TPMS" mark on them (A), and a counterweight (B) cast into the opposite side of the spoke to balance the weight of the sensor (C).

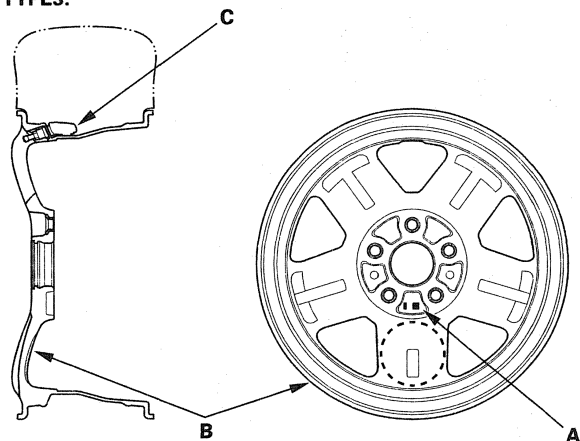
TYPE1:



TYPE2:



TYPE3:

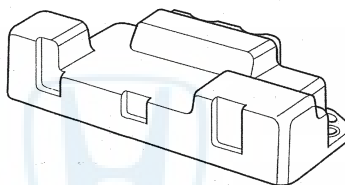


System Communication

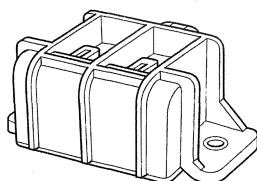
- When the vehicle is running, an RF (radio frequency) band wave signal is continuously transmitted from each tire pressure sensor to the control unit.
- When the ignition switch is turned ON (II), the initiators send an LF (low frequency) band wave signal to the tire pressure sensors, switching them from sleep mode to normal function mode. When the ignition switch is turned OFF, the sensors switch from normal function mode back to sleep mode to extend their battery life.
- Each tire pressure sensor has its own ID to prevent jamming by similar systems on other vehicles. After memorizing all the sensor IDs, the control unit receives only those specific signals.
- An ID can be memorized manually or automatically. Each initiator is hardwired to the control unit. Every time the ignition is turned ON (II), the control unit asks each initiator for a sensor ID. The initiators then transmit the sensor IDs, and the control unit receives and memorizes them. The control unit then knows which ID belongs to each tire location. This recurring ID confirmation prevents any confusion in the system as a result of normal tire rotation.

NOTE: Be careful not to bend the brackets on the TPMS control unit and front initiators: Misalignment of the control unit and initiators could interfere with sending and receiving signals.

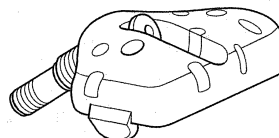
**Control Unit
(with Radio Frequency Antenna)**



**Initiator
(Low Frequency Initiator)**

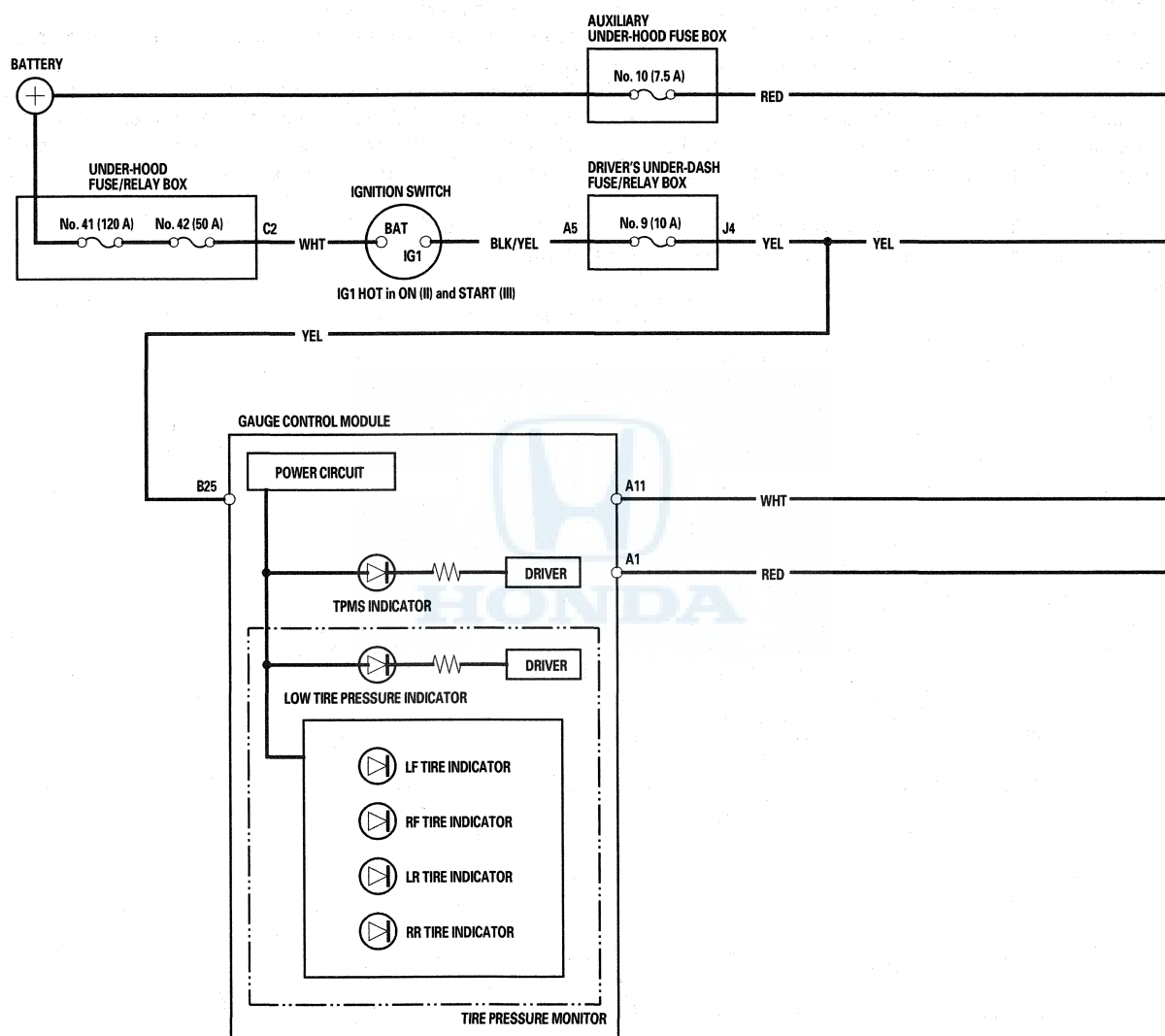


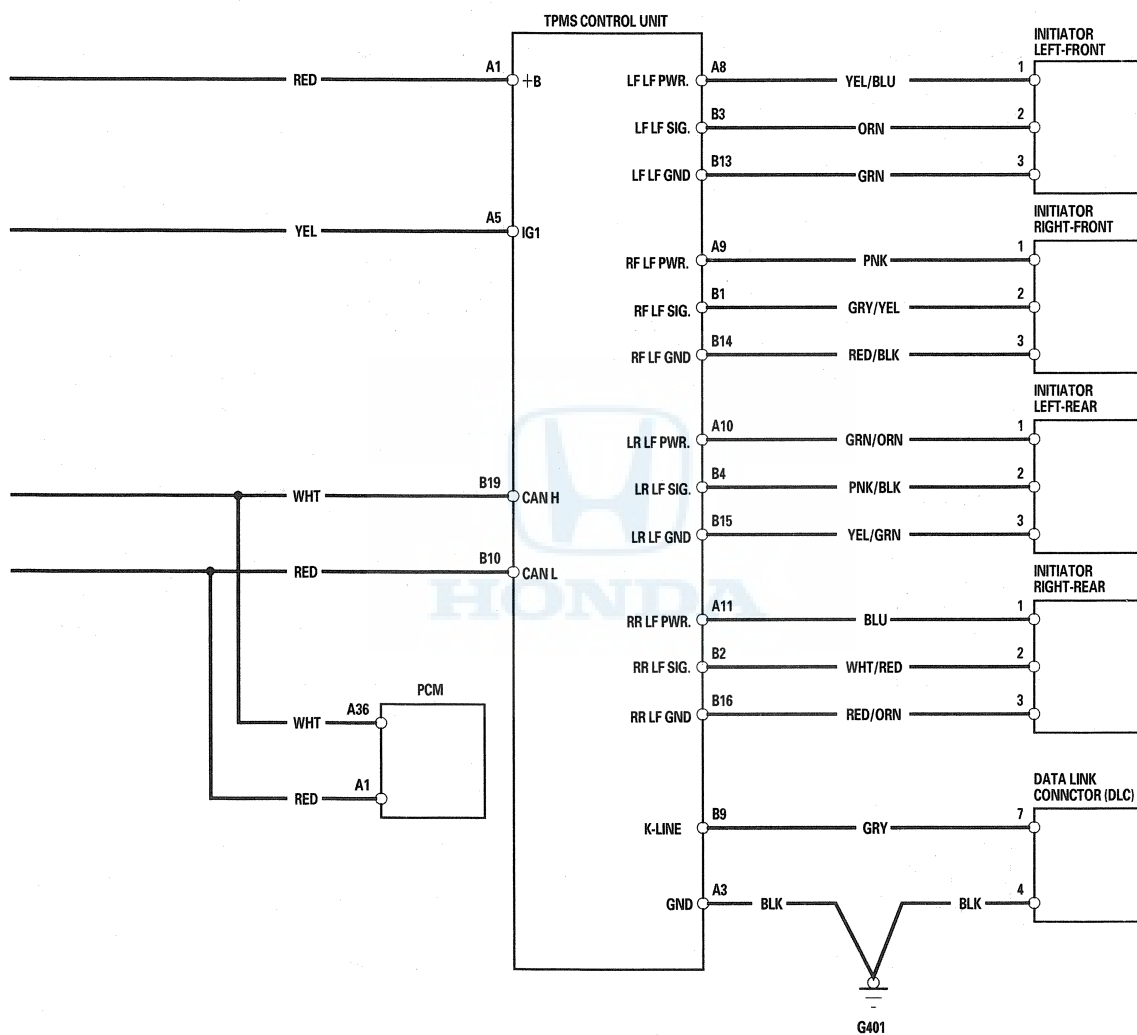
**Tire Pressure Sensor
(Sensor-transmitter)**



TPMS

Circuit Diagram



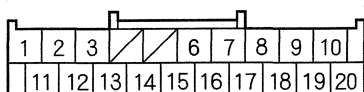


(cont'd)

TPMS

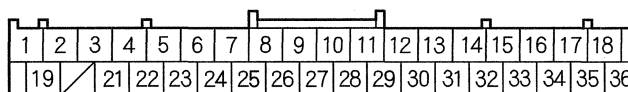
Circuit Diagram (cont'd)

GAUGE CONTROL MODULE CONNECTOR A (20P)



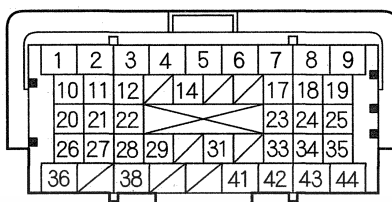
Wire side of female terminals

GAUGE CONTROL MODULE CONNECTOR B (36P)



Wire side of female terminals

PCM CONNECTOR A (44P)



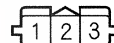
Terminal side of female terminals

DATA LINK CONNECTOR (DLC)



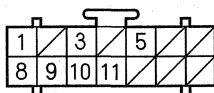
Terminal side of female terminals

INITIATOR 3P CONNECTOR



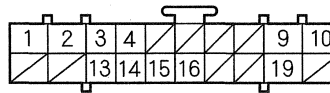
Wire side of female terminals

TPMS CONTROL UNIT CONNECTOR A (14P)



Wire side of female terminals

TPMS CONTROL UNIT CONNECTOR B (20P)



Wire side of female terminals



DTC Troubleshooting

DTC 11, 13, 15, 17: Tire Low Air Pressure

NOTE: If low tire pressure is detected, the control unit will set one or more of these DTCs, and turn on the low tire pressure indicator and the appropriate tire indicator(s). If the low tire pressure and tire indicator(s) come on due to true low tire pressure, and the customer corrects it before bringing the vehicle in, the DTCs will have been stored, but all the indicators will be off.

1. Turn the ignition switch ON (II).
2. If no tire indicators are on, retrieve the DTC(s).

DTC	Tire location
11	Right-front
13	Left-front
15	Right-rear
17	Left-rear

3. Turn the ignition switch OFF.
4. Check the pressure of the indicated tire(s).
Is there 175 kPa (1.8 kgf/cm², 25 psi) or less?
YES—Go to step 5.
NO—Go to step 7.
5. Check for and repair the cause of air loss, and then inflate the tire (see page 18-5).
6. Turn the ignition switch ON (II).

Do the tire indicators go off within 1 minute?

YES—The system is OK at this time. Clear the DTC with the HDS. ■

NO—Go to step 8.

7. Turn the ignition switch ON (II).

8. Check pressure of the appropriate tire with the HDS.

NOTE: If UNDEFINED is shown on sensor transmitter status, turn the ignition switch OFF, rotate the tire 1/4 turn, then turn the ignition switch ON (II), and try again. If UNDEFINED is still displayed, repeat the procedure in the previous sentence until NORMAL is shown.

Is the tire pressure shown on the HDS monitor within 40 kPa (0.4 kgf/cm², 6 psi) of the actual tire pressure?

YES—Check for loose terminals and poor connections at the TPMS control unit. If necessary, substitute a known-good TPMS control unit (see page 18-82) and recheck. ■

NO—Replace the tire pressure sensor (see page 18-84). ■

DTC Troubleshooting (cont'd)

DTC 21, 22, 23, 24: Tire Pressure Sensor Abnormally High Temperature

1. Turn the ignition switch ON (II).
2. Check the tire indicated by the DTCs you retrieved.

NOTE: An abnormal rise in the internal temperature of the tires can be caused by

- Excessive braking
- Failure to release the parking brake (rear tires only)
- Leaving the vehicle running while parked (2WD: front tires only)
- Improper assembly of a wheel and tire

DTC	Tire location
21	Right-front
22	Left-front
23	Right-rear
24	Left-rear

3. Turn the ignition switch OFF.
4. Make sure the tires have cooled down.
5. Turn the ignition switch ON (II).

Does the TPMS indicator go off within 1 minute?

YES—The system is OK at this time. Clear the DTC with the HDS. ■

NO—Go to step 6.

6. Read the internal temperature of the tire with the HDS.

NOTE: If UNDEFINED is shown on sensor transmitter status, turn the ignition switch OFF, rotate the tire 1/4 turn, then turn the ignition switch ON (II), and try again. If UNDEFINED is still displayed, repeat the procedure in the previous sentence until a response is shown.

Is the internal temperature shown on the HDS 176 °F (80 °C) or more?

YES—Replace the appropriate tire pressure sensor (see page 18-84). ■

NO—Check for loose terminals and poor connections at the TPMS control unit. If necessary, substitute a known-good TPMS control unit (see page 18-82) and recheck. ■

DTC 31, 33, 35, 37: Tire Pressure Sensor Low Battery Voltage

NOTE: This problem occurs when the temperature around the sensor is -40°F (-40°C) or lower. Note that the diagnosis must be made in a place where ambient temperature is -4°F (-20°C) or higher.

1. Turn the ignition switch ON (II).

Does the TPMS indicator go off within 1 minute?

YES—The system is OK at this time. Clear the DTC with the HDS. ■

NO—Go to step 2.

2. Read the tire pressure sensor voltage with the HDS.

NOTE: If UNDEFINED is shown on sensor transmitter status, turn the ignition switch OFF, rotate the tire 1/4 turn, then turn the ignition switch ON (II), and try again. If UNDEFINED is still displayed, repeat the procedure in the previous sentence until NORMAL is shown.

DTC	Tire location
31	Right-front
33	Left-front
35	Right-rear
37	Left-rear

Is the sensor transmitter battery low?

YES—Replace the appropriate tire pressure sensor (see page 18-84). ■

NO—Check for loose terminals and poor connections at the TPMS control unit. If necessary, substitute a known-good TPMS control unit (see page 18-82) and recheck. ■



DTC 32, 34, 36, 38: Tire Pressure Sensor Transmission Failure

NOTE:

- The vehicle must be driven for 3 minutes at a speed above 15 mph (24 km/h) for DTC 32, 34, 36, or 38 to set.
- Inspect for an aftermarket electrical device interfering with the RF signal from the sensors when the ignition switch is ON (II).

1. Turn the ignition switch OFF.
2. Check the indicated location to make sure the wheel is a TPMS type with the tire pressure sensor properly mounted in it.

DTC	Tire location
32	Right-front
34	Left-front
36	Right-rear
38	Left-rear

Is the tire pressure sensor mounted properly?

YES—Go to step 5.

NO—Go to step 3.

3. Install a known-good TPMS wheel.
4. To memorize the sensor ID, drive the vehicle above 15 mph (24 km/h) for 40 continuous seconds, or memorize the ID with the HDS (see page 18-51).
5. Test-drive the vehicle, and check the Vehicle Speed in the TPMS DATA LIST with the HDS.

Is the vehicle speed indicated?

YES—Go to step 9.

NO—Go to step 6.

6. Turn the ignition switch OFF.
7. Turn the ignition switch ON (II).

8. Check for DTCs with the HDS.

Is DTC 85 indicated?

YES—Go to the DTC 85 troubleshooting (see page 18-76). ■

NO—Check for loose terminals and poor connections at the TPMS control unit. If necessary, substitute a known-good TPMS control unit (see page 18-82) and recheck. ■

9. Turn the ignition switch OFF.
10. Turn the ignition switch ON (II).
11. Check the indicated tire for sensor transmitter status changing to "Normal" with the HDS.

NOTE: If UNDEFINED is shown on sensor transmitter status, turn the ignition switch OFF, rotate the tire 1/4 turn, then turn the ignition switch ON (II), and try again. If UNDEFINED is still displayed, repeat the procedure in the previous sentence until NORMAL is shown.

DTC	Tire location
32	Right-front
34	Left-front
36	Right-rear
38	Left-rear

Is there at least one response in one full turn of the tire?

YES—The system is OK at this time. Clear the DTC with the HDS. ■

NO—Go to step 12.

(cont'd)

TPMS

DTC Troubleshooting (cont'd)

12. Turn the ignition switch OFF.
13. Install a wheel with a known-good tire pressure sensor on the vehicle.
14. Turn the ignition switch ON (II).
15. Memorize the sensor ID and check that wheel location again for normal sensor signal (repeat the procedure in step 11).

Is there a response this time?

YES—Replace the tire pressure sensor on the customer's wheel (see page 18-84). ■

NO—Go to step 16.

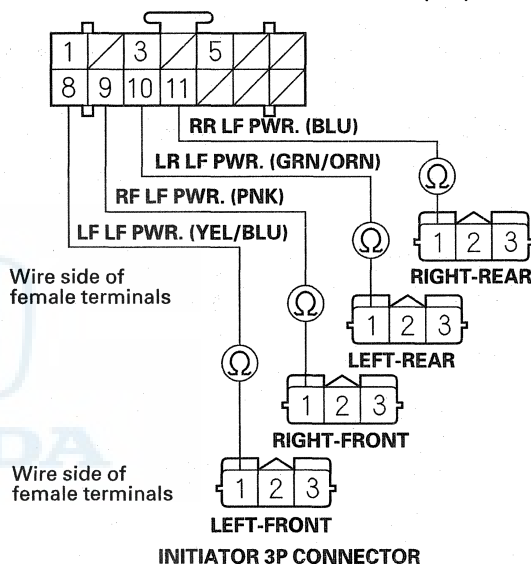
16. Turn the ignition switch OFF.
17. Disconnect TPMS control unit connectors A (14P) and B (20P) and the appropriate initiator 3P connector.

DTC	Tire location
32	Right-front
34	Left-front
36	Right-rear
38	Left-rear

18. Check for continuity between the appropriate terminal in TPMS control unit connector A (14P) and the corresponding terminal in the initiator 3P connector (see table).

DTC	TPMS control unit terminal No.	Initiator name/terminal No.
32	9	RIGHT-FRONT/1
34	8	LEFT-FRONT/1
36	11	RIGHT-REAR/1
38	10	LEFT-REAR/1

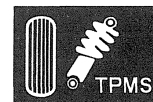
TPMS CONTROL UNIT CONNECTOR A (14P)



Is there continuity?

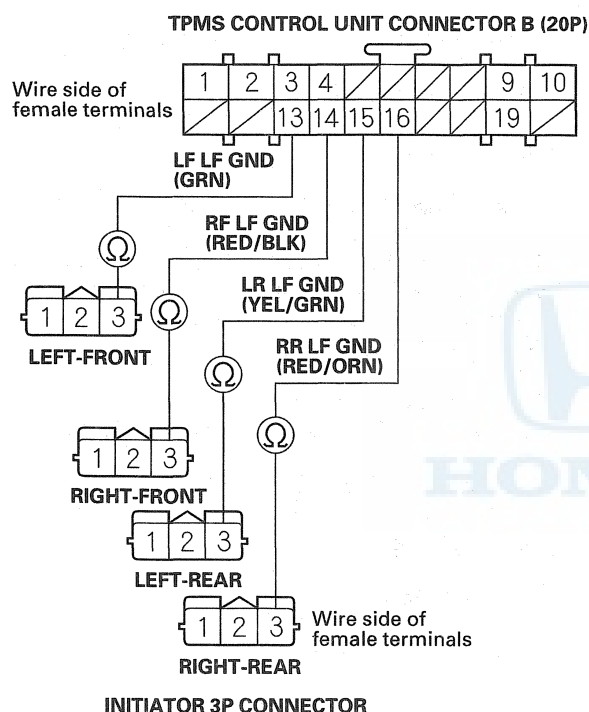
YES—Go to step 19.

NO—Repair the open in the appropriate wire between the TPMS control unit and the initiator. ■



19. Check for continuity between the appropriate terminal in TPMS control unit connector B (20P) and the corresponding terminal in the initiator 3P connector (see table).

DTC	TPMS control unit terminal No.	Initiator name/terminal No.
32	14	RIGHT-FRONT/3
34	13	LEFT-FRONT/3
36	16	RIGHT-REAR/3
38	15	LEFT-REAR/3



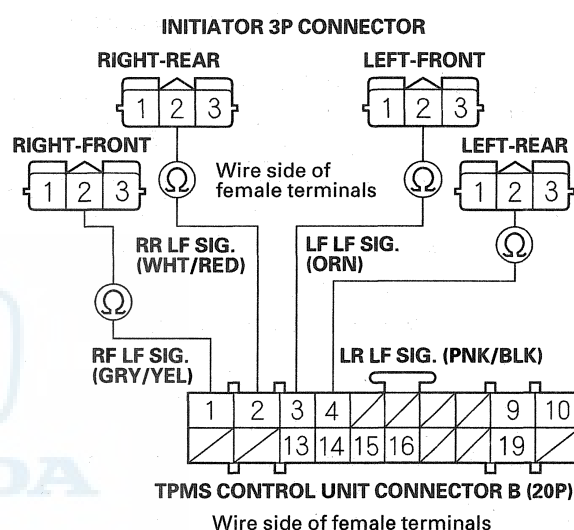
Is there continuity?

YES—Go to step 20.

NO—Repair the open in the appropriate wire between the TPMS control unit and the initiator. ■

20. Check for continuity between the appropriate terminal in TPMS control unit connector B (20P) and the corresponding terminal in the initiator 3P connector (see table).

DTC	TPMS control unit terminal No.	Initiator name/terminal No.
32	1	RIGHT-FRONT/2
34	3	LEFT-FRONT/2
36	2	RIGHT-REAR/2
38	4	LEFT-REAR/2



Is there continuity?

YES—Go to step 21.

NO—Repair the open in the appropriate wire between the TPMS control unit and the initiator. ■

(cont'd)

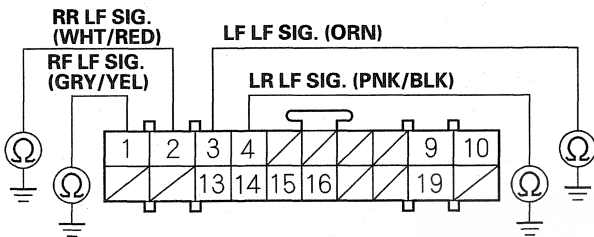
TPMS

DTC Troubleshooting (cont'd)

21. Check for continuity between the appropriate terminal in TPMS control unit connector B (20P) and body ground (see table).

DTC	TPMS control unit terminal No.
32	1
34	3
36	2
38	4

TPMS CONTROL UNIT CONNECTOR B (20P)



Wire side of female terminals

Is there continuity?

YES—Repair the short to body ground in the appropriate wire between the TPMS control unit and the initiator. ■

NO—Check for loose terminals and poor connections at the TPMS control unit. If necessary, substitute a known-good TPMS control unit (see page 18-82) and recheck. ■

DTC 41: Abnormal Signal Reception Error

NOTE: Inspect for an aftermarket electrical device that may produce RF signals. This may interfere with the signals from sensors.

1. Turn the ignition switch OFF.
2. Check all four wheels to make sure they are the TPMS type with the tire pressure sensor properly mounted in each one.

Is each tire pressure sensor mounted properly?

YES—Go to step 10.

NO—Go to step 3.

3. Install known-good TPMS wheel(s).
4. To memorize the new sensor ID(s), drive the vehicle above 15 mph (24 km/h) for 40 continuous seconds, or memorize the ID(s) with the HDS (see page 18-51).

5. Test-drive the vehicle, and check the VEHICLE SPEED in the TPMS DATA LIST with the HDS.

Is the vehicle speed indicated?

YES—Go to Step 9.

NO—Go to Step 6.

6. Turn the ignition switch OFF.



7. Turn the ignition switch ON (II).

8. Check for DTCs with the HDS.

Is DTC 85 indicated?

YES—Go to the DTC 85 troubleshooting (see page 18-76). ■

NO—Check for loose terminals and poor connections at the TPMS control unit. If necessary, substitute a known-good TPMS control unit (see page 18-82) and recheck. ■

9. Turn the ignition switch OFF.

10. Turn the ignition switch ON (II).

11. Check that all the wheels are transmitting signals with the HDS.

NOTE: If UNDEFINED is shown on sensor transmitter status, turn the ignition switch OFF, rotate the appropriate tire 1/4 turn, then turn the ignition switch ON (II), and try again. If UNDEFINED is still displayed, repeat the procedure in the previous sentence until NORMAL is shown.

Is there at least one response from each wheel, in one full turn of the tire?

YES—The system is OK at this time. Clear the DTC with the HDS. ■

NO—Check for loose terminals and poor connections at the TPMS control unit. If necessary, substitute a known-good TPMS control unit (see page 18-82) and recheck. ■

DTC 45: Initiator Circuit Short Detection

1. Turn the ignition switch ON (II).

2. Clear the DTC with the HDS.

3. Turn the ignition switch OFF, then turn it ON (II) again.

4. Check for DTCs with the HDS.

Is DTC 45 indicated?

YES—Go to step 5.

NO—The system is OK at this time. ■

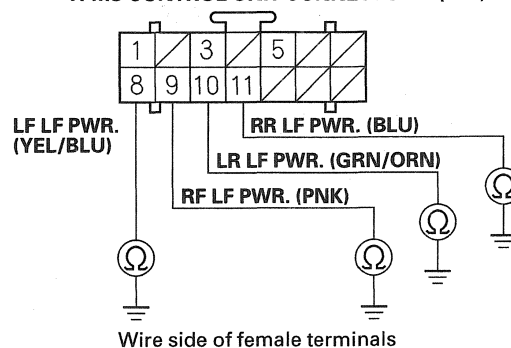
5. Turn the ignition switch OFF.

6. Disconnect TPMS control unit connectors A (14P) and B (20P).

7. Check for continuity between the appropriate terminal in TPMS control unit connector A (14P) and body ground (see table).

Terminal name	TPMS control unit terminal No.
RF LF PWR.	9
LF LF PWR.	8
RR LF PWR.	11
LR LF PWR.	10

TPMS CONTROL UNIT CONNECTOR A (14P)



Is there continuity?

YES—Go to step 8.

NO—Go to step 10.

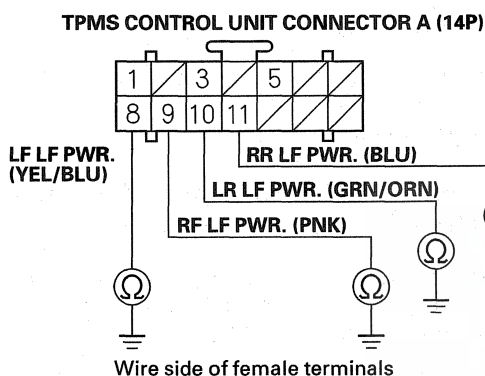
(cont'd)

TPMS

DTC Troubleshooting (cont'd)

8. Disconnect the appropriate initiator 3P connector.
9. Check for continuity between the appropriate terminal in TPMS control unit connector A (14P) and body ground (see table).

Terminal name	TPMS control unit terminal No.
RF LF PWR.	9
LF LF PWR.	8
RR LF PWR.	11
LR LF PWR.	10



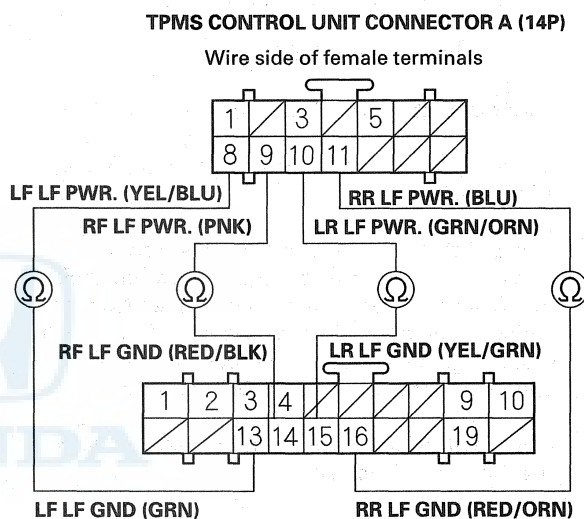
Is there continuity?

YES—Repair the short to body ground in the appropriate wire between the TPMS control unit and the initiator. ■

NO—Replace the initiator (see page 18-83). ■

10. Check for continuity between the appropriate terminal in TPMS control unit connector A (14P) and connector B (20P) terminals.

Tire location	TPMS control unit terminal name/No.	
	Connector A (14P)	Connector B (20P)
Right-front	RF LF PWR./9	RF LF GND/14
Left-front	LF LF PWR./8	LF LF GND/13
Right-rear	RR LF PWR./11	RR LF GND/16
Left-rear	LR LF PWR./10	LR LF GND/15



Is there continuity?

YES—Go to Step 11.

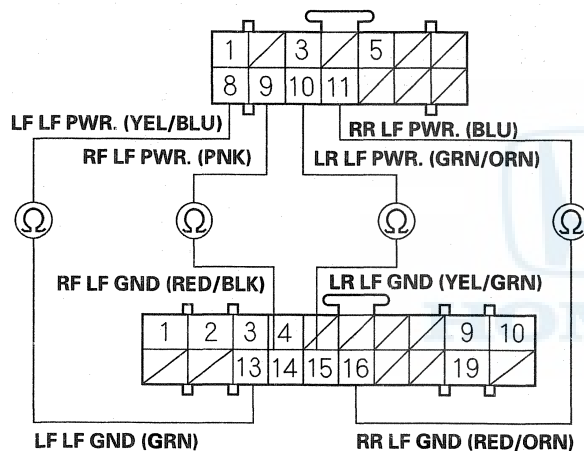
NO—Go to Step 13.

11. Disconnect the appropriate initiator 3P connector.
12. Check for continuity between the appropriate terminal in TPMS control unit connector A (14P) and connector B (20P) terminals.

Tire location	TPMS control unit terminal name/No.	
	Connector A (14P)	Connector B (20P)
Right-front	RF LF PWR./9	RF LF GND/14
Left-front	LF LF PWR./8	LF LF GND/13
Right-rear	RR LF PWR./11	RR LF GND/16
Left-rear	LR LF PWR./10	LR LF GND/15

TPMS CONTROL UNIT CONNECTOR A (14P)

Wire side of female terminals



TPMS CONTROL UNIT CONNECTOR B (20P)

Wire side of female terminals

Is there continuity?

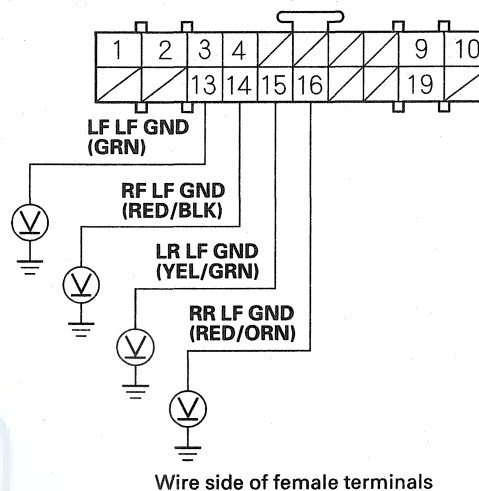
YES—Repair the short in the appropriate wire between the TPMS control unit and the initiator. ■

NO—Replace the initiator (see page 18-83). ■

13. Turn the ignition switch ON (II).

14. Measure voltage between the appropriate terminal in TPMS control unit connector B (20P) and body ground individually.

TPMS CONTROL UNIT CONNECTOR B (20P)



Is there battery voltage?

YES—Repair the short to power in the appropriate wire between the TPMS control unit and the initiator. ■

NO—Check for loose terminals and poor connections at the TPMS control unit. If necessary, substitute a known-good TPMS control unit (see page 18-82) and recheck. ■

DTC Troubleshooting (cont'd)

DTC 51, 53, 55, 57: Tire Pressure Sensor Registration Error

1. Turn the ignition switch OFF.
2. Check the indicated location to make sure the wheel is a TPMS type with the tire pressure sensor.

DTC	Tire location
51	Right-front
53	Left-front
55	Right-rear
57	Left-rear

Is a TPMS type wheel with a tire pressure sensor mounted on the vehicle?

YES—Go to Step 8.

NO—Go to Step 3.

3. Install a known-good TPMS wheel.
4. To memorize the sensor ID, drive the vehicle above 15 mph (24 km/h) for 40 continuous seconds, or memorize the ID with the HDS (see page 18-51).
5. Turn the ignition switch OFF.
6. Turn the ignition switch ON (II).
7. With the HDS, check the indicated tire for the tire sensor transmitter status changing to "Normal".

NOTE: If UNDEFINED is shown on sensor transmitter status, turn the ignition switch OFF, rotate the tire 1/4 turn, then turn the ignition switch ON (II), and try again. If UNDEFINED is still displayed, repeat the procedure in the previous sentence until NORMAL is shown.

DTC	Tire location
51	Right-front
53	Left-front
55	Right-rear
57	Left-rear

Is there at least one response in one full turn of the tire?

YES—The system is OK at this time. Clear the DTC with the HDS. ■

NO—Go to step 13.

8. Install a wheel with a known-good tire pressure sensor on the vehicle.
9. To memorize the sensor ID, drive the vehicle above 15 mph (24 km/h) for 40 continuous seconds, or memorize the ID with the HDS (see page 18-51).
10. Turn the ignition switch OFF.
11. Turn the ignition switch ON (II).
12. With the HDS, check the indicated tire for the tire sensor transmitter status changing to "Normal".

NOTE: If UNDEFINED is shown on sensor transmitter status, turn the ignition switch OFF, rotate the tire 1/4 turn, then turn the ignition switch ON (II), and try again. If UNDEFINED is still displayed, repeat the procedure in the previous sentence until NORMAL is shown.

DTC	Tire location
51	Right-front
53	Left-front
55	Right-rear
57	Left-rear

Is there a response this time?

YES—Replace the tire pressure sensor on the customer's wheel (see page 18-84). ■

NO—Go to step 13.

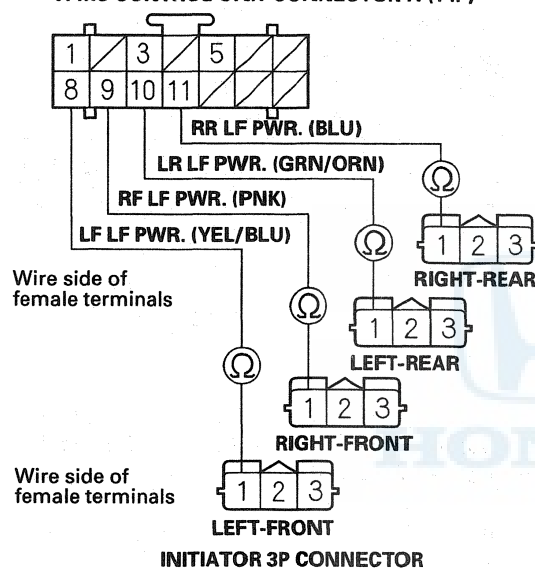
13. Turn the ignition switch OFF.
14. Disconnect TPMS control unit connectors A (14P) and B (20P) and the appropriate initiator 3P connector.

DTC	Tire location
51	Right-front
53	Left-front
55	Right-rear
57	Left-rear

15. Check for continuity between the appropriate terminal in TPMS control unit connector A (14P) and the corresponding terminal in the initiator 3P connector (see table).

DTC	TPMS control unit terminal No.	Initiator name/terminal No.
51	9	RIGHT-FRONT/1
53	8	LEFT-FRONT/1
55	11	RIGHT-REAR/1
57	10	LEFT-REAR/1

TPMS CONTROL UNIT CONNECTOR A (14P)



Is there continuity?

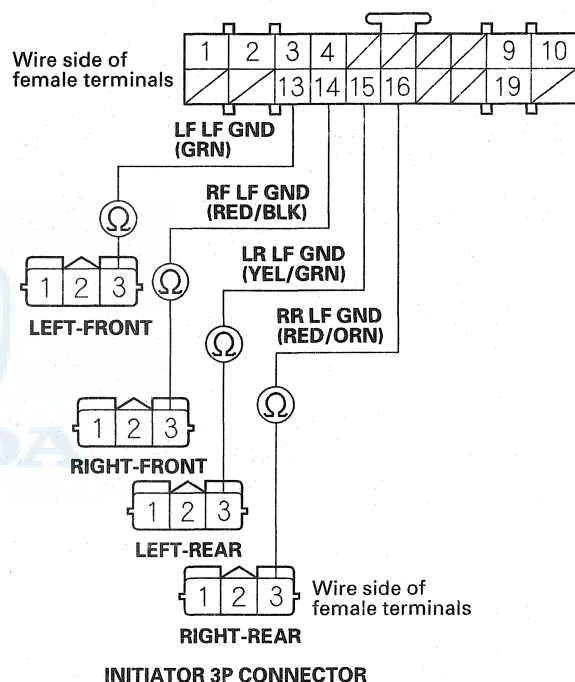
YES—Go to step 16.

NO—Repair the open in the appropriate wire between the TPMS control unit and the initiator. ■

16. Check for continuity between the appropriate terminal in TPMS control unit connector B (20P) and the corresponding terminal in the initiator 3P connector (see table).

DTC	TPMS control unit terminal No.	Initiator name/terminal No.
51	14	RIGHT-FRONT/3
53	13	LEFT-FRONT/3
55	16	RIGHT-REAR/3
57	15	LEFT-REAR/3

TPMS CONTROL UNIT CONNECTOR B (20P)



Is there continuity?

YES—Go to step 17.

NO—Repair the open in the appropriate wire between the TPMS control unit and the initiator. ■

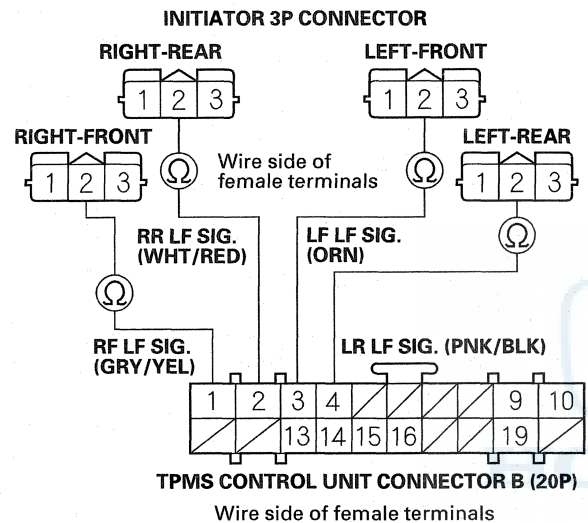
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TPMS

DTC Troubleshooting (cont'd)

17. Check for continuity between the appropriate terminal in TPMS control unit connector B (20P) and the corresponding terminal in the initiator 3P connector (see table).

DTC	TPMS control unit terminal No.	Initiator name/terminal No.
51	1	RIGHT-FRONT/2
53	3	LEFT-FRONT/2
55	2	RIGHT-REAR/2
57	4	LEFT-REAR/2



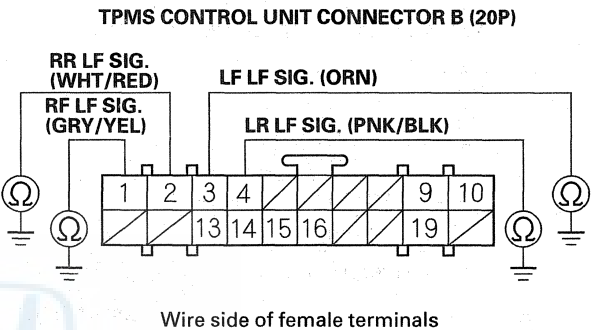
Is there continuity?

YES—Go to step 18.

NO—Repair the open in the appropriate wire between the TPMS control unit and the initiator. ■

18. Check for continuity between the appropriate terminal in TPMS control unit connector B (20P) and body ground (see table).

DTC	TPMS control unit terminal No.
51	1
53	3
55	2
57	4



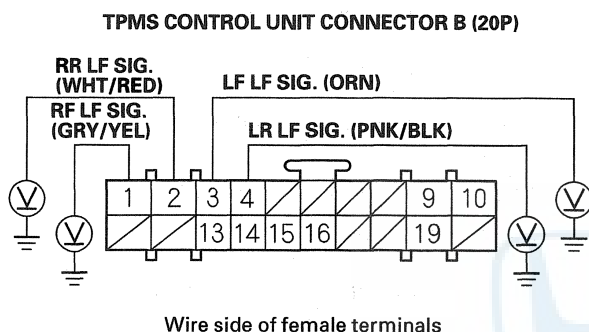
Is there continuity?

YES—Repair the short to body ground in the appropriate wire between the TPMS control unit and the initiator. ■

NO—Go to step 19.

19. Turn the ignition switch ON (II).
20. Measure voltage between the appropriate terminal in TPMS control unit connector B (20P) and body ground (see table).

DTC	TPMS control unit terminal No.
51	1
53	3
55	2
57	4



Is there battery voltage?

YES—Repair the short to power in the appropriate wire between the TPMS control unit and the initiator. ■

NO—Check for loose terminals and poor connections at the TPMS control unit. If necessary, substitute a known-good TPMS control unit (see page 18-82) and recheck. ■

DTC 81: TPMS Control Unit Failure

NOTE: Low battery voltage can cause this DTC. Make sure the battery is fully charged and in good condition.

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch OFF, then turn it ON (II) again.
4. Check for DTCs with the HDS.

Is DTC 81 indicated?

YES—Replace the TPMS control unit (see page 18-82). ■

NO—The system is OK at this time. ■

DTC Troubleshooting (cont'd)

DTC 83: No VSP Signal

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Test-drive the vehicle. Drive the vehicle 7 mph (10 km/h) or more.
4. Check the Vehicle Speed in the TPMS DATA LIST with the HDS.

Is the vehicle speed indicated?

YES—The system is OK at this time. ■

NO—Go to Step 5.

5. Check for DTCs with the HDS.

Is DTC 85 indicated?

YES—Go to DTC 85 troubleshooting (see page 18-76). ■

NO—Go to Step 6.

6. Check the speedometer.

Does the speedometer register speed?

YES—Check for loose terminals and poor connections at the TPMS control unit. If necessary, substitute a known-good TPMS control unit (see page 18-82) and recheck. ■

NO—Substitute a known-good PCM (see page 11-8) and retest. If no codes are shown, replace the original PCM (see page 11-230). ■

DTC 85: F-CAN Communication Failure

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch OFF, then turn the ignition switch ON (II) again.

4. Wait about 5 seconds.

5. Check for DTCs with the HDS.

Is DTC 85 indicated?

YES—Go to step 6.

NO—The system is OK at this time. ■

6. Test-drive the vehicle.

Does the speedometer work?

YES—Go to step 10.

NO—Go to step 7.

7. Turn the ignition switch OFF.

8. Disconnect TPMS control unit connector B (20P).

9. Test-drive the vehicle.

Does the speedometer work?

YES—Check for loose terminals and poor connections at the TPMS control unit. If necessary, substitute a known-good TPMS control unit (see page 18-82), and recheck. ■

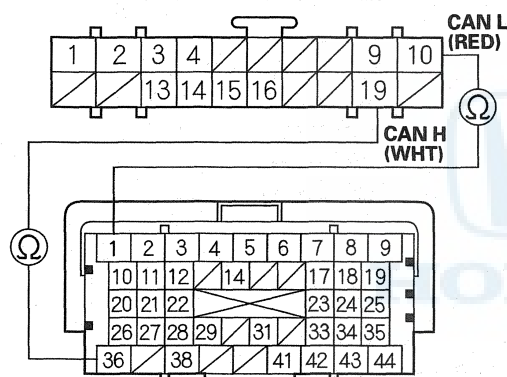
NO—Turn the ignition switch OFF, then reconnect all connectors, then check and troubleshoot the fuel and emissions system (see page 11-3). ■

10. Turn the ignition switch OFF.
11. Short the SCS line with the HDS.
12. Disconnect PCM connector A (44P).
13. Disconnect TPMS control unit connector B (20P).
14. Check for continuity between TPMS control unit connector B (20P) terminals and PCM connector A (44P) terminals individually (see table).

Terminal name	TPMS control unit B terminal	PCM A terminal
CAN L	No. 10	No. 1
CAN H	No. 19	No. 36

TPMS CONTROL UNIT CONNECTOR B (20P)

Wire side of female terminals



PCM CONNECTOR A (44P)

Terminal side of female terminals

Is there continuity?

YES—Check for loose terminals and poor connections at the TPMS control unit. If necessary, substitute a known-good TPMS control unit (see page 18-82), and recheck. ■

NO—Repair open in the appropriate wire between the TPMS control unit and the PCM. ■

DTC 91, 93, 95, 97: Tire Pressure Sensor Internal Error

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch OFF, then turn it ON (II) again.
4. Check for DTCs with the HDS.

DTC	Tire location
91	Right-front
93	Left-front
95	Right-rear
97	Left-rear

Is DTC 91, 93, 95 or 97 indicated?

YES—Replace the appropriate tire pressure sensor (see page 18-84). ■

NO—The system is OK at this time. ■

Symptom Troubleshooting

Low tire pressure and tire indicators do not come on, and no DTCs are stored

1. Turn the ignition switch ON (II).
2. Check the low tire pressure indicator for several seconds when the ignition switch is turned ON (II).

Did the indicator come on and then go off?

YES—Go to step 3.

NO—Go to step 7.

3. Turn the ignition switch OFF.
4. Check the pressure in all four tires.

Is the tire pressure 175 kPa (1.8 kgf/cm², 25 psi) or less?

YES—Go to step 5.

NO—The system is OK at this time. ■

5. Turn the ignition switch ON (II).
6. Check the pressure of all four tires with the HDS.

NOTE: If UNDEFINED is shown on sensor transmitter status, turn the ignition switch OFF, rotate the tire 1/4 turn, then turn the ignition switch ON (II), and try again. If UNDEFINED is still displayed, repeat the procedure in the previous sentence until NORMAL is shown.

Is the tire pressure shown on the HDS monitor within 40 kPa (0.4 kgf/cm², 6 psi) of the actual tire pressure?

YES—Go to step 7.

NO—Replace the appropriate tire pressure sensor (see page 18-84). ■

7. Do the troubleshooting for the gauge control module (see page 22-90).

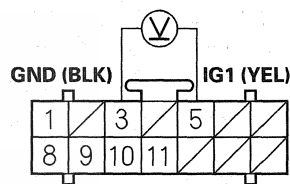
Is the gauge control module OK?

YES—Go to step 8.

NO—Replace the gauge control module (see page 22-102). ■

8. Turn the ignition switch OFF.
9. Disconnect TPMS control unit connector A (14P).
10. Measure voltage between TPMS control unit connector A (14P) terminals No. 3 and No. 5.

TPMS CONTROL UNIT CONNECTOR A (14P)

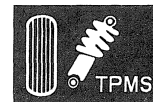


Wire side of female terminals

Is there battery voltage?

YES—Repair short to power in the wire between the TPMS control unit and the No. 9 (10 A) fuse in the driver's under-dash fuse/relay box. ■

NO—Check for loose terminals and poor connections at the TPMS control unit. If necessary, substitute a known-good TPMS control unit (see page 18-82), and recheck. ■



Low tire pressure and tire indicators do not go off, and no DTCs are stored

1. Turn the ignition switch OFF.
2. Disconnect TPMS control unit connector B (20P).
3. Turn the ignition switch ON (II).
4. Check the low tire pressure indicator for several seconds when the ignition switch is turned ON (II).

Did the indicator come on and then go off?

YES—Check for loose terminals and poor connections at the TPMS control unit. If necessary, substitute a known-good TPMS control unit (see page 18-82), and recheck. ■

NO—Do the troubleshooting for the gauge control module (see page 22-90). If necessary, substitute a known-good gauge control module (see page 22-102), and recheck. ■

TPMS indicator does not come on, and no DTCs are stored

1. Turn the ignition switch OFF.
2. Disconnect TPMS control unit connector B (20P).
3. Turn the ignition switch ON (II).
4. Check the TPMS indicator for several seconds when the ignition switch is turned ON (II).

Did the indicator come on and then go off?

YES—Check for loose terminals and poor connections at the TPMS control unit. If necessary, substitute a known-good TPMS control unit (see page 18-82), and recheck. ■

NO—Do the troubleshooting for the gauge control module (see page 22-90). If necessary, substitute a known-good gauge control module (see page 22-102), and recheck. ■



TPMS

Symptom Troubleshooting (cont'd)

TPMS indicator does not go off, and no DTCs are stored

1. Turn the ignition switch ON (II).
2. Check the TPMS indicator for several seconds when the ignition switch is turned ON (II).

Did the indicator come on and then go off?

YES—The system is OK at this time. ■

NO—Go to step 3.

3. Turn the ignition switch OFF.
4. Check the No. 10 (7.5 A) fuse in the auxiliary under-hood fuse box.

Is the fuse blown?

YES—Replace the No. 10 (7.5 A) fuse, and recheck. ■

NO—Reinstall the fuse, then go to step 5.

5. Check the No. 9 (10 A) fuse in the driver's under-dash fuse/relay box.

Is the fuse blown?

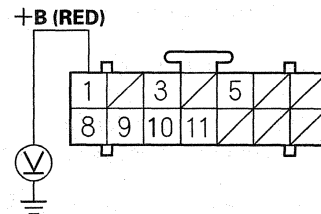
YES—Replace the No. 9 (10 A) fuse, and recheck. ■

NO—Reinstall the fuse, then go to step 6.

6. Disconnect TPMS control unit connector A (14P).

7. Measure voltage between body ground and TPMS control unit connector A (14P) terminal No. 1.

TPMS CONTROL UNIT CONNECTOR A (14P)



Wire side of female terminals

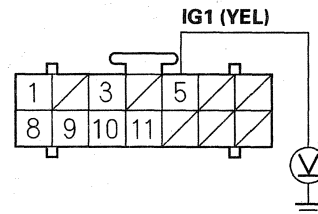
Is there battery voltage?

YES—Go to step 8.

NO—Repair open in the wire between the TPMS control unit and the No. 10 (7.5 A) fuse in the auxiliary under-hood fuse box. ■

8. Turn the ignition switch ON (II).
9. Measure voltage between body ground and TPMS control unit connector A (14P) terminal No. 5.

TPMS CONTROL UNIT CONNECTOR A (14P)



Wire side of female terminals

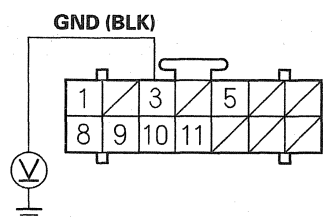
Is there battery voltage?

YES—Go to step 10.

NO—Repair open in the wire between the TPMS control unit and the No. 10 (7.5 A) fuse in the auxiliary under-hood fuse box. ■

10. Turn the ignition switch OFF.
11. Reconnect TPMS control unit connector A (14P).
12. Turn the ignition switch ON (II).
13. Measure voltage between body ground and TPMS control unit connector A (14P) terminal No. 3.

TPMS CONTROL UNIT CONNECTOR A (14P)



Wire side of female terminals

Is there 0.1 V or more?

YES—Repair open or high resistance in the wire between the TPMS control unit and body ground (G401). ■

NO—Go to step 14.

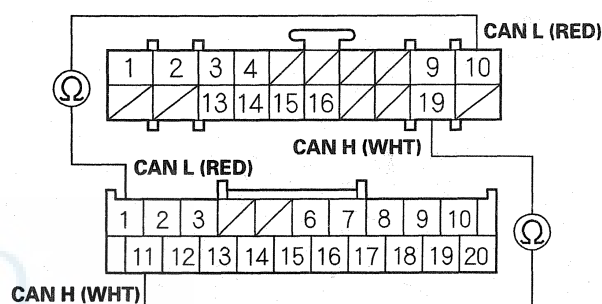
14. Turn the ignition switch OFF.
15. Disconnect gauge control module connector A (20P).
16. Disconnect TPMS control unit connector B (20P).

17. Check for continuity between TPMS control unit connector B (20P) terminals and gauge control module connector A (20P) terminals individually (see table).

Terminal name	TPMS control unit B terminal	Gauge control module A terminal
CAN L	No. 10	No. 1
CAN H	No. 19	No. 11

TPMS CONTROL UNIT CONNECTOR B (20P)

Wire side of female terminals



GAUGE CONTROL MODULE CONNECTOR A (20P)

Wire side of female terminals

Is there continuity?

YES—Do the troubleshooting for the gauge control module (see page 22-90). If the gauge control module is OK, check for loose terminals and poor connections at the TPMS control unit. If necessary, substitute a known-good TPMS control unit (see page 18-82), and recheck. ■

NO—Repair open in the wire between the TPMS control unit and the gauge control module. ■

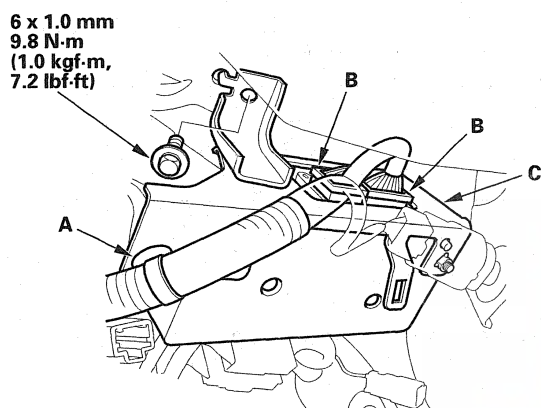
TPMS

TPMS Control Unit Replacement

NOTE: Make sure the TPMS control unit mounting bracket is not bent or twisted as this may affect its communication with the initiators and the tire pressure sensors.

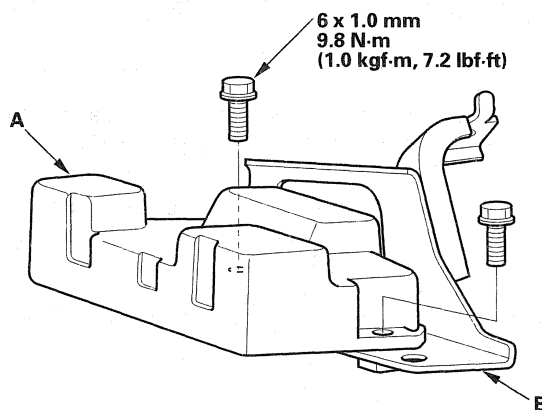
1. Turn the ignition switch OFF.
2. Remove the clip (A), and disconnect the TPMS control unit connectors (B).

NOTE: The TPMS control unit is located under the steering column.



3. Remove the TPMS control unit with the bracket (C).

4. Remove the TPMS control unit (A) from the bracket (B).



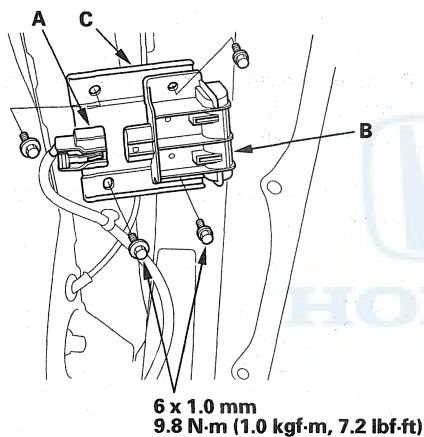
5. Install the TPMS control unit in the reverse order of removal.
6. Connect the HDS and memorize the pressure sensor IDs (see page 18-51). Do not memorize the IDs automatically.

Initiator Replacement

Front

NOTE: Make sure the initiator mounting bracket is not bent or twisted as this may affect its communication with the TPMS control unit and the tire pressure sensor.

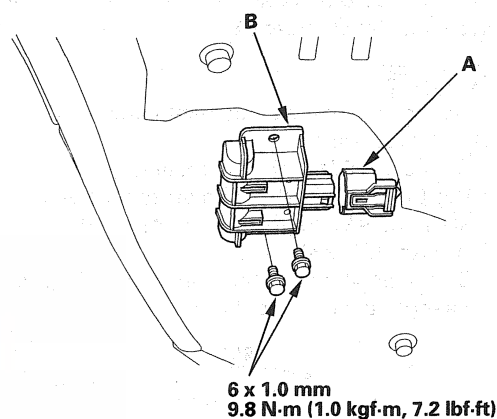
1. Turn the ignition switch OFF.
2. Raise the front of the vehicle, and support it with safety stands in the proper locations (see page 1-13).
3. Remove the front wheel.
4. Remove the front inner fender (see page 20-161).
5. Disconnect the initiator connector (A).



6. Remove the initiator (B) with the bracket (C) from the inner side of the wheelwell.
7. Remove the initiator from the bracket.
8. Install the initiator in the reverse order of removal.

Rear

1. Turn the ignition switch OFF.
2. Raise the rear of the vehicle, and support it with safety stands in the proper locations (see page 1-13).
3. Remove the rear wheel.
4. Disconnect the initiator connector (A).



5. Remove the initiator (B) from the inner side of the wheelwell.
6. Install the initiator in the reverse order of removal.

Tire Pressure Sensor Replacement

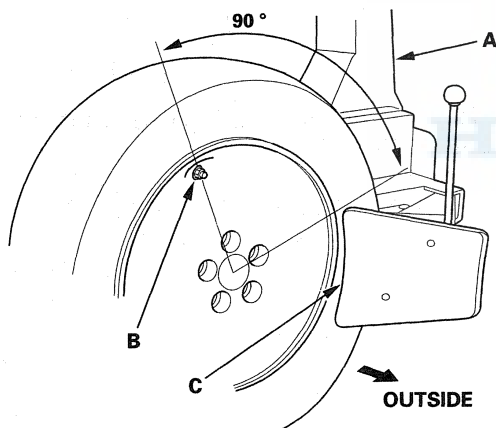
Removal

1. Raise the vehicle, and support it with safety stands in the proper locations (see page 1-13).
2. Remove the wheel with the faulty sensor.
3. Remove the tire valve stem cap and the valve stem core, and let the tire deflate.
4. Remove any balance weights, and then break the bead loose from the wheel with a commercially available tire changer (A).

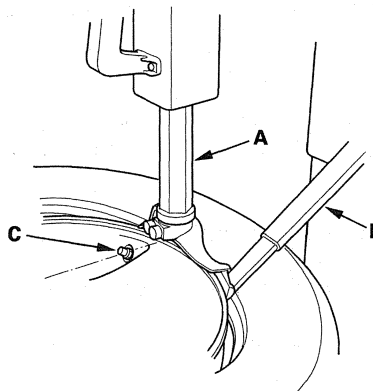
NOTICE

Note these items to avoid damaging the tire pressure sensor:

- Do the outside of the wheel first.
- Position the wheel as shown so the valve stem (B) is 90 degrees from the bead breaker (C) as shown.
- Do not position the bead breaker of the tire changer too close to the rim.

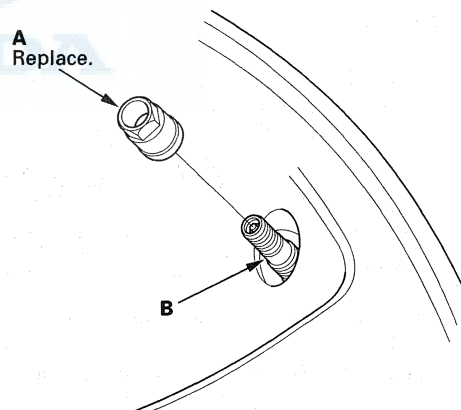


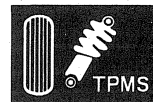
5. Position the wheel so the tire machine (A) and tire iron (B) are next to the valve stem (C) and will move away from it when the machine starts. Then remove the tire from the wheel.



6. Remove and discard the valve stem nut (A), then remove the tire pressure sensor and valve stem (B) from the wheel.

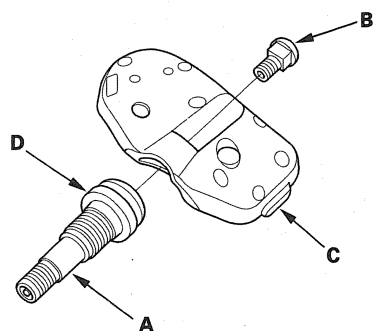
NOTE: Use a new nut and a new valve stem on reassembly.





7. Remove and discard the valve stem (A), and the screw (B) from the tire pressure sensor (C).

NOTE: The valve stem grommet (D) might stay in the wheel; make sure you remove it.

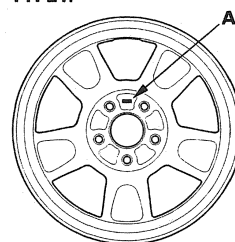


Installation

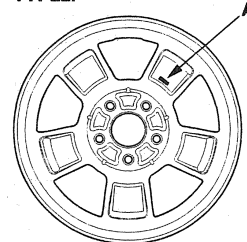
NOTE:

- Use only wheels that have a "TPMS" mark (A) on them.
- The vehicle may be equipped with one of the three types of wheels.

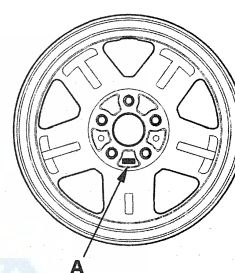
TYPE1:



TYPE2:

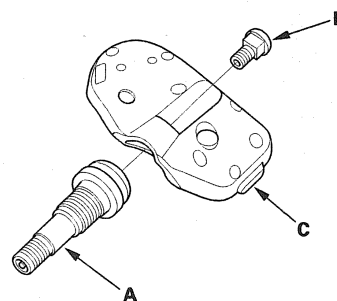


TYPE3:



1. Assemble the new valve stem (A), new screw (B), and the tire pressure sensor (C).

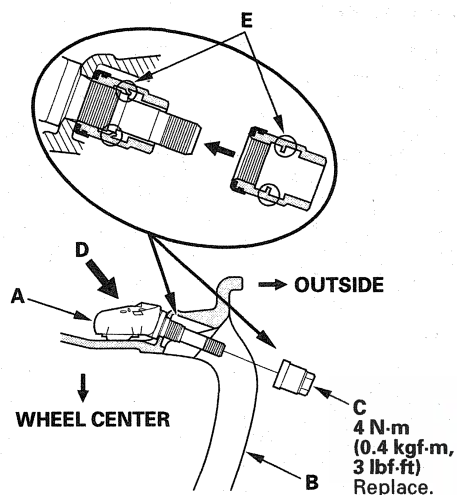
NOTE: Always use a new valve stem and new screw.



(cont'd)

Tire Pressure Sensor Replacement (cont'd)

- Before installing the tire pressure sensor, clean the mating surfaces on the sensor and the wheel.
- Install the tire pressure sensor (A) to the wheel (B), and tighten the valve nut (C) finger tight. Make sure the pressure sensor is resting on the wheel.

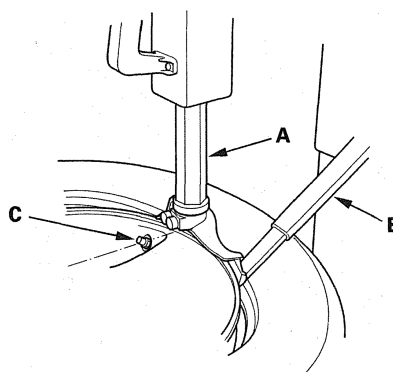


- Tighten the valve nut to the specified torque while holding the tire pressure sensor toward (D) the wheel. You may hear a snap or pop as you tighten the nut. This is normal.

NOTE:

- Do not reuse any nut that has been tightened, even one time, to the specified torque, as it is deformed inside (E).
- Do not use air or electric impact tools to tighten a valve stem nut.
- Tightening the nut above the specified torque can damage the nut.
- Make sure that there is no space between the sensor and the wheel.

- Lube the tire bead, and position the wheel so the tire machine (A) and tire iron (B) are next to the valve stem (C) and will move away from it when the machine starts. Then install the tire onto the wheel.



- Inflate the tire to 300 kPa (3.1 kgf/cm², 44 psi) to seat the tire bead to the rim, then adjust the tire pressure (see page 18-5), and install the valve stem cap.

NOTE: Make sure the tire bead is seated on both sides of the rim uniformly.

- Check and adjust the wheel balance, then install the wheels on the vehicle.
- Remove the jack stands, and lower the jack.
- Connect the HDS and memorize the pressure sensor ID(s) (see page 18-51).

Brakes

Conventional Brake Components

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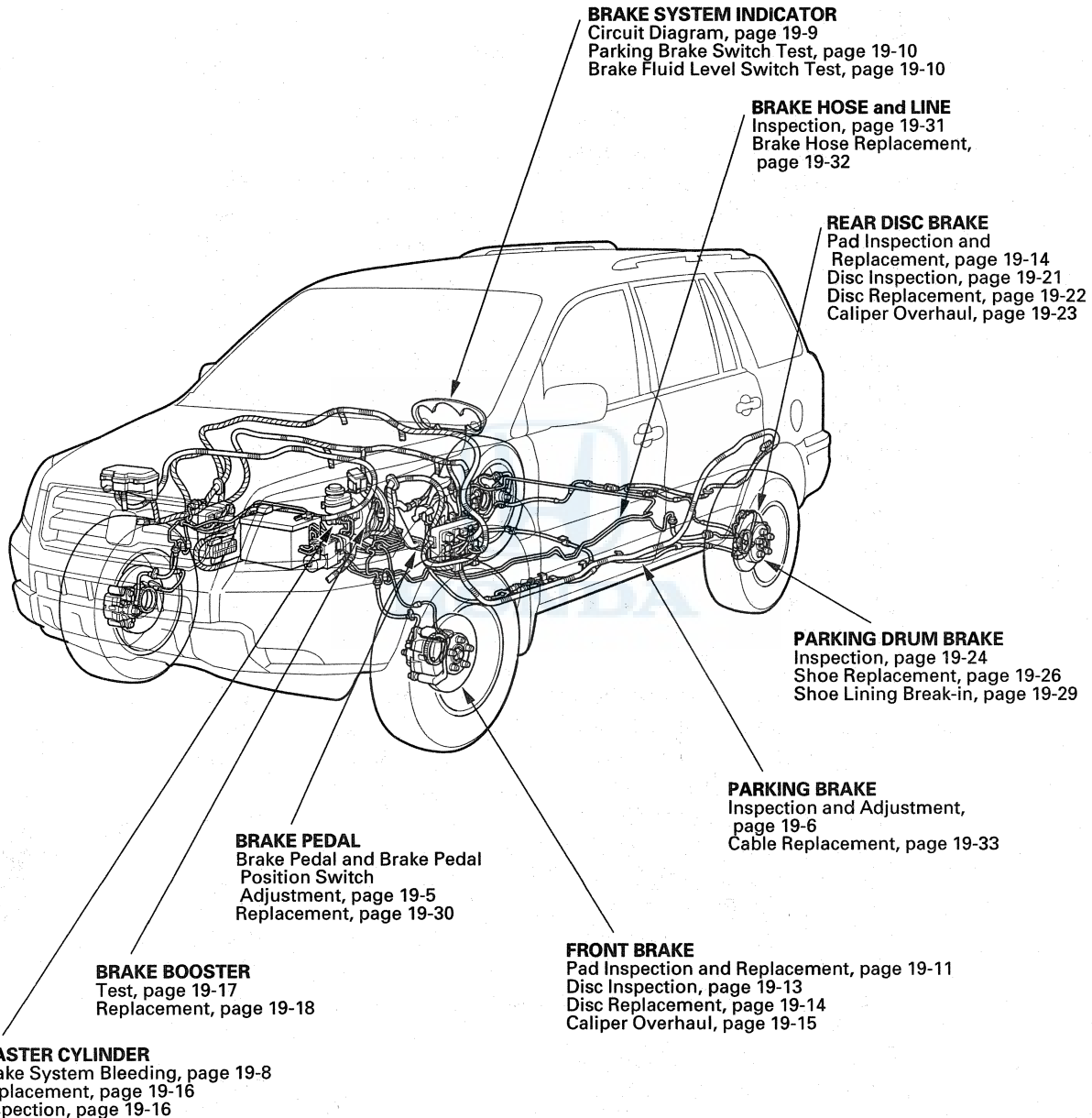
VSA (Vehicle Stability Assist)

System Components	19-35
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Conventional Brake Components

Component Location Index





Brake System Inspection and Test

Inspect the brake system components listed. Repair or replace any parts that are leaking or damaged.

Component Inspections:

Component	Procedure	Also check for
Master Cylinder	Look for damage or signs of fluid leakage at: <ul style="list-style-type: none">• Reservoir or reservoir grommets.• Line joints.• Between master cylinder and booster.	Bulging seat at reservoir cap. This is a sign of fluid contamination.
Brake Hoses	Look for damage or signs of fluid leakage at: <ul style="list-style-type: none">• Line joints and banjo bolt connections.• Hoses and lines, also inspect for twisting or damage.	Bulging, twisted, or bent lines.
Caliper	Look for damage or signs of fluid leakage at: <ul style="list-style-type: none">• Piston seal.• Banjo bolt connections.• Bleed screw.	Seized or sticking caliper pins.
VSA Modulator-control Unit	Look for damage or signs of fluid leakage at: <ul style="list-style-type: none">• Line joints.• Modulator-control unit.	

Brake System Test

Brake pedal sinks/fades when braking

1. Set the parking brake, and start the engine, then turn off the A/C switch. Allow the engine to warm up to normal operating temperature (radiator fan comes on twice).
2. Attach a 50 mm (2 in.) piece of masking tape along the bottom of the steering wheel, and draw a horizontal reference mark across it.
3. With the transmission in the P or N position, press and hold the brake pedal lightly (about the same pressure needed to keep an A/T-equipped vehicle from creeping), then release the parking brake.
4. While still holding the brake pedal, hook the end of the tape measure behind the brake pedal, then pull the tape up to the steering wheel. Note the measurement between the brake pedal and the reference mark on the steering wheel.
5. Apply steady pressure to the brake pedal for 3 minutes.
6. Watch the tape measure.
 - If the measurement increases 10 mm (3/8 in.) or less, the master cylinder is OK.
 - If the measurement increases more than 10 mm (3/8 in.), replace the master cylinder.

Conventional Brake Components

Symptom Troubleshooting

Rapid brake pad wear, vehicle vibration (after a long drive), or high, hard brake pedal

NOTE: Make sure that the caliper pins are installed correctly.

The upper caliper pin B and lower caliper pin A are different. If the pins are installed in the wrong location, it will cause vibration, uneven or rapid brake pad wear, and possibly uneven tire wear. For proper caliper pin location (see page 19-15).

1. Drive the vehicle until the brakes drag or until the pedal is high and hard. This can take 20 or more brake pedal applications during an extended test-drive.
2. With the engine running, raise the vehicle on a lift, and spin all four wheels by hand.

Is there brake drag at any of the wheels?

YES—Go to step 3.

NO—Look for other causes of pad wear, high pedal, or vehicle vibration. ■

3. Turn the engine off, press the brake pedal several times to deplete the vacuum in the brake booster, and then spin the wheels again to check for brake drag.

Is there brake drag at any of the wheels?

YES—Go to step 4.

NO—Replace the brake booster (see page 19-18). ■

4. Without removing the brake lines, unbolt and separate the master cylinder from the booster, then spin the wheels to check for brake drag.

Is there brake drag at any of the wheels?

YES—Go to step 5.

NO—Check the brake pedal position switch adjustment and pedal free play (see page 19-5). ■

5. Loosen the hydraulic lines at the master cylinder, then spin the wheels to check for brake drag.

Is there brake drag at any of the wheels?

YES—Go to step 6.

NO—Check the master cylinder reservoir for contamination in the brake fluid. If you find contamination, flush the entire brake system of all contaminated fluid. If the brake fluid is OK, replace the master cylinder (see page 19-16). ■

6. Loosen the bleed screws at each caliper, then spin the wheels to check for brake drag.

Is there brake drag at any of the wheels?

YES—Check the master cylinder reservoir for contamination in the brake fluid. If you find contamination, flush the entire brake system of all contaminated fluid. If the brake fluid is OK, disassemble and repair the caliper on the wheel(s) with brake drag. ■

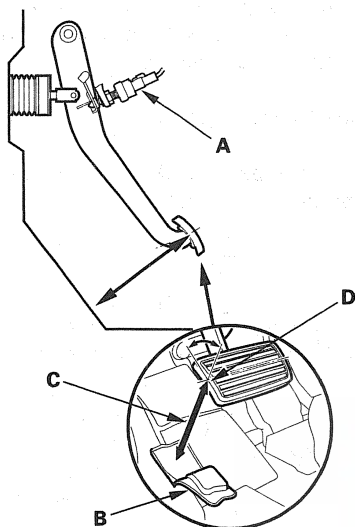
NO—Look for and replace any damaged brake lines. If all brake lines are OK, replace the VSA modulator-control unit (see page 19-100). ■



Brake Pedal and Brake Pedal Position Switch Adjustment

Pedal Height

1. Turn the brake pedal position switch (A) counterclockwise, and pull it back until it is no longer touching the brake pedal.

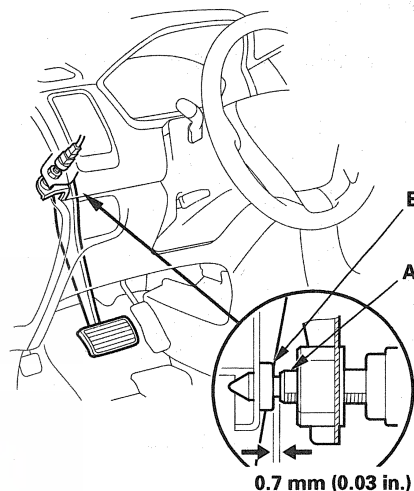


2. Pull back the carpet and find the cutout (B) in the insulator. Measure the pedal height (C) at the middle of the left side center of the pedal pad (D) to the floor.

Standard pedal height (with carpet removed):
155 mm (6 1/8 in.)

Brake Pedal Position Switch Clearance

3. Lift up on the brake pedal by hand. Push in the brake pedal position switch until its plunger is fully pressed (threaded end (A) touching the pad (B) on the pedal arm). Turn the switch 45° clockwise to lock it. The gap between the brake pedal position switch and the pad is automatically adjusted to 0.7 mm (0.03 in.) by locking the switch. Make sure the brake lights go off when the pedal is released.



4. Check the brake pedal free play.

(cont'd)

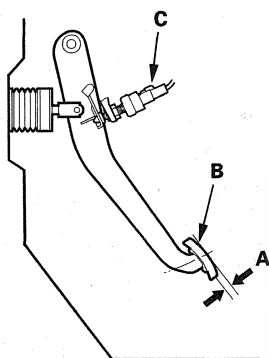
Conventional Brake Components

Brake Pedal and Brake Pedal Position Switch Adjustment (cont'd)

Pedal Free Play

1. With the engine off, inspect the play (A) at the brake pedal pad (B) by pushing the brake pedal by hand. If the brake pedal free play is out of specification, adjust the brake pedal position switch (C). If the brake pedal free play is insufficient, it may result in brake drag.

Free play: 1–5 mm (1/16–3/16 in.)



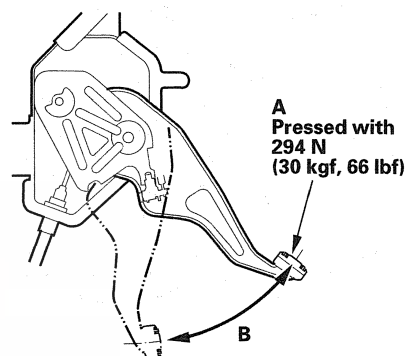
Parking Brake Inspection and Adjustment

Inspection

1. Press the parking brake pedal (A) with 294 N (30 kgf, 66 lbf) of force to fully apply the parking brake. The parking brake pedal should be locked within the specified number of clicks (B).

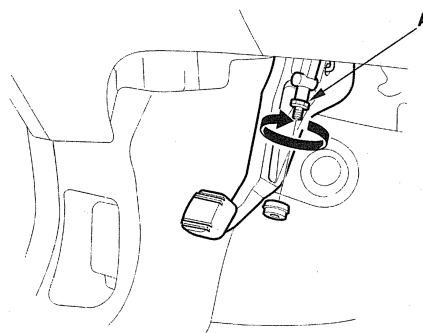
Pedal locked clicks: 4 to 6

If the number of pedal clicks is excessive, adjust the parking brake.



Minor Adjustment

1. Raise the rear of the vehicle, and support it with safety stands in the proper locations (see page 1-13).
2. Tighten the parking brake adjusting nut (A) until the parking brakes drag slightly when the rear wheels are turned.

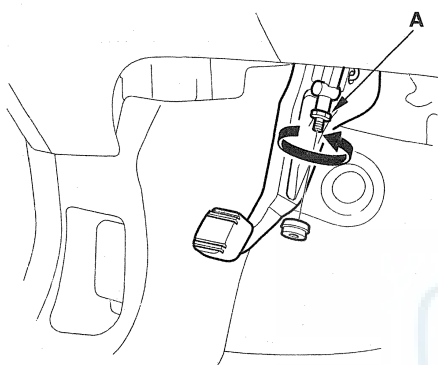


3. Back off the parking brake adjusting nut in half-turn increments, and check for proper adjustment (4 to 6 clicks) at a pedal force of 294 N (30 kgf, 66 lbf).



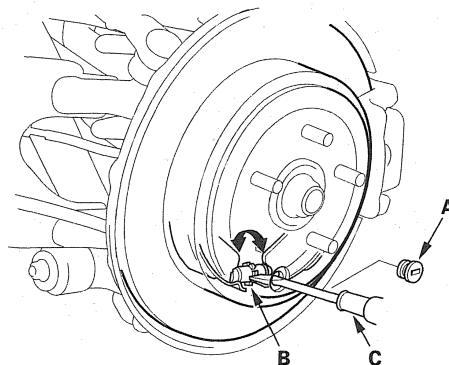
Major Adjustment (to be done when replacing parking brake shoes)

1. Raise the rear of the vehicle, and support it with safety stands in the proper locations (see page 1-13).
2. Fully release the parking brake pedal.
3. Back off the parking brake adjusting nut (A) in the parking brake pedal.



4. Remove the rear wheels.

5. Remove the access plug (A).



6. Turn the ratchet teeth on the adjuster nut (B) with a flat-tip screwdriver (C) until the shoes lock against the parking brake drum. Then back off the adjuster 10 clicks, and install the access plug.
7. Do the minor adjustment procedure.
8. Clean the mating surfaces of the brake disc/drum and the inside of the wheel, then install the rear wheels.
9. Do the parking brake shoe lining break-in procedure (see page 19-29).

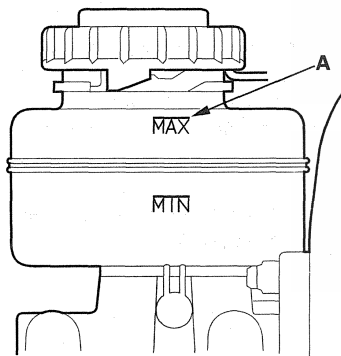
Conventional Brake Components

Brake System Bleeding

NOTE:

- Do not reuse the drained fluid. Use only clean Honda DOT 3 Brake Fluid from an unopened container. Using a non-Honda brake fluid can cause corrosion and shorten the life of the system.
- Make sure no dirt or other foreign matter is allowed to contaminate the brake fluid.
- Do not mix different brands of brake fluid; they may not be compatible.
- Do not spill brake fluid on the vehicle, it may damage the paint; if brake fluid does contact the paint, wash it off immediately with water.
- The reservoir connected to the master cylinder must be at the MAX (upper) level mark at the start of the bleeding procedure and checked after bleeding each brake system. Add fluid as required.

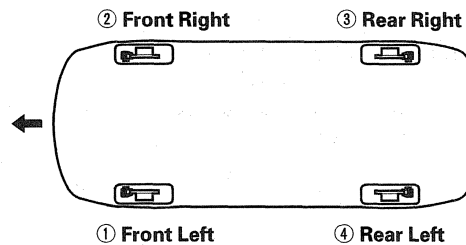
1. Make sure the brake fluid level in the reservoir is at the MAX (upper) level line (A).



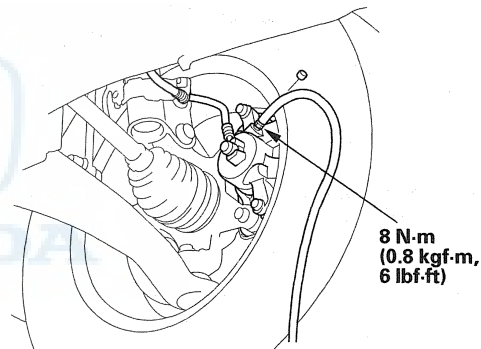
2. Slide a piece of clear plastic hose over the first bleed screw, and submerge the other end in a container of new brake fluid.
3. Have someone slowly pump the brake pedal several times, then apply steady pressure.
4. Starting at the left-front, loosen the brake bleed screw to allow air to escape from the system. Then tighten the bleed screw securely.

5. Repeat the procedure for each wheel in the sequence shown until air bubbles no longer appear in the fluid.

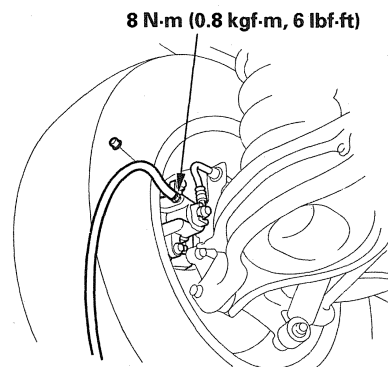
BLEEDING SEQUENCE:



Front



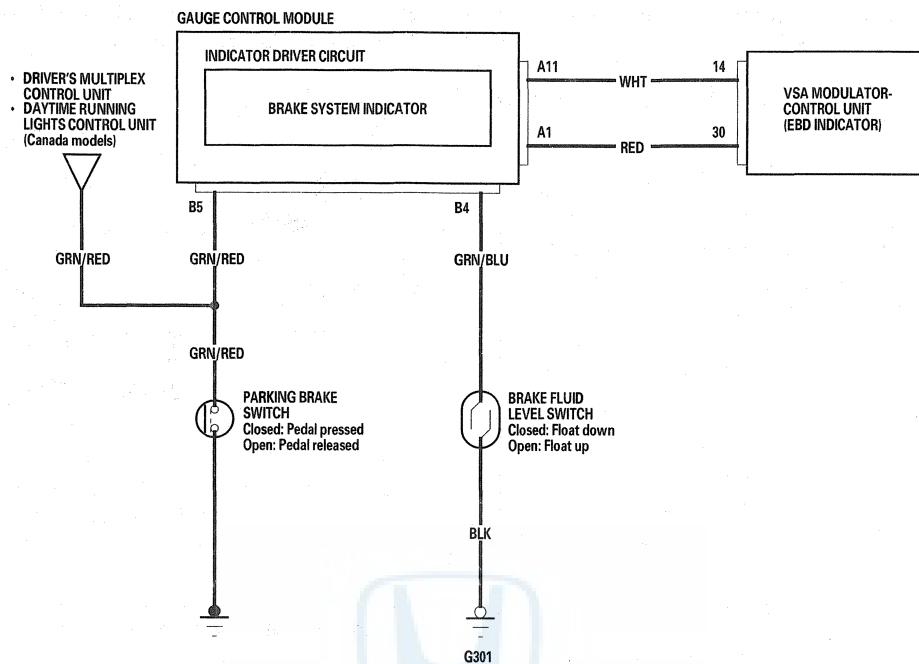
Rear



6. Refill the master cylinder reservoir to the MAX (upper) level line.



Brake System Indicator Circuit Diagram

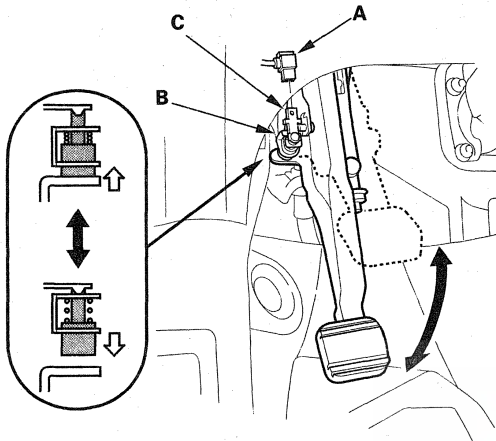


Conventional Brake Components

Parking Brake Switch Test

NOTE: If both the ABS/VSA indicator and the brake system indicator come on at the same time, check the VSA system first (see page 19-37).

1. Disconnect the parking brake switch connector (A) from the parking brake switch (B).



2. Check for continuity between the switch terminal (C) and body ground.

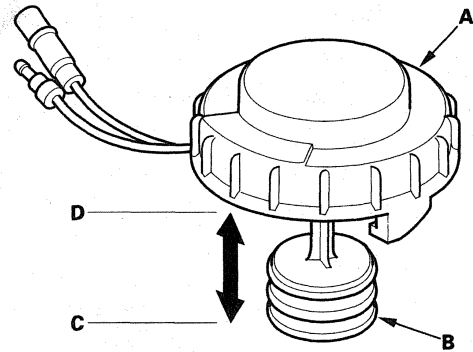
- With the parking brake pedal pressed, there should be continuity.
- With the parking brake pedal released, there should be no continuity.

NOTE: If the parking brake switch and the fluid level switch are OK, but the brake system indicator does not function, do the gauge control module test (see page 22-90).

3. Connect the parking brake switch connector to the parking brake switch.

Brake Fluid Level Switch Test

1. Remove the reservoir cap (A). Check that the float (B) moves up and down freely; if it doesn't, replace the reservoir cap assembly.



2. Check for continuity between the terminals with the float in the down position (C) and the up position (D).

- With the float up, there should be no continuity.
- With the float down, there should be continuity.



Front Brake Pad Inspection and Replacement

⚠ CAUTION

Frequent inhalation of brake pad dust, regardless of material composition, could be hazardous to your health.

- Avoid breathing dust particles.
- Never use an air hose or brush to clean brake assemblies. Use an OSHA-approved vacuum cleaner.

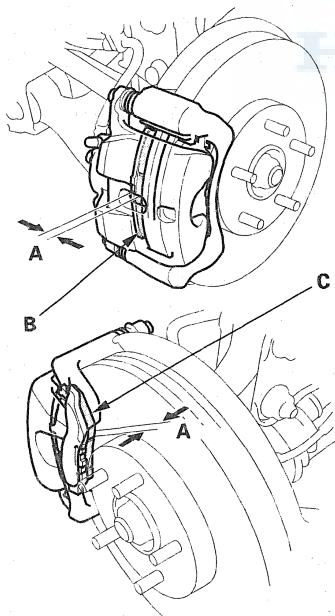
Inspection

1. Raise the front of the vehicle, and support it with safety stands in the proper locations (see page 1-13).
2. Remove the front wheels.
3. Check the thickness (A) of the inner brake pad (B) and outer brake pad (C). Do not include the thickness of the backing plate.

Brake pad thickness:

Standard: 10.5—11.5 mm (0.41—0.45 in.)

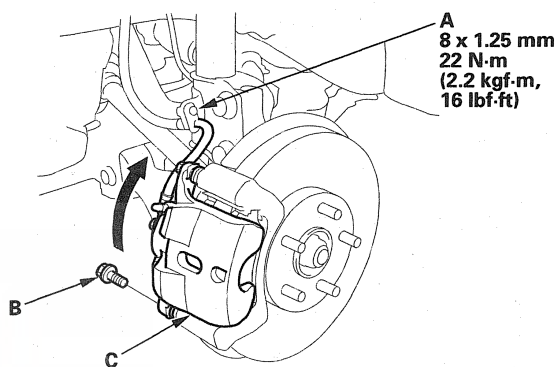
Service limit: 1.6 mm (0.06 in.)



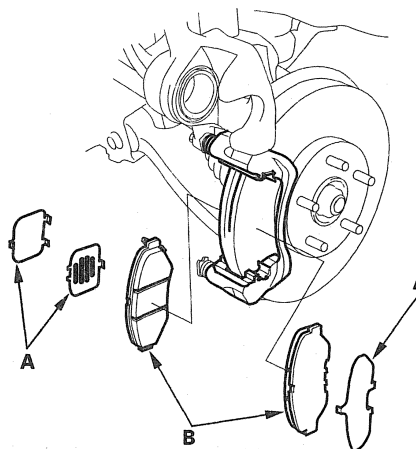
4. If the brake pads thickness is less than the service limit, replace the front brake pads as a set.
5. Clean the mating surface of the brake disc and the inside of the wheel, then install the front wheels.

Replacement

1. Remove some brake fluid from the master cylinder.
2. Raise the front of the vehicle, and support it with safety stands in the proper locations (see page 1-13).
3. Remove the front wheels.
4. Remove the brake hose bracket mounting bolt (A).



5. Remove the flange bolt (B) while holding the lower caliper pin with a wrench being careful not to damage the pin boot, and pivot the caliper (C) up out of the way. Check the hose and pin boots for damage and deterioration.
6. Remove the pad shims (A) and brake pads (B).

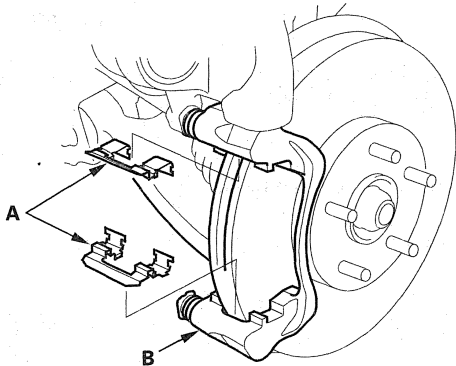


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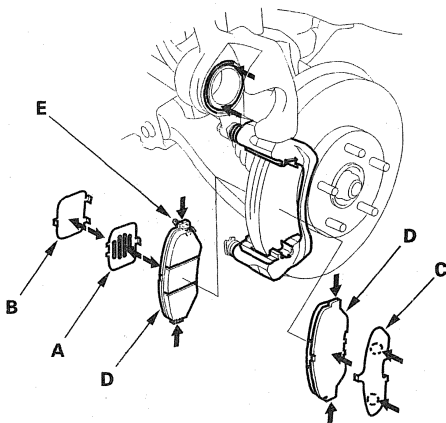
Conventional Brake Components

Front Brake Pad Inspection and Replacement (cont'd)

7. Remove the pad retainers (A).



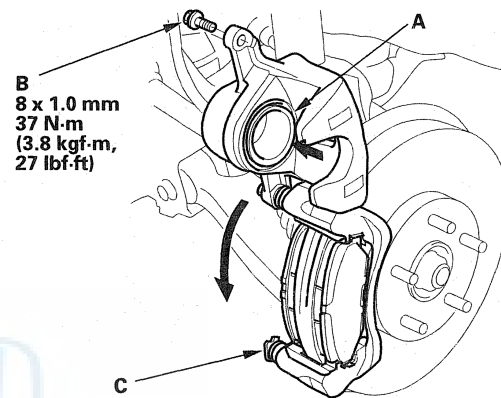
8. Clean the caliper bracket (B) thoroughly; remove any rust, and check for grooves and cracks.
9. Inspect the brake disc, and check for damage and cracks (see page 19-13).
10. Clean and install the pad retainers.
11. Apply a thin coat of M-77 assembly paste (P/N 08798-9010) to the pad side of outer pad shim C, inner pad shim B, both sides of inner pad shim A, the back of brake pads (D), and the other areas indicated by the arrows. Wipe excess assembly paste off the shims and brake pads. Contaminated brake discs or brake pads reduces stopping ability. Keep grease and assembly paste off the brake discs and brake pads.



12. Install the brake pads and pad shims correctly. Install the pad with the wear indicator (E) on the top inside. If you are reusing the brake pads, always reinstall the brake pads in their original positions to prevent a momentary loss of braking efficiency.

13. Push in the piston (A) so that the caliper will fit over the brake pads. Make sure that the piston boot is in position to prevent damaging it when pivoting the caliper down.

NOTE: Be careful when pressing in the caliper piston; brake fluid might overflow from the master cylinder's reservoir. If brake fluid gets on any painted surface, wash it off immediately with water.



14. Pivot the caliper down into position. Install the flange bolt (B), and tighten it to the specified torque while holding the lower caliper pin (C) with a wrench being careful not to damage the pin boot.
15. Install the brake hose bracket mounting bolt, and tighten it to the specified torque.
16. Clean the mating surfaces of the brake disc and the inside of the wheel, then install the front wheels.
17. Press the brake pedal several times to make sure the brakes work.

NOTE: Engagement may require a greater pedal stroke immediately after the brake pads have been replaced as a set. Several applications of the brake pedal will restore the normal pedal stroke.

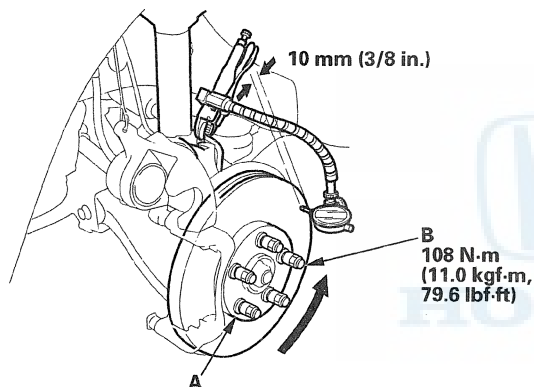
18. Add brake fluid as needed.
19. After installation, check for leaks at hose and line joints or connections, and retighten if necessary. Test-drive the vehicle, then check for leaks (see page 19-31).



Front Brake Disc Inspection

Runout

1. Raise the front of the vehicle, and support it with safety stands in the proper locations (see page 1-13).
2. Remove the front wheels.
3. Remove the brake pads (see page 19-11).
4. Inspect the brake disc surface for damage and cracks. Clean the brake disc thoroughly, and remove all rust.
5. Install suitable flat washers (A) and wheel nuts (B), and tighten the wheel nuts to the specified torque to hold the brake disc securely against the hub.



6. Set up the dial gauge against the brake disc as shown, and measure the runout at 10 mm (3/8 in.) from the outer edge of the brake disc.

Brake disc runout:

Service limit: 0.04 mm (0.0016 in.)

7. If the brake disc is beyond the service limit, refinish the brake disc with a commercially available on-car brake lathe.

Max. refinishing limit: 26.0 mm (1.02 in.)

NOTE:

- If the brake disc is beyond the service limit for refinishing, replace it (see page 19-14).
- A new brake disc should be refinished if its runout is greater than 0.04 mm (0.0016 in.).

Thickness and Parallelism

1. Raise the front of the vehicle, and support it with safety stands in the proper locations (see page 1-13).
2. Remove the front wheels.
3. Remove the brake pads (see page 19-11).
4. Using a micrometer, measure the brake disc thickness at eight points, about 45 ° apart and 10 mm (3/8 in.) in from the outer edge of the brake disc. Replace the brake disc if the smallest measurement is less than the max. refinishing limit.

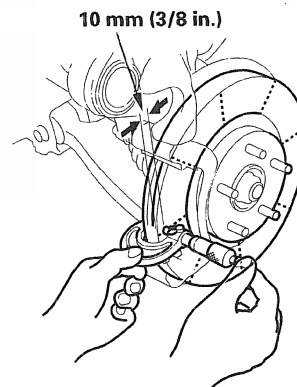
Brake disc thickness:

Standard: 27.9—28.1 mm (1.10—1.11 in.)

Max. refinishing limit: 26.0 mm (1.02 in.)

Brake disc parallelism: 0.015 mm (0.0006 in.) max.

NOTE: This is the maximum allowable difference between the thickness measurements.



5. If the brake disc is beyond the service limit for parallelism, refinish the brake disc with a commercially available on-car brake lathe.

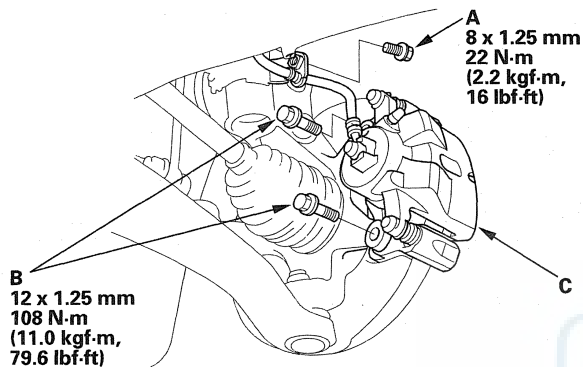
NOTE: If the brake disc is beyond the service limit for refinishing, replace it (see page 19-14).

Conventional Brake Components

Front Brake Disc Replacement

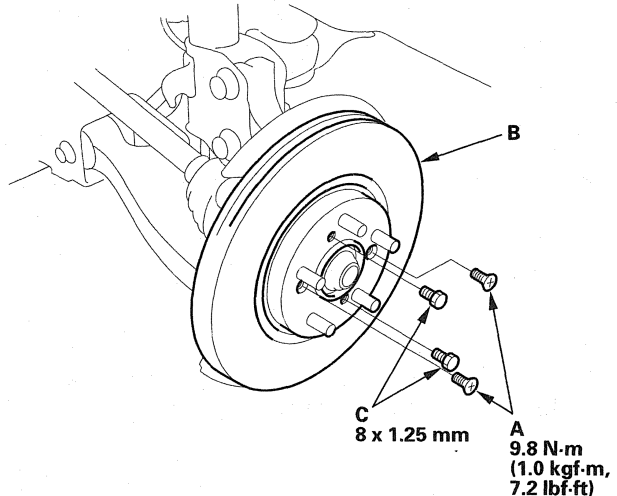
NOTE: Keep any grease off the brake disc and brake pads.

1. Raise the front of the vehicle, and support it with safety stands in the proper locations (see page 1-13).
2. Remove the front wheel.
3. Remove the brake hose bracket mounting bolt (A).



4. Remove the brake caliper bracket mounting bolts (B), then remove the caliper assembly (C) from the knuckle. To prevent damage to the caliper assembly or brake hose, use a short piece of wire to hang the caliper assembly from the undercarriage. Do not twist the brake hose excessively.

5. Remove the brake disc flat screws (A).



6. Remove the brake disc (B) from the front hub.

NOTE: If the brake disc is stuck to the front hub, screw two 8 x 1.25 mm bolts (C) into the brake disc to push it away from the front hub. Turn each bolt 90 degrees to prevent the brake disc from binding.

7. Install the brake disc in the reverse order of removal.

NOTE: Before installing the brake disc, clean the mating surfaces of the front hub and the inside of the brake disc.

8. Clean the mating surfaces of the brake disc and the inside of the wheel, then install the front wheel.



Front Brake Caliper Overhaul

CAUTION

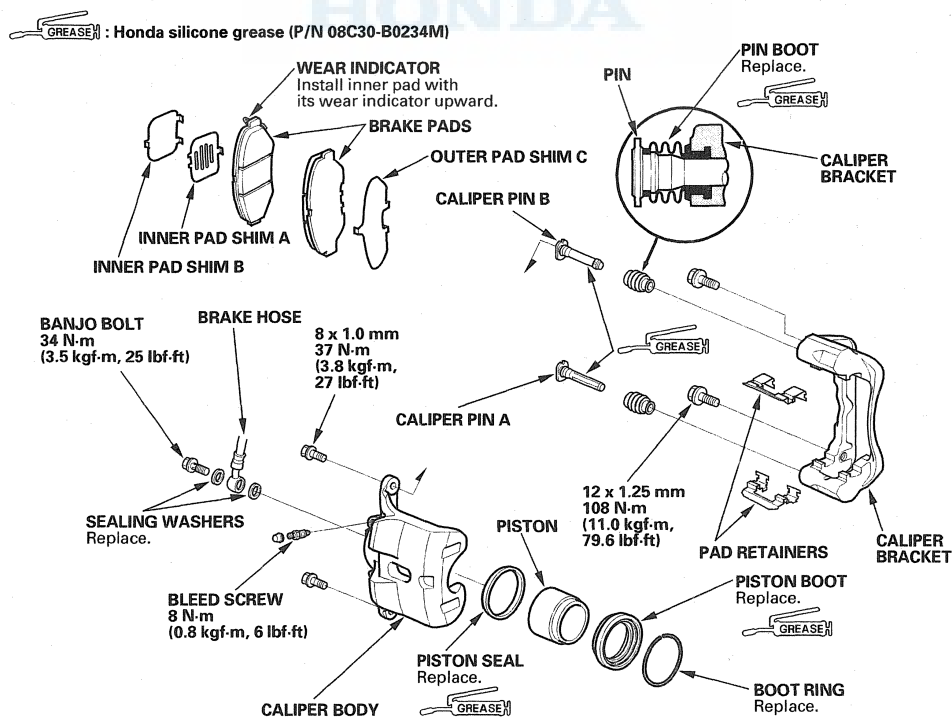
Frequent inhalation of brake pad dust, regardless of material composition, could be hazardous to your health.

- Avoid breathing dust particles.
- Never use an air hose or brush to clean brake assemblies. Use an OSHA-approved vacuum cleaner.

Remove, disassemble, inspect, reassemble, and install the caliper, and note these items:

NOTE: Make sure that the caliper pins are installed correctly. Upper caliper pin B and lower caliper pin A are different. If these caliper pins are installed in the wrong location, it will cause vibration, uneven or rapid pad wear, and possibly uneven tire wear.

- Do not spill brake fluid on the vehicle; it may damage the paint; if brake fluid gets on the paint, wash it off immediately with water.
- To prevent dripping brake fluid, cover disconnected hose joints with rags or shop towels.
- Clean all parts in brake fluid and air dry; blow out all passages with compressed air.
- Before reassembling, check that all parts are free of dirt and other foreign particles.
- Replace parts with new ones as specified in the illustration.
- Make sure no dirt or other foreign matter gets in the brake fluid.
- Make sure no grease or oil gets on the brake discs or pads.
- When reusing brake pads, always reinstall them in their original positions to prevent loss of braking efficiency.
- Do not reuse drained brake fluid. Use only clean Honda DOT 3 Brake Fluid from an unopened container. Using a non-Honda brake fluid can cause corrosion and shorten the life of the system.
- Do not mix different brands of brake fluid as they may not be compatible.
- Coat the pistons, piston seal grooves, and caliper bores with clean brake fluid.
- Replace all rubber parts with new ones whenever disassembled.
- After installing the caliper, check the brake hose and line for leaks, interference, and twisting.



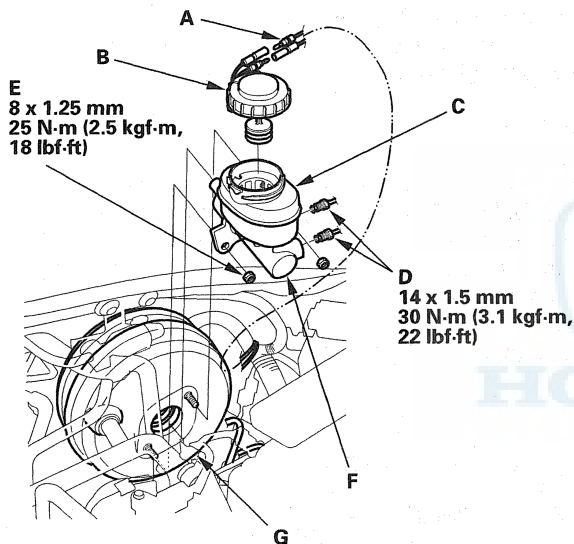
Conventional Brake Components

Master Cylinder Replacement

NOTICE

- Do not spill brake fluid on the vehicle; it may damage the paint; if brake fluid gets on the paint, wash it off immediately with water.
- Be careful not to damage or deform the brake lines during removal and installation.
- To prevent the brake fluid from flowing, plug and cover the hose ends and joints with a shop towel or equivalent.

1. Remove the intake air duct (see page 5-2).
2. Disconnect the brake fluid level switch connectors (A), and remove the reservoir cap (B).

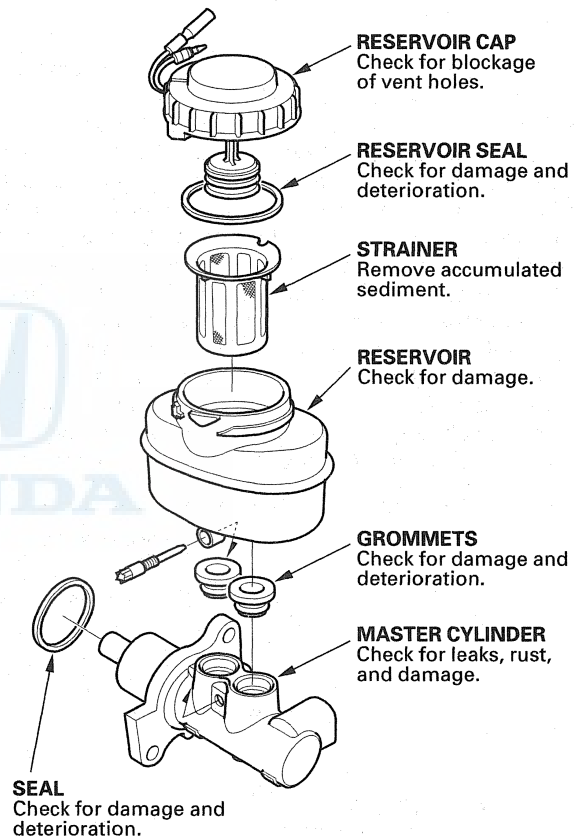


3. Remove the brake fluid from the master cylinder reservoir (C) with a syringe.
4. Disconnect the brake lines (D) from the master cylinder. To prevent spills, cover the hose joints with rags or shop towels.
5. Remove the master cylinder mounting nuts (E).
6. Remove the master cylinder (F) from the brake booster (G). Be careful not to bend or damage the brake lines when removing the master cylinder.
7. Install the master cylinder in the reverse order of removal.
8. Bleed the brake system (see page 19-8).
9. Spin the wheels to check for brake drag.

Master Cylinder Inspection

1. Inspect and note these items:

- Before reassembling, check that all parts are free of dirt and other foreign particles.
- Do not try to disassemble the master cylinder assembly. Replace the master cylinder assembly with a new part if necessary.
- Do not allow dirt or foreign matter to contaminate the brake fluid.
- Bleed the brake system (see page 19-8).





Brake Booster Test

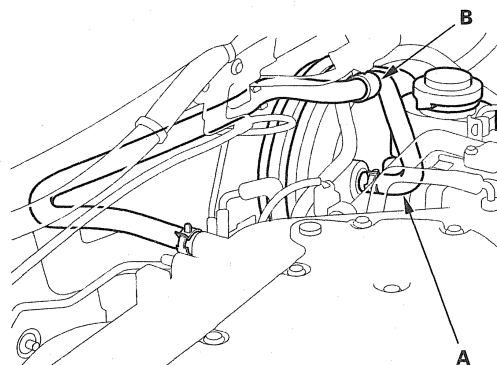
Functional Test

1. With the engine off, press the brake pedal several times to deplete the vacuum reservoir, then press the brake pedal hard, and hold it for 15 seconds. If the brake pedal sinks, either the master cylinder is bypassing internally, or the brake system is leaking. Inspect the brake hoses and lines (see page 19-31).
2. Start the engine with the brake pedal pressed. If the brake pedal sinks slightly, the vacuum booster is operating normally. If the brake pedal height does not vary, do the brake system test (see page 19-3).

Leak Test

1. Press the brake pedal with the engine running, then stop the engine. The brake pedal height should not vary while pressed for 30 seconds. If the pedal height rises, go to step 6. If it does not rise, go to step 2.
2. Start the engine and let it idle for 30 seconds. Turn the ignition switch off, and wait 30 seconds. Press the brake pedal several times using normal pressure. When the pedal is first pressed, it should be low. On consecutive applications, the pedal height should gradually rise. Does the pedal rise on each consecutive application? If it rises the booster is OK. If it does not go to step 3.

3. Disconnect the brake booster vacuum hose (A) at the booster. The check valve (B) is built into the hose.

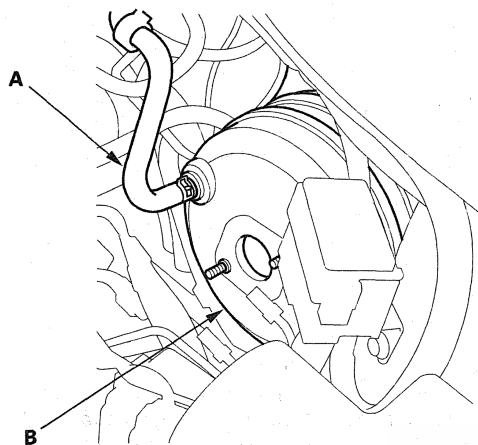


4. Start the engine, and let it idle. There should be vacuum available. If no vacuum is available, the check valve is not working properly. Replace the brake booster vacuum hose and check valve, and retest. If vacuum is found, go to step 5.
5. With the engine off, reconnect the vacuum hose to the brake booster.
6. Start the engine, and then pinch the brake booster vacuum hose between the check valve and the booster.
7. Turn the ignition switch off, and wait 30 seconds. Press the brake pedal several times using normal pressure. When the pedal is first pressed, it should be low. On consecutive applications, the pedal height should gradually rise.
 - If the pedal position does not vary inspect the seal between the master cylinder and booster. If the seal is OK, replace the brake booster.
 - If the pedal position varies, replace the brake booster vacuum hose/check valve assembly.

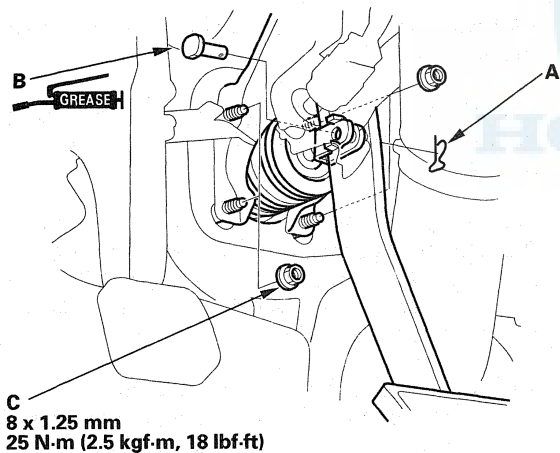
Conventional Brake Components

Brake Booster Replacement

1. Remove the master cylinder (see page 19-16).
2. Disconnect the brake booster vacuum hose (A) from the brake booster (B).



3. Remove the lock pin (A) and joint pin (B).

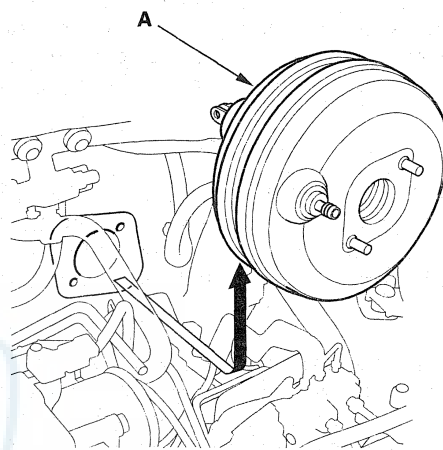


4. Remove the brake booster mounting nuts (C).

5. Pull the brake booster (A) forward, and remove it from the engine compartment.

NOTICE

- Be careful not to damage the booster surfaces and threads of the booster stud bolts.
- Be careful not to bend or damage the brake lines.



6. Install the brake booster in the reverse order of removal, and note these items:

- After installing the brake booster and master cylinder, fill the reservoir with new brake fluid, bleed the brake system (see page 19-8).
- Check the brake pedal height and free play (see page 19-5).



Rear Brake Pad Inspection and Replacement

⚠ CAUTION

Frequent inhalation of brake pad dust, regardless of material composition, could be hazardous to your health.

- Avoid breathing dust particles.
- Never use an air hose or brush to clean brake assemblies. Use an OSHA-approved vacuum cleaner.

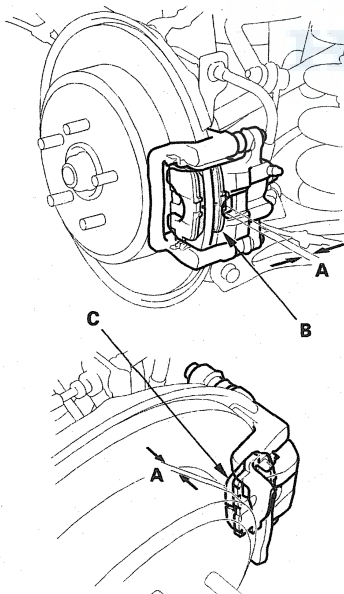
Inspection

1. Raise the rear of the vehicle, and support it with safety stands in the proper locations (see page 1-13).
2. Remove the rear wheels.
3. Check the thickness (A) of the inner pad (B) and outer pad (C). Do not include the thickness of the backing plate.

Brake pad thickness:

Standard: 9.5–10.5 mm (0.37–0.41 in.)

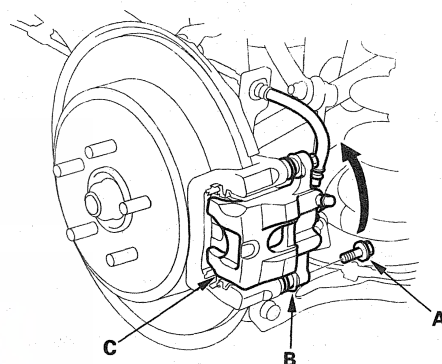
Service limit: 1.6 mm (0.06 in.)



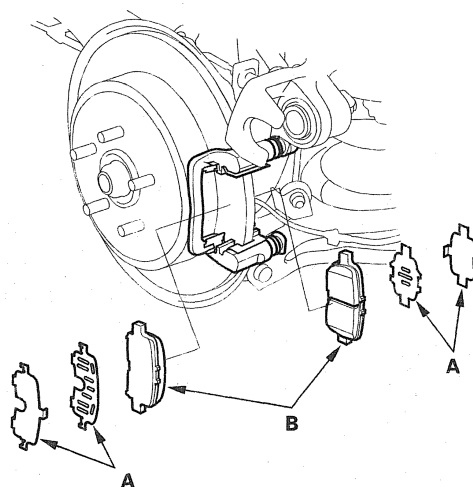
4. If the brake pad thickness is less than the service limit, replace the rear brake pads as a set.
5. Clean the mating surfaces of the brake disc/drum and the inside of the wheel, then install the rear wheels.

Replacement

1. Remove some brake fluid from the master cylinder.
2. Raise the rear of the vehicle, and support it with safety stands in the proper locations (see page 1-13).
3. Remove the rear wheels.
4. Remove the flange bolt (A) while holding the lower caliper pin (B) with a wrench being careful not to damage the pin boot, and pivot the caliper (C) up out of the way. Check the hose and pin boots for damage and deterioration.



5. Remove the pad shims (A) and brake pads (B).

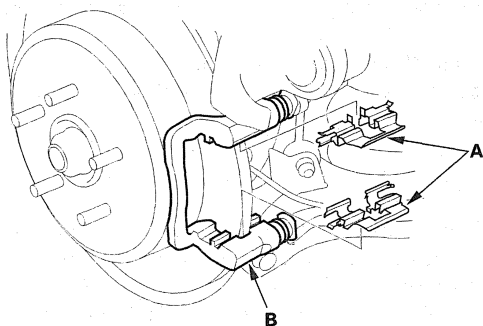


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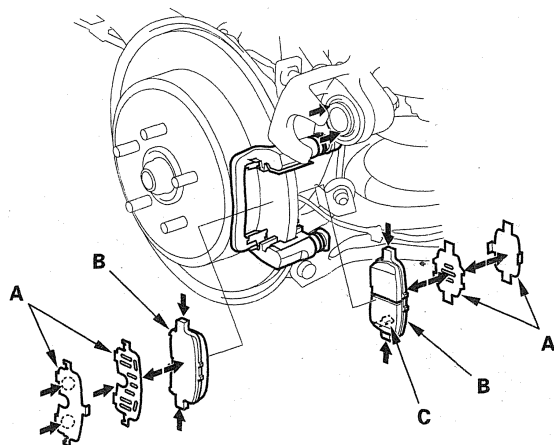
Conventional Brake Components

Rear Brake Pad Inspection and Replacement (cont'd)

6. Remove the pad retainers (A).



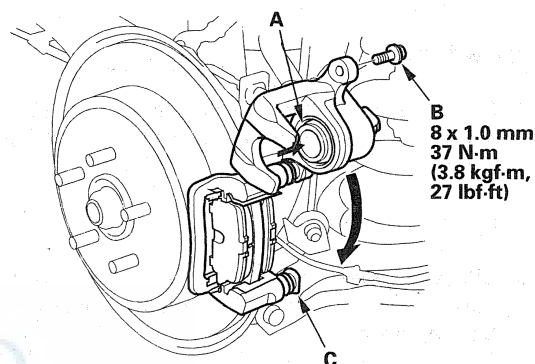
7. Clean the caliper bracket (B) thoroughly; remove any rust, and check for grooves and cracks.
8. Inspect the brake disc/drum, and check for damage and cracks (see page 19-21).
9. Clean and install the pad retainers.
10. Apply a thin coat of M-77 assembly paste (P/N 08798-9010) to the pad side of the shims (A), the back of the brake pads (B), and the other areas indicated by the arrows. Wipe excess assembly paste off the pad shims and brake pads. Contaminated brake discs or brake pads reduce stopping ability. Keep grease and assembly paste off the brake discs and pads.



11. Install the brake pads and pad shims correctly. Install the brake pad with the wear indicator (C) on the bottom inside. If you are reusing the brake pads, always reinstall the brake pads in their original positions to prevent a momentary loss of braking efficiency.

12. Push in the piston (A) so the caliper will fit over the brake pads. Make sure the piston boot is in position to prevent damaging it when pivoting the caliper down.

NOTE: Be careful when pushing in the caliper piston; brake fluid might overflow from the master cylinder's reservoir. If brake fluid gets on any painted surface, wash it off immediately with water.



13. Pivot the caliper down into position. Install the flange bolt (B), and tighten it to the specified torque while holding the lower caliper pin (C) with a wrench being careful not to damage the pin boot.
14. Clean the mating surfaces of the brake disc/drum and the inside of the wheel, then install the rear wheels.
15. Press the brake pedal several times to make sure the brakes work.

NOTE: Engagement may require a greater pedal stroke immediately after the brake pads have been replaced as a set. Several applications of the brake pedal will restore the normal pedal stroke.

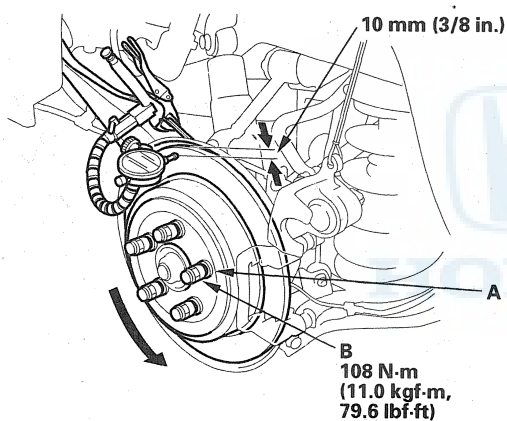
16. Add brake fluid as needed.
17. After installation, check for leaks at hose and line joints or connections, and retighten if necessary. Test-drive the vehicle, then check for leaks (see page 19-31).



Rear Brake Disc Inspection

Runout

1. Raise the rear of the vehicle, and support it with safety stands in the proper locations (see page 1-13).
2. Remove the rear wheels.
3. Remove the brake pads (see page 19-19).
4. Inspect the brake disc/drum surface for damage and cracks. Clean the brake disc/drum thoroughly, and remove all rust.
5. Install suitable flat washers (A) and wheel nuts (B), and tighten the wheel nuts to the specified torque to hold the brake disc/drum securely against the hub.



6. Set up the dial gauge against the brake disc/drum as shown, and measure the runout at 10 mm (3/8 in.) from the outer edge of the brake disc/drum.

Brake disc/drum runout:

Service limit: 0.04 mm (0.0016 in.)

7. If the brake disc/drum is beyond the service limit, refinish the brake disc/drum with a commercially available on-car brake lathe.

Max. refinishing limit: 9.0 mm (0.35 in.)

NOTE:

- If the brake disc/drum is beyond the service limit for refinishing, replace it (see page 19-22).
- A new brake disc/drum should be refinished if its runout is greater than 0.04 mm (0.0016 in.).

Thickness and Parallelism

1. Raise the rear of the vehicle, and support it with safety stands in the proper locations (see page 1-13).
2. Remove the rear wheels.
3. Remove the brake pads (see page 19-19).
4. Using a micrometer, measure the brake disc/drum thickness at eight points, about 45 ° apart and 10 mm (3/8 in.) in from the outer edge of the brake disc/drum. Replace the brake disc/drum if the smallest measurement is less than the max. refinishing limit.

Brake disc/drum thickness:

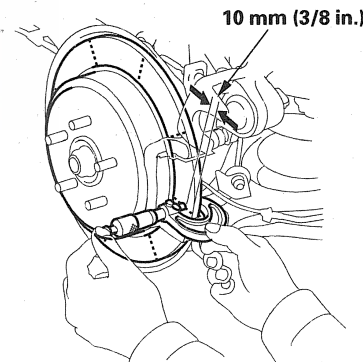
Standard: 10.9—11.1 mm (0.43—0.44 in.)

Max. refinishing limit: 9.0 mm (0.35 in.)

Brake disc/drum parallelism:

0.015 mm (0.0006 in.) max.

NOTE: This is the maximum allowable difference between the thickness measurements.



5. If the brake disc/drum is beyond the service limit for parallelism, refinish the brake disc/drum with a commercially available on-car brake lathe.

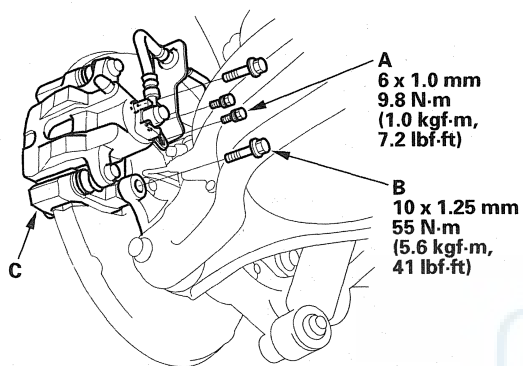
NOTE: If the brake disc/drum is beyond the service limit for refinishing, replace it (see page 19-22).

Conventional Brake Components

Rear Brake Disc Replacement

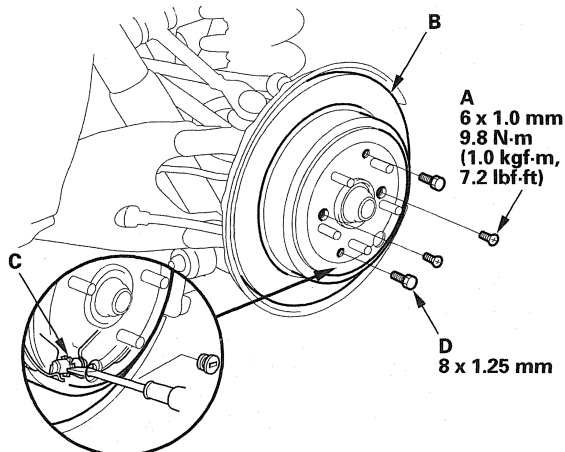
NOTE: Keep any grease off the brake disc/drum and brake pads.

1. Raise the rear of the vehicle, and support it with safety stands in the proper locations (see page 1-13).
2. Remove the rear wheel.
3. Remove the brake hose bracket mounting bolt (A).



4. Remove the brake caliper bracket mounting bolts (B), then remove the caliper assembly (C) from the knuckle. To prevent damage to the caliper assembly or brake hose, use a short piece of wire to hang the caliper assembly from the undercarriage. Do not twist the brake hose excessively.
5. Release the parking brake.

6. Remove the brake disc/drum flat screws (A).



7. Remove the brake disc/drum (B) from the rear hub.

NOTE:

- It may be necessary to back-off the parking brake adjuster nut (C) to remove the brake disc/drum from the rear hub (see step 6 on page 19-7).
- If the brake disc/drum has stuck to the rear hub, screw two 8 x 1.25 mm bolts (D) into the brake disc/drum to push it away from the rear hub. Turn each bolt 90 degrees to prevent the brake disc/drum from binding.
- After installation, check the parking brake, and adjust it necessary (see page 19-6).

8. Install the brake disc/drum in the reverse order of removal.

NOTE: Before installing the brake disc/drum, clean the mating surfaces of the rear hub and the inside of the brake disc/drum.

9. Clean the mating surfaces of the brake disc/drum and the inside of the wheel, then install the rear wheel.



Rear Brake Caliper Overhaul

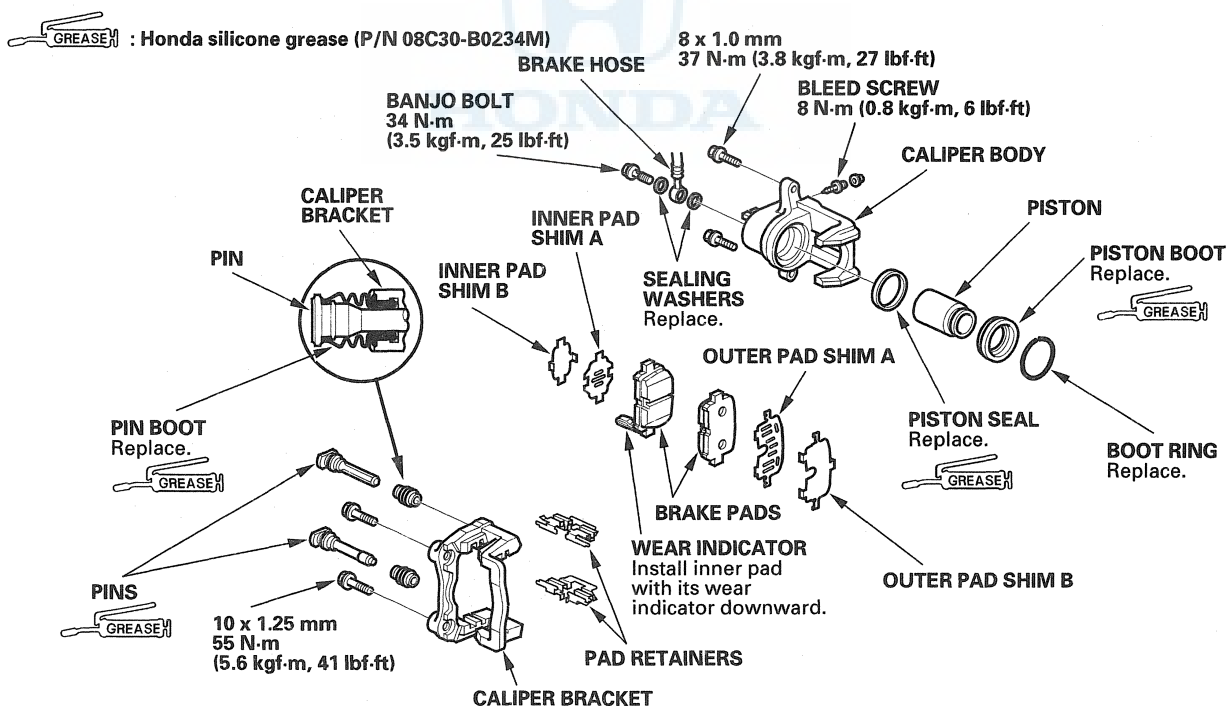
⚠ CAUTION

Frequent inhalation of brake pad dust, regardless of material composition, could be hazardous to your health.

- Avoid breathing dust particles.
- Never use an air hose or brush to clean brake assemblies. Use an OSHA-approved vacuum cleaner.

Remove, disassemble, inspect, reassemble, and install the caliper, and note these items:

- Do not spill brake fluid on the vehicle; it may damage the paint; if brake fluid gets on the paint, wash it off immediately with water.
- To prevent dripping brake fluid, cover disconnected hose joints with rags or shop towels.
- Clean all parts in brake fluid and air dry; blow out all passages with compressed air.
- Before reassembling, check that all parts are free of dirt and other foreign particles.
- Replace parts with new ones as specified in the illustration.
- Make sure no dirt or other foreign matter gets into the brake fluid.
- Make sure no grease or oil gets on the brake discs or pads.
- When reusing brake pads, always reinstall them in their original positions to prevent loss of braking efficiency.
- Do not reuse drained brake fluid. Use only clean Honda DOT 3 Brake Fluid from an unopened container. Using a non-Honda brake fluid can cause corrosion and shorten the life of the system.
- Do not mix different brands of brake fluid as they may not be compatible.
- Coat the pistons, piston seal grooves, and caliper bores with clean brake fluid.
- Replace all rubber parts with new ones whenever disassembled.
- After installing the caliper, check the brake hose and line for leaks, interference, and twisting.



Conventional Brake Components

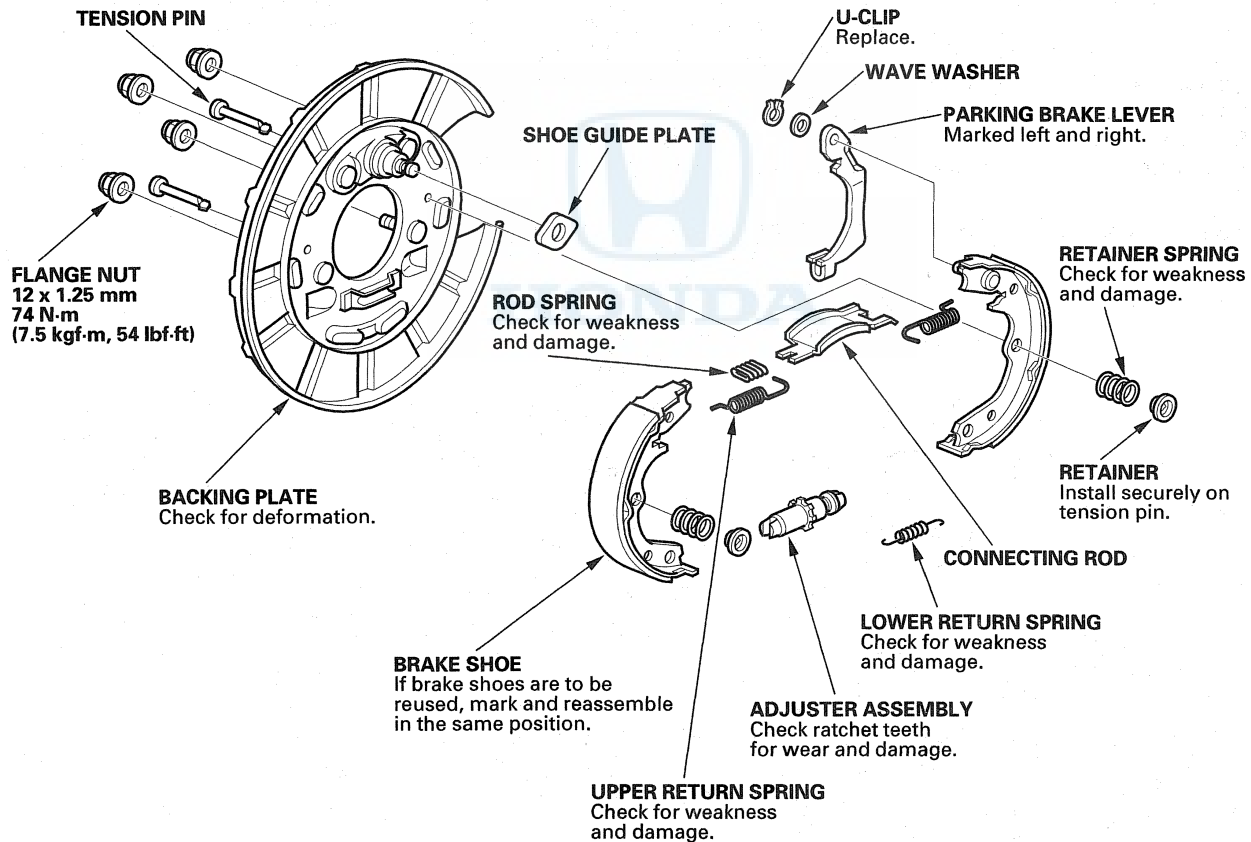
Parking Brake Inspection

⚠ CAUTION

Frequent inhalation of brake pad dust, regardless of material composition, could be hazardous to your health.

- Avoid breathing dust particles.
- Never use an air hose or brush to clean brake assemblies. Use an OSHA-approved vacuum cleaner.

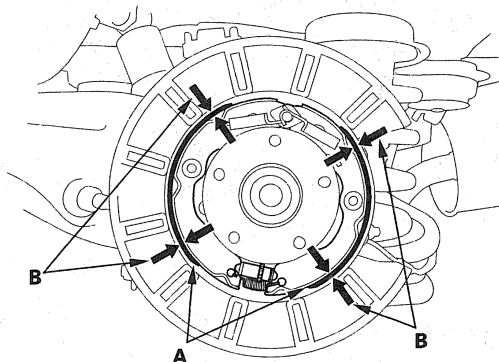
1. Raise the rear of the vehicle, and support it with safety stands in the proper locations (see page 1-13).
2. Remove the rear wheels.
3. Release the parking brake, and remove the rear brake disc/drum (see page 19-22).





4. Check the parking brake linings (A) for cracking, glazing, wear, and contamination.

NOTE: Contaminated brake linings or drums reduce stopping ability.



5. Measure the parking brake lining thickness (B). Measurement does not include brake shoe thickness.

Parking brake lining thickness:

Standard: 4.0 mm (0.16 in.)

Service limit: 1.0 mm (0.04 in.)

6. If the parking brake lining thickness is less than the service limit, replace all of the parking brake shoes as a set (see page 19-26).
7. Check the bearings in the hub unit for smooth operation.

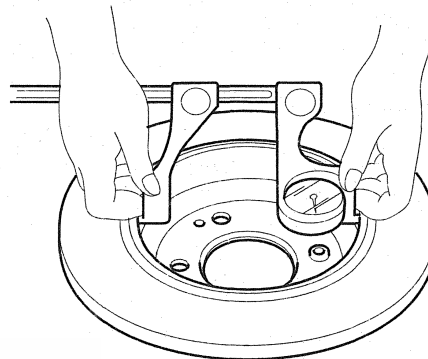
8. Measure the inside diameter of the parking brake drum with inside vernier calipers.

Parking brake drum inside diameter:

Standard: 209.9–210.0 mm

(8.264–8.267 in.)

Service limit: 211.0 mm (8.307 in.)



9. If the inside diameter of the parking brake drum is more than service limit, replace the brake disc/drum.
10. Check the parking brake drum for scoring, grooves, and cracks.
11. Clean the mating surfaces of the brake disc/drum and the inside of the wheel, then install the rear wheels.

Conventional Brake Components

Parking Brake Shoe Replacement

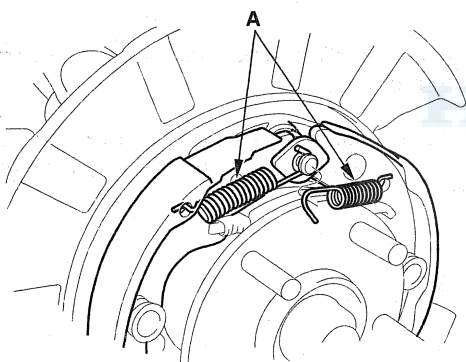
⚠ CAUTION

Frequent inhalation of brake pad dust, regardless of material composition, could be hazardous to your health.

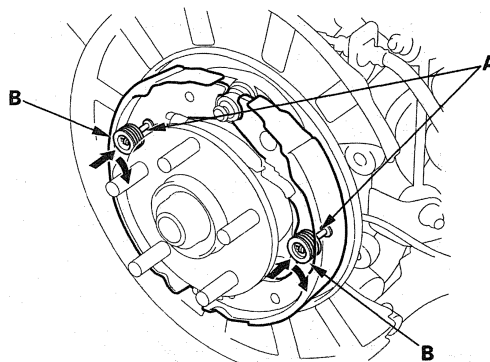
- Avoid breathing dust particles.
- Never use an air hose or brush to clean brake assemblies. Use an OSHA-approved vacuum cleaner.

Disassembly

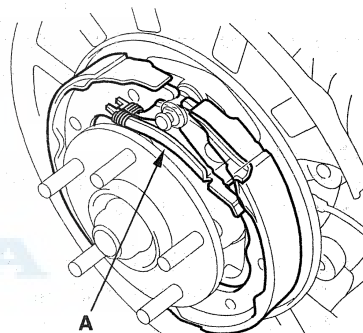
1. Raise the rear of the vehicle, and support it with safety stands in the proper locations (see page 1-13).
2. Remove the rear wheels.
3. Release the parking brake, and remove the rear brake disc/drum (see page 19-22).
4. Disconnect and remove the upper return springs (A).



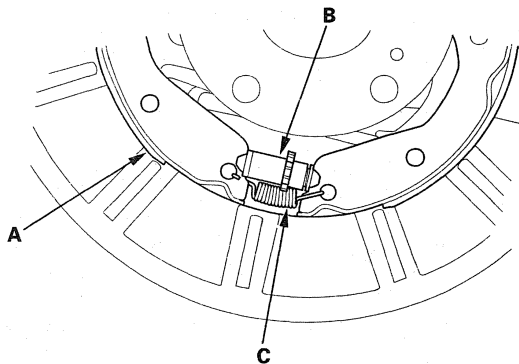
5. Remove the tension pins (A) by pushing the respective retainer (B) and turning the pin.



6. Remove the connecting rod (A).

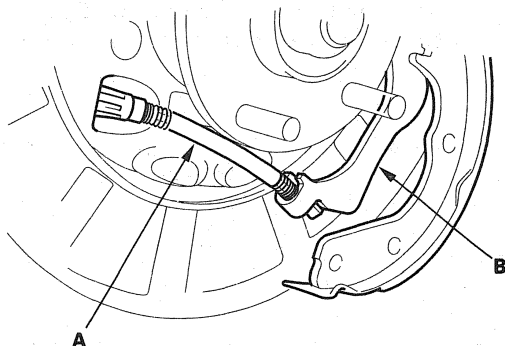


7. Lower the parking brake shoe assembly.
8. Remove the forward brake shoe (A) and the adjuster assembly (B) by removing the lower return spring (C).

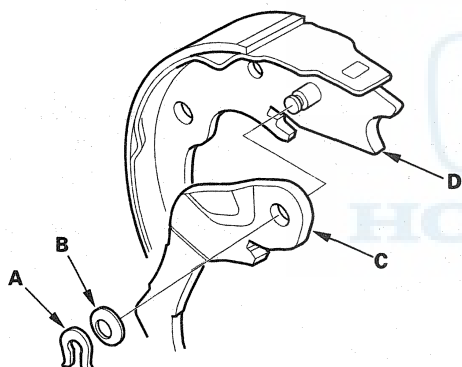




9. Remove the rearward brake shoe by disconnecting the parking brake cable (A) from the parking brake lever (B).

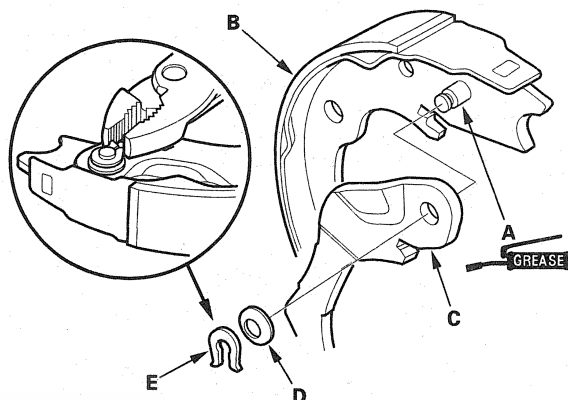


10. Remove the U-clip (A), wave washer (B), and parking brake lever (C) from the brake shoe (D).



Reassembly

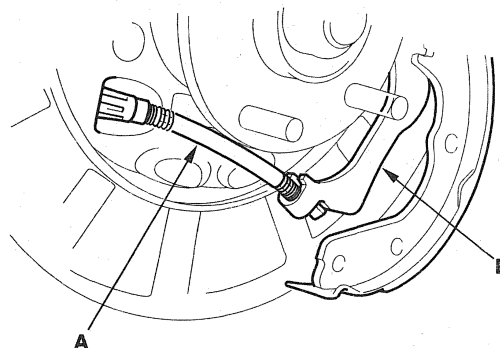
1. Apply a thin coat of Molykote 44 MA grease to the sliding surface of the pivot pin (A) of the rearward brake shoe (B).



2. Install the parking brake lever (C) and wave washer (D) on the pivot pin, and secure with a new U-clip (E).

- Install the wave washer with its convex side facing out.
- Pinch the U-clip securely to prevent the parking brake lever from coming out from the brake shoe.

3. Connect the parking brake cable (A) to the parking brake lever (B).

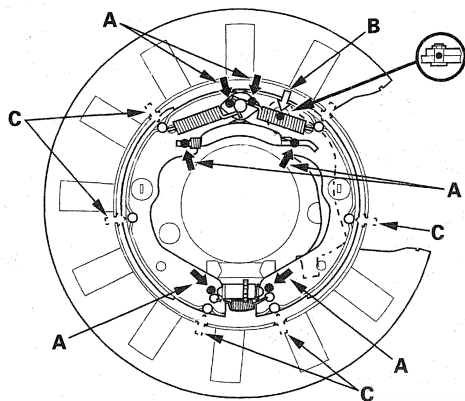


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Conventional Brake Components

Parking Brake Shoe Replacement (cont'd)

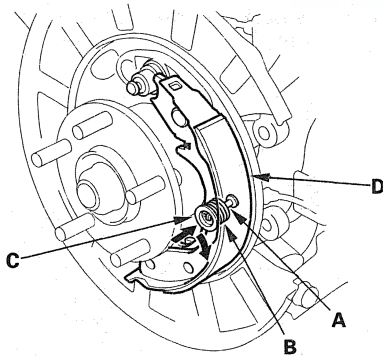
4. Apply a thin coat of Molycote 44 MA grease to the shoe ends and connecting rod ends (A), sliding surfaces (B), and opposite edges of the parking brake shoe (C) as shown. Wipe off any excess. Keep grease off the brake linings.



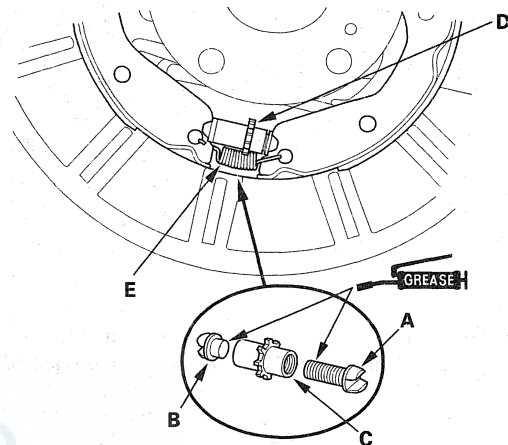
Greasing symbols:

- ➔• Brake shoe ends and connecting rod ends
- ⋯• Opposite edge of the shoe
- ➔• Sliding surface

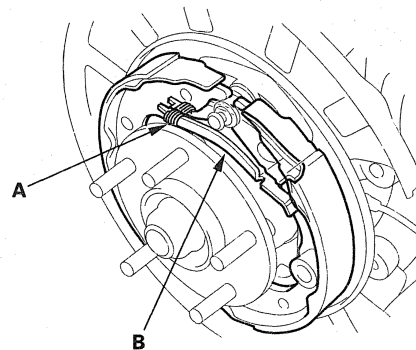
5. Install the tension pin (A), the retainer spring (B), and the retainer (C) on the rearward brake shoe (D). Make sure the tension pin does not contact the parking brake lever.



6. Clean the threaded portions of the clevis A, and coat the threads with multipurpose grease. Clean the sliding surface of the clevis B, and coat the sliding surface with multipurpose grease. Install the clevis A and B on the adjuster nut (C), and shorten the clevis A by turning the adjuster nut.



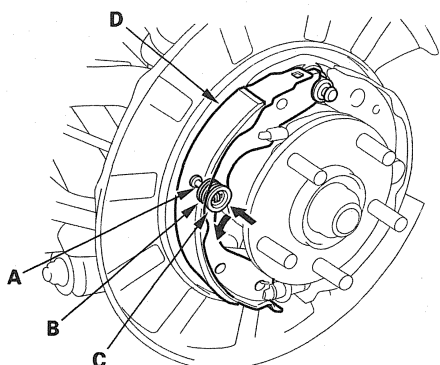
7. Install the brake shoe adjuster assembly (D), and hook the lower return spring (E) on the parking brake shoes.
8. Install the rod spring (A) to the connecting rod (B) first. Then install the connecting rod on the parking brake shoes.



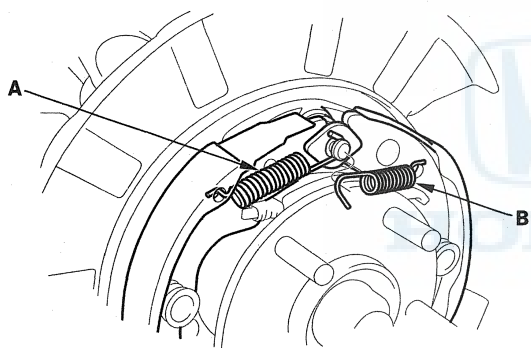


Parking Brake Shoe Lining Break-in

9. Install the tension pin (A), the retainer spring (B), and the retainer (C) on the forward brake shoe (D).



10. Install the forward upper return springs (A) as shown.



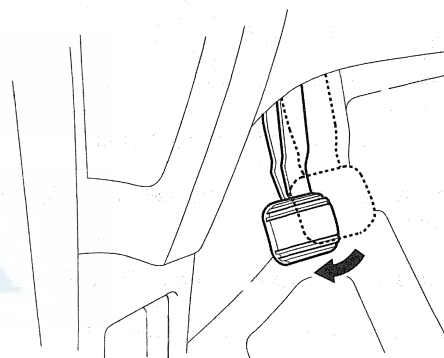
11. Install the rearward upper return spring (B) as shown.
12. Install the rear brake disc/drum and the rear brake caliper bracket in the reverse order of removal.
13. Do the major parking brake adjustment (see page 19-7).

⚠ WARNING

Do this operation in a safe area.

NOTE: Do the brake linings surface break-in when replacing shoes with new brake linings and/or new rear brake disc/drum.

1. Park the vehicle on a firm, level surface.
2. Do the major parking brake adjustment (see page 19-7).
3. Do the minor parking brake adjustment (see page 19-6).
4. Press the parking brake pedal 2 to 4 clicks.

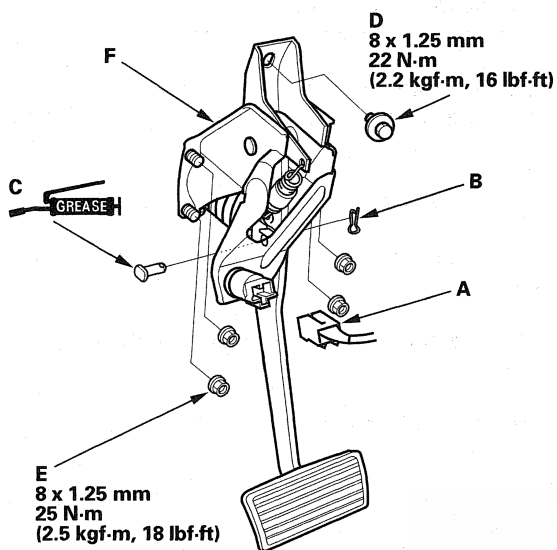


5. Drive the vehicle for 1/4 mile (400 m) at no more than 31 mph (50 km/h).
6. Stop the vehicle and release the parking brake for 5–10 minutes to allow the brake disc/drum to cool.
7. Repeat steps 4 through 6 three more times.
8. Check the parking brake pedal adjustment (see page 19-6).

Conventional Brake Components

Brake Pedal Replacement

1. Disconnect the brake pedal position switch connector (A).



2. Remove the lock pin (B) and joint pin (C).
3. Remove the brake pedal bracket mounting bolt (D) and nuts (E).
4. Remove the brake pedal with bracket (F).
5. Install in the reverse order of removal.
6. Do the brake pedal and brake pedal position switch adjustment (see page 19-5).

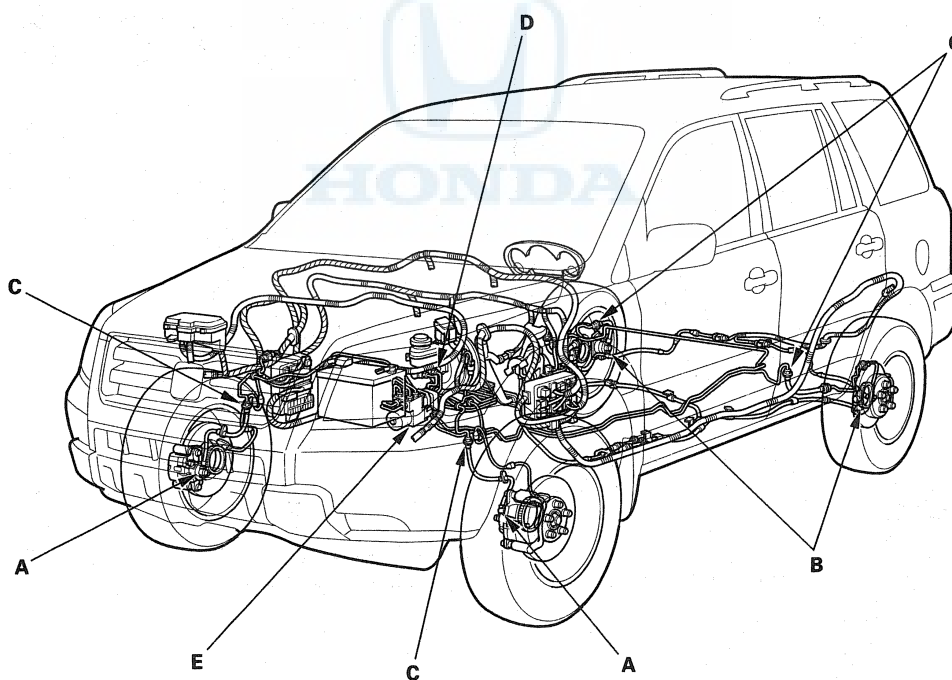


Brake Hose and Line Inspection

1. Inspect the brake hoses for damage, deterioration, leaks, interference, and twisting.
2. Check the brake lines for damage, rusting, and leaks. Also check for bent brake lines.
3. Check for leaks at hose and line joints and connections, and retighten if necessary.
4. Check the master cylinder and VSA modulator-control unit for damage and leaks.

NOTE: Replace the brake hose clip whenever the brake hose is serviced.

Connection Point	Component	Connected to	Specified Torque Value	Note
A	Front brake caliper	Brake hose	34 N·m (3.5 kgf·m, 25 lbf·ft)	Banjo bolt
		Bleed screw	8 N·m (0.8 kgf·m, 6 lbf·ft)	
B	Rear brake caliper	Brake hose	34 N·m (3.5 kgf·m, 25 lbf·ft)	Banjo bolt
		Bleed screw	8 N·m (0.8 kgf·m, 6 lbf·ft)	
C	Brake hose	Brake line	15 N·m (1.5 kgf·m, 11 lbf·ft)	Flare nut
D	Master cylinder	Brake line	30 N·m (3.1 kgf·m, 22 lbf·ft)	Flare nut
E	VSA modulator-control unit	Brake line (14 mm nut)	30 N·m (3.1 kgf·m, 22 lbf·ft)	Flare nut
		Brake line (10 mm nut)	15 N·m (1.5 kgf·m, 11 lbf·ft)	Flare nut



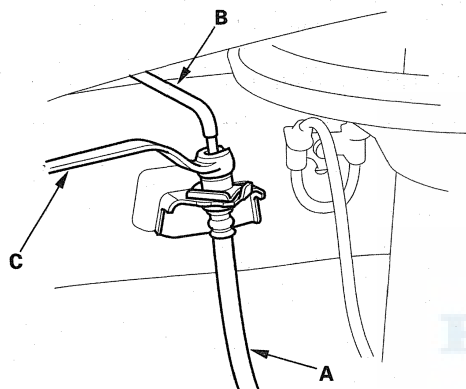
Conventional Brake Components

Brake Hose Replacement

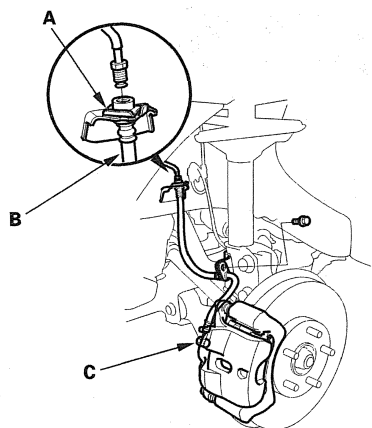
NOTE:

- Before reassembling, check that all parts are free of dirt and other foreign particles.
- Replace parts with new ones whenever specified to do so.
- Do not spill brake fluid on the vehicle; it may damage the paint; if brake fluid gets on the paint, wash it off immediately with water.
- To prevent the brake fluid from flowing, plug and cover the hose ends and joints with a shop towel or equivalent material.

1. Remove the wheel.
2. Disconnect the brake hose (A) from the brake line (B) using a 10 mm flare-nut wrench (C).



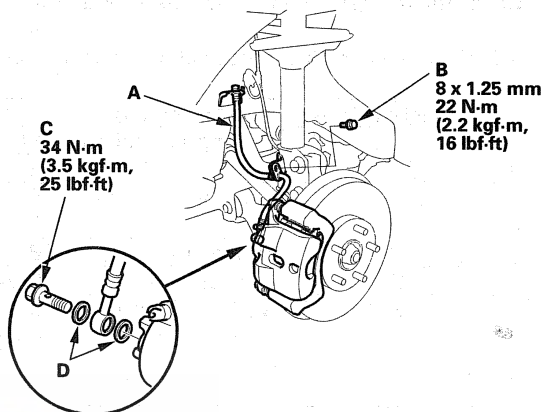
3. Remove the brake hose clip (A) from the brake hose (B).



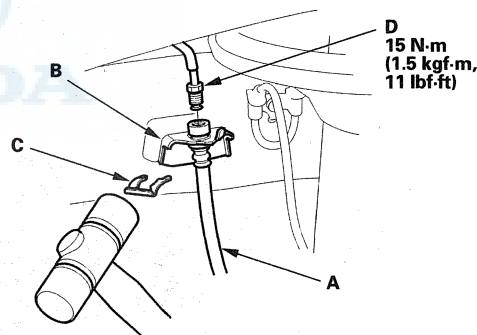
4. Remove the banjo bolt (C), and disconnect the brake hose from the caliper.

5. Remove the brake hose from the damper.

6. Install the brake hose (A) on the damper with the flange bolt (B) first, then connect the brake hose to the caliper with the banjo bolt (C) and new sealing washers (D).



7. Install the brake hose (A) onto the upper brake hose bracket (B) on the body with a new brake hose clip (C).



8. Connect the brake line (D) to the brake hose.

9. After installing the brake hose, bleed the brake system (see page 19-8).

10. Do the following check:

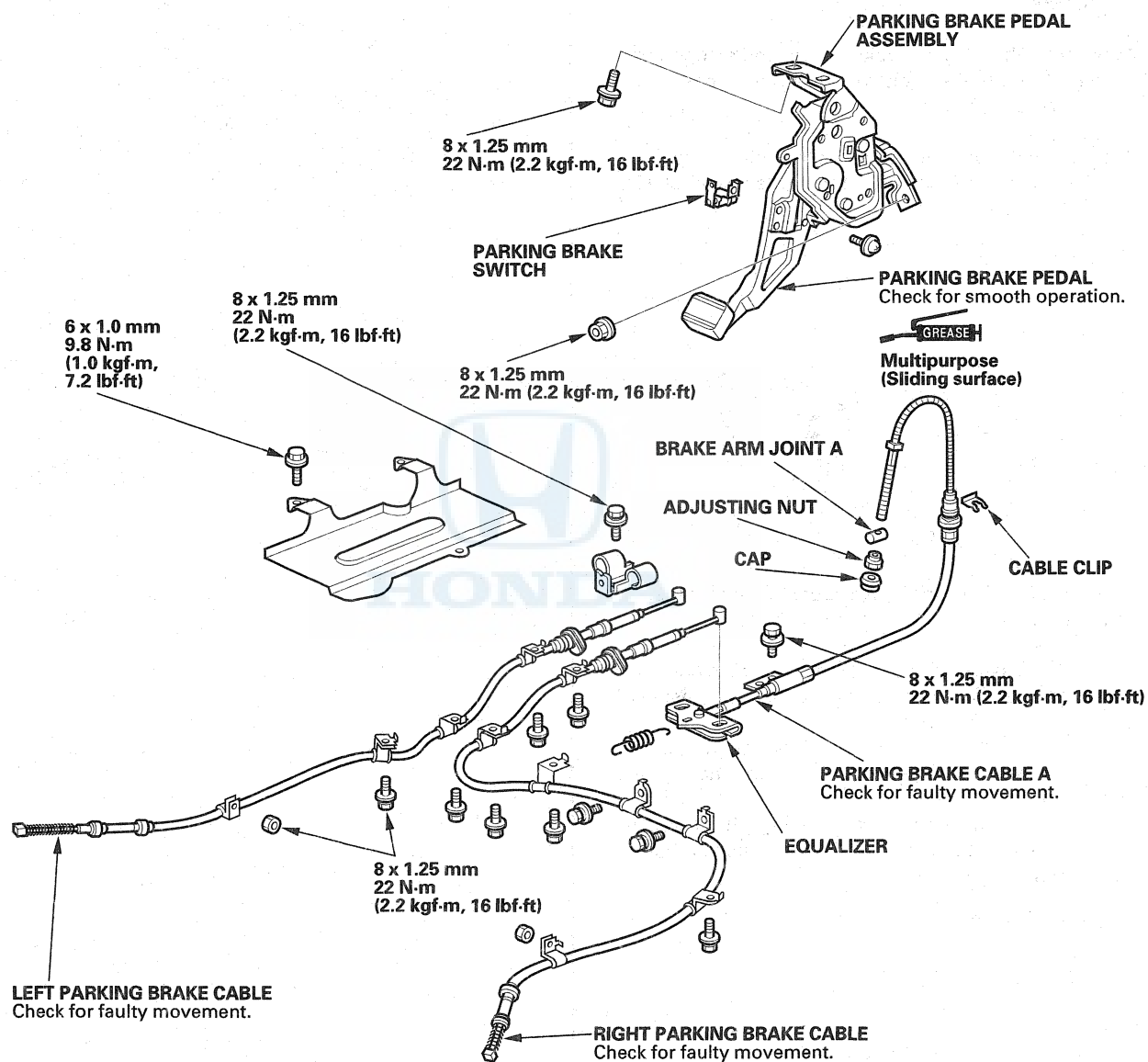
- Check the brake hose and line joint for leaks, and tighten if necessary.
- Check the brake hoses for interference and twisting.

11. Clean the mating surfaces of the brake disc and the inside of the wheel, then install the wheel.



Parking Brake Cable Replacement

Exploded View



(cont'd)

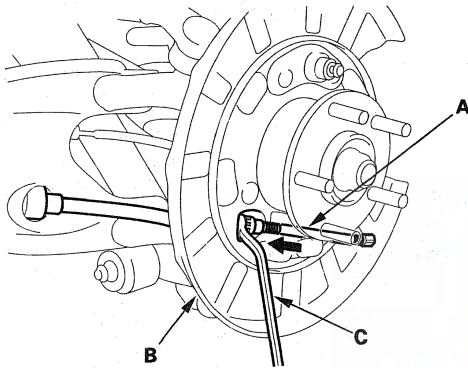
Conventional Brake Components

Parking Brake Cable Replacement (cont'd)

NOTE:

- The parking brake cables must not be bent or distorted. This will lead to stiff operation and premature failure.
- Refer to the Exploded View as needed during this procedure.

1. Remove the parking brake shoes, and disconnect the parking brake cable from the brake shoe (see page 19-26).
2. Remove the parking brake cable (A) from the backing plate (B) using a 12 mm offset wrench (C).



3. Reinstall the parking brake cable in the reverse order of removal, and note these items:
 - Before installing the brake disc/drum, clean the mating surfaces of the rear hub and the inside of the brake disc/drum.
 - Before installing the wheel, clean the mating surfaces on the brake disc/drum and the inside of the wheel.
 - Adjust the parking brake (see page 19-6). Apply the parking brake firmly 10 times, then adjust it again.

Brakes

Conventional Brake Components 19-1

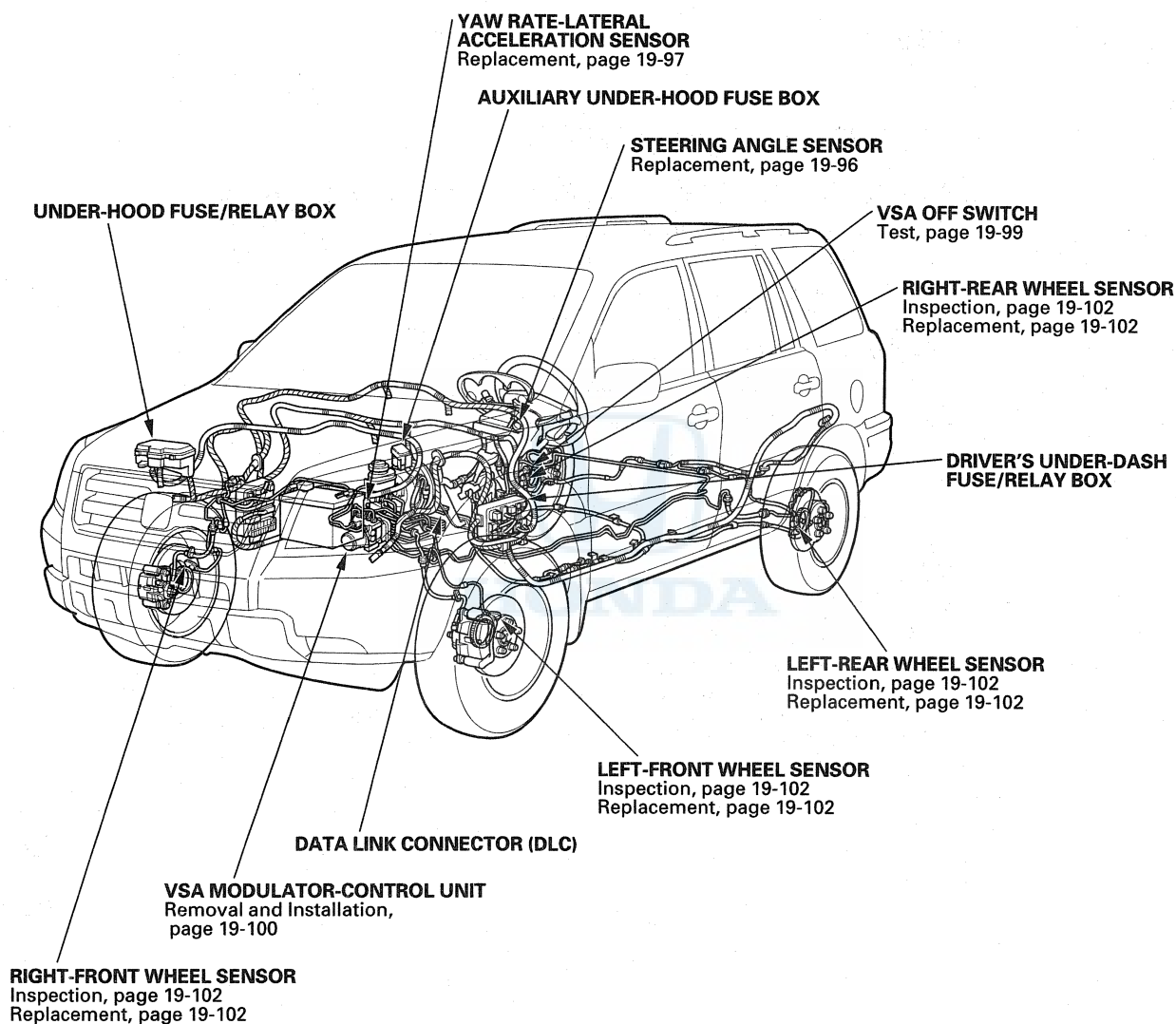
VSA (Vehicle Stability Assist) System Components

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VSA System Components

Component Location Index

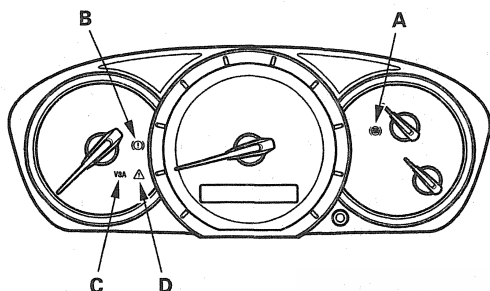


General Troubleshooting Information

System Indicator

This system has four indicators:

- ABS indicator (A)
- Brake system indicator (B)
- VSA indicator (C)
- VSA activation indicator (D)



When the system detects a problem, it will turn the appropriate indicator on. Depending on the failure, the VSA modulator-control unit determines which indicators are turned on.

When the system is OK, each indicator comes on for about 2 seconds after turning the ignition switch ON (II), then goes off.

ABS Indicator

The ABS indicator comes on when the ABS function is lost. The brakes still work like a conventional system.

Brake System Indicator

The brake system indicator comes on when the EBD function is lost, the parking brake is applied, and/or the brake fluid level is low.

VSA Indicator

The VSA indicator comes on, when VSA function is lost.

VSA Activation Indicator

The VSA activation indicator blinks, when the VSA function is activating. The VSA activation indicator comes on, when the VSA is turned OFF by using the VSA OFF switch, or the VSA function is lost.

ABS/VSA Indicator

- If the system is OK, the ABS and VSA indicators will go off 2 seconds after turning the ignition switch ON (II).
- The ABS and VSA indicators come on when the control unit detects a problem in the system. However, even though the system is operating properly, the indicator may come on under these conditions:
 - Only the drive wheels rotate.
 - One drive wheel is stuck.
 - The vehicle goes into a spin.
 - The ABS or VSA continues to operate for a long time.
 - The vehicle is subjected to an electrical signal disturbance.

To determine the actual cause of the problem, question the customer taking these conditions into consideration.

- When a problem is detected, there are cases when the indicator stays on until the ignition switch is turned OFF, and cases when the indicator goes off automatically when the system returns to normal.
 - DTC 61 or 62:
The ABS and VSA indicators go off automatically when the system returns to normal.
 - DTC 11, 13, 15, 17, 31, 32, 33, 34, 35, 36, 37, 38, 54, 71, 81, 112, 121, 122, 123 or 124:
The ABS and VSA indicators stay on until the ignition switch is turned OFF whether or not the system returns to normal.
 - DTC 12, 14, 16, 18, 21, 22, 23, 24, 41, 42, 43, 44, 51, 52 or 53:
The ABS and VSA indicators stay on until the system returns to normal after the vehicle is driven.
 - DTC 25, 26, 27, 28, 64, 65, 66, 68, 83, 84 or 86:
The VSA indicator stays on until the ignition switch is turned OFF whether or not the system returns to normal.

(cont'd)

VSA System Components

General Troubleshooting Information (cont'd)

Diagnostic Trouble Code (DTC)

- The memory can hold any number of DTCs. However, when the same DTC is detected more than once, the more recent DTC is written over the earlier one. Therefore, when the same problem is detected repeatedly, it is memorized as a single DTC.
- The DTCs are indicated in ascending number order, not in the order they occur.
- The DTCs are memorized in the EEPROM. Therefore, the memorized DTCs cannot be erased by disconnecting the battery. Do the specified procedures to clear the DTCs.

Self-diagnosis

- Self-diagnosis can be classified into two categories:
 - Initial diagnosis: Done right after the ignition switch is turned ON (II) and until the ABS or VSA indicator goes off.
 - Regular diagnosis: Done right after the initial diagnosis until the ignition switch is turned OFF.
- When the system detects a problem, the VSA modulator-control unit shifts to fail-safe mode.

Kickback

The pump motor operates when the VSA modulator-control unit is functioning, and the fluid in the reservoir is forced out to the master cylinder, causing kickback at the brake pedal.

Pump Motor

- The pump motor operates when the VSA modulator-control unit is functioning.
- The VSA modulator-control unit checks the pump motor operation one time after completing initial diagnosis during regular diagnosis when the vehicle is driven over 10 mph (15 km/h).

Brake Fluid Replacement/Air Bleeding

Brake fluid replacement and air bleeding procedures are identical to the procedures used on vehicles without the VSA system (see page 19-8).

How to Troubleshoot DTCs

The troubleshooting procedures assume that the cause of the problem is still present and the ABS and/or VSA indicator is still on. Following the troubleshooting procedure when the ABS and/or VSA indicator does not come on (no problem is present) can result in incorrect diagnosis.

The connector illustrations show the female terminal connectors with a single outline and the male terminal connectors with a double outline.

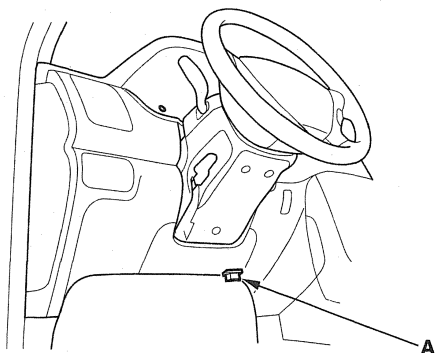
1. Question the customer about the conditions when the problem occurred, and try to reproduce the same conditions for troubleshooting. Find out when the ABS and/or VSA indicator came on, such as during control, after control, when the vehicle was traveling at a certain speed, etc. If necessary, have the customer demonstrate the concern.
2. When the ABS or VSA indicator does not come on during the test-drive, but troubleshooting is done based on the DTC, check for loose connectors, poor contact of the terminals, etc. before you start troubleshooting.
3. After troubleshooting, or repairs are done, clear the DTCs, and test-drive the vehicle under the same conditions as originally set with the DTCs. Make sure the ABS and VSA indicators do not come on.

Intermittent Failures

The term "intermittent failure" means a system may have had a failure, but it checks OK now. If the indicator(s) of the system does not come on, check for loose connectors and grounds, poor contact of the terminals related to the circuit that you are troubleshooting.

How to Retrieve DTCs

1. With the ignition switch OFF, connect the HDS to the data link connector (DLC) (A) under the driver's side of the dashboard.



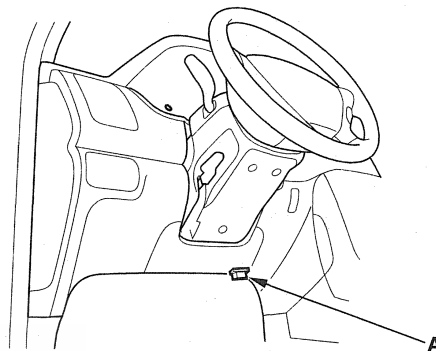
2. Turn the ignition switch ON (II), and follow the prompts on the HDS to display the DTC(s) on the screen. After determining the DTC, refer to the DTC Troubleshooting.

NOTE: See the HDS Help menu for specific instructions.

How to Clear DTCs

NOTE: You cannot clear the DTCs manually.

1. With the ignition switch OFF, connect the HDS to the data link connector (DLC) (A) under the driver's side of the dashboard.



2. Turn the ignition switch ON (II), and clear the DTC(s) by following the screen prompts on the HDS.

NOTE: See the HDS Help menu for specific instructions.

3. If the VSA activation indicator remains on, but the VSA and ABS indicators are off, do the VSA sensor neutral position memorization (see page 19-98).

VSA System Components

DTC Troubleshooting Index

DTC	Detection Item	Note
11	Right-front wheel sensor (short to power/short to body ground/open)	(see page 19-57)
12	Right-front wheel sensor (electrical noise/intermittent interruption)	(see page 19-60)
13	Left-front wheel sensor (short to power/short to body ground/open)	(see page 19-57)
14	Left-front wheel sensor (electrical noise/intermittent interruption)	(see page 19-60)
15	Right-rear wheel sensor (short to power/short to body ground/open)	(see page 19-57)
16	Right-rear wheel sensor (electrical noise/intermittent interruption)	(see page 19-60)
17	Left-rear wheel sensor (short to power/short to body ground/open)	(see page 19-57)
18	Left-rear wheel sensor (electrical noise/intermittent interruption)	(see page 19-60)
21	Right-front pulser	(see page 19-61)
22	Left-front pulser	(see page 19-61)
23	Right-rear pulser	(see page 19-61)
24	Left-rear pulser	(see page 19-61)
25	Yaw rate sensor	(see page 19-63)
26	Lateral acceleration sensor	(see page 19-65)
27	Steering angle sensor	(see page 19-68)
28	Longitudinal acceleration sensor (4WD)	(see page 19-71)
31	ABS solenoid	(see page 19-74)
32	ABS solenoid	(see page 19-74)
33	ABS solenoid	(see page 19-74)
34	ABS solenoid	(see page 19-74)
35	ABS solenoid	(see page 19-74)
36	ABS solenoid	(see page 19-74)
37	ABS solenoid	(see page 19-74)
38	ABS solenoid	(see page 19-74)
41	Right-front wheel lock	(see page 19-75)
42	Left-front wheel lock	(see page 19-75)
43	Right-rear wheel lock	(see page 19-75)
44	Left-rear wheel lock	(see page 19-75)
51	Motor lock	(see page 19-75)
52	Motor stuck OFF	(see page 19-75)
53	Motor stuck ON	(see page 19-77)
54	Fail-safe relay	(see page 19-77)
61	Low +B-FSR voltage	(see page 19-78)
62	High +B-FSR voltage	(see page 19-78)
64	Sensor power voltage	(see page 19-79)
65	Brake fluid level	(see page 19-80)
66	VSA pressure sensor (Inside of VSA modulator-control unit)	(see page 19-80)
68	Brake pedal position switch	(see page 19-81)
71	Different diameter tire	(see page 19-82)
81	Central processing unit (CPU)	(see page 19-83)
83	PCM	(see page 19-84)
84	VSA sensor neutral position	(see page 19-85)
86	F-CAN communication	(see page 19-85)
107	TCS operation	(see page 19-86)
108	VSA operation	(see page 19-86)
112	Internal power source stuck OFF	(see page 19-86)
121	VSA solenoid	(see page 19-87)
122	VSA solenoid	(see page 19-87)
123	VSA solenoid	(see page 19-87)
124	VSA solenoid	(see page 19-87)



Symptom Troubleshooting Index

Symptom	Diagnostic procedure
ABS indicator does not come on	Symptom Troubleshooting (see page 19-88)
ABS indicator does not go off, and no DTCs are stored	Symptom Troubleshooting (see page 19-88)
Brake system indicator does not come on (check bulb operation with parking brake)	Symptom Troubleshooting (see page 19-90)
Brake system indicator does not go off, and no DTCs are stored	Symptom Troubleshooting (see page 19-91)
VSA indicator does not come on	Symptom Troubleshooting (see page 19-91)
VSA indicator does not go off, and no DTCs are stored	Symptom Troubleshooting (see page 19-92)
VSA activation indicator does not come on at start-up (bulb check)	Symptom Troubleshooting (see page 19-94)
VSA activation indicator does not go off, and no DTCs are stored	Symptom Troubleshooting (see page 19-94)



VSA System Components

System Description

VSA Modulator-Control Unit Inputs and Outputs for 47P Connector

1	2	3	4	5	6			9		11			14			16
	17	18		20						26		28	29	30		
32		33	34	35		37	38	39		41	42	43				47

Wire side of female terminals

Terminal number	Wire color	Terminal sign	Description	Measurement (VSA modulator-control unit 47P connector connected)		
				Terminals	Conditions	Voltage
1	WHT/GRN	+B-FSR	Power source for the fail-safe relay	1—GND	At all times	Battery voltage
2	GRY	RLS (—)	Detects left-rear	2—3	Ammeter connected in series with the wheel speed sensor, then ignition switch ON (II)* ¹ Rotate the appropriate wheel slowly	About 7 mA to about 14 mA alternately
3	PUR	RLS (+)	wheel sensor signal			
4	BRN	FLS (—)	Detects left-front wheel sensor signal	4—20		
5	BLU/YEL	RRS (—)	Detects right-rear wheel sensor signal	5—6		
6	GRN/YEL	RRS (+)				
9* ²	GRY/YEL	RLP	Outputs left-rear wheel speed signal	—	—	—
11	GRY	K-LINE	Communication with HDS	11—GND	Ignition switch ON (II)	Battery voltage
14	WHT	CAN-H	F-CAN communication circuit	14—GND	Ignition switch ON (II)	About 2.5 V
16	WHT	+B-MR	Power source for the motor relay	16—GND	At all times	Battery voltage
17	GRN/BLK	FRS (+)	Detects right-front wheel sensor signal	17—18	Ammeter connected in series with the wheel speed sensor, then ignition switch ON (II)* ¹ Rotate the appropriate wheel slowly	About 7 mA to about 14 mA alternately
18	GRN	FRS (—)				
20	GRN/BLU	FLS (+)	Detects left-front wheel sensor signal	4—20		
26* ²	LT GRN	FRP	Outputs right-front wheel sensor signal	—	—	—

* 1: If a DTC is set during set up, turn the ignition switch OFF, then back ON (II) before testing.

* 2: 4WD



Terminal number	Wire color	Terminal sign	Description	Measurement (VSA modulator-control unit 47P connector connected)		
				Terminals	Conditions	Voltage
28	RED/YEL	STR-A	Detects steering angle sensor signal	28—GND	Ignition switch ON (II), turn steering wheel very slowly	1—4 V alternately
29	BLU/ORN	STR-D	Detects steering angle sensor signal	29—GND	Ignition switch ON (II), steering wheel in straight ahead position, then turned off at center	1 V on center 4 V off center
30	RED	CAN-L	CAN communication circuit	30—GND	Ignition switch ON (II)	2.5 V
32	BLK	GND	Ground for the VSA modulator-control unit	32—GND	Under all conditions	Continuity
33	LT BLU	SGND	Ground for the sensors	33—GND	Ignition switch ON (II)	0 V
34	GRN/WHT	YAW	Detects yaw rate sensor signal	34—GND	Ignition switch ON (II)	2.5 V
35	RED	SVCC	Power source for the sensors	35—GND	Ignition switch ON (II)	5 V
37	RED/WHT	GLAT	Detects lateral acceleration sensor signal	37—GND	Ignition switch ON (II)	2.5 V
38	BLK/YEL	IG1	Power source for activating the system	38—GND	Ignition switch ON (II)	Battery voltage
39 ^{*2}	GRN/RED	GLONG	Detects longitudinal acceleration sensor signal	39—GND	Ignition switch ON (II)	2.5 V
41 ^{*2}	GRY/RED	RRP	Outputs right-rear wheel sensor signal	—	—	—
42 ^{*2}	WHT/RED	FLP	Outputs left-front wheel sensor signal	—	—	—
43	YEL/RED	STR-B	Detects steering angle sensor signal	43—GND	Ignition switch ON (II), turn steering wheel very slowly	1—4 V alternately
47	BLK	MR-GND	Ground for the pump motor	47—GND	Under all conditions	Continuity

* 1: If a DTC is set during set up, turn the ignition switch OFF, then back ON (II) before testing.

* 2: 4WD

(cont'd)

VSA System Components

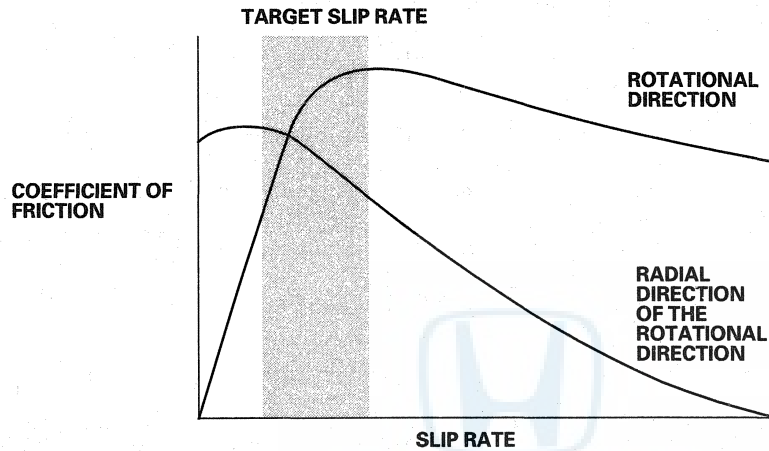
System Description (cont'd)

ABS Features

When the brake pedal is pressed while driving, the wheels can lock before the vehicle comes to a stop. In such an event, the maneuverability of the vehicle is reduced if the front wheels are locked, and the stability of the vehicle is reduced if the rear wheels are locked, creating an extremely unstable condition. The ABS precisely controls the slip rate of the wheels to ensure maximum grip force from the tires, and it thereby ensures maneuverability and stability of the vehicle.

The ABS calculates the slip rate of the wheels based on the vehicle speed and the wheel speed, then it controls the brake fluid pressure to reach the target slip rate.

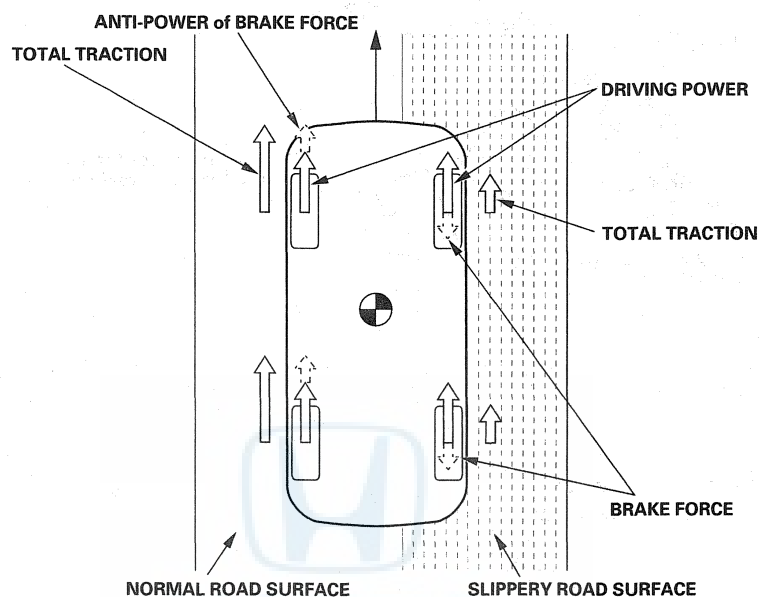
Grip force of tire and road surface



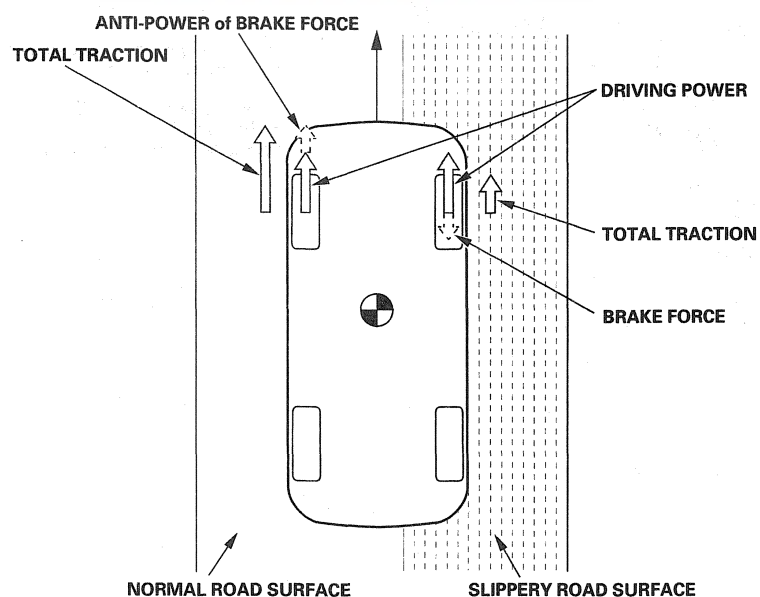
TCS Features

When a drive wheel loses traction on a slippery road surface and starts to spin, the VSA modulator-control unit applies brake pressure to the spinning wheel and sends engine torque control request to the PCM to slow the spinning wheel and keep traction.

4WD:



2WD:



(cont'd)

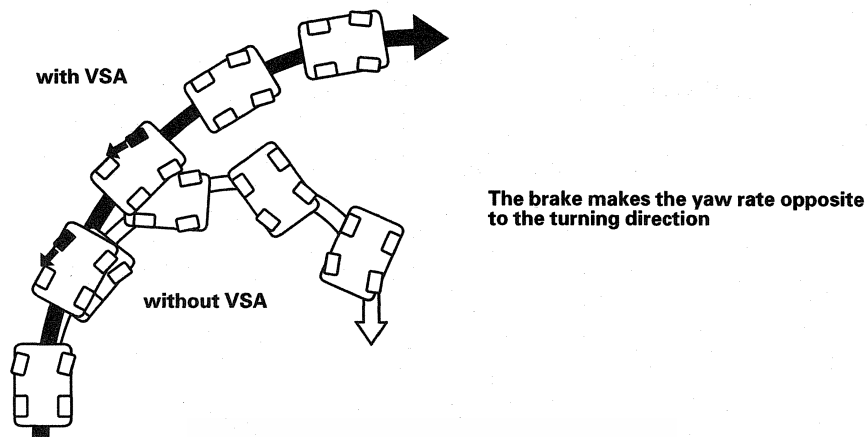
VSA System Components

System Description (cont'd)

VSA System Features

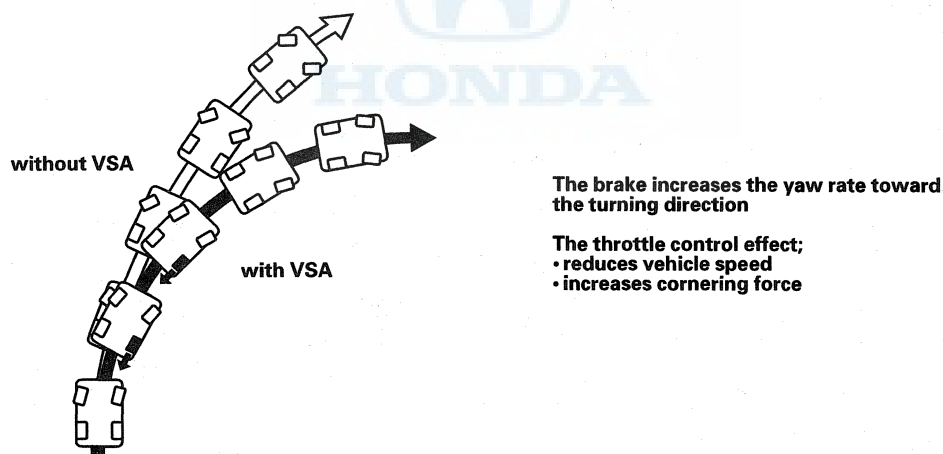
Oversteer control

Applies the brake to the front outside wheel



Understeer control

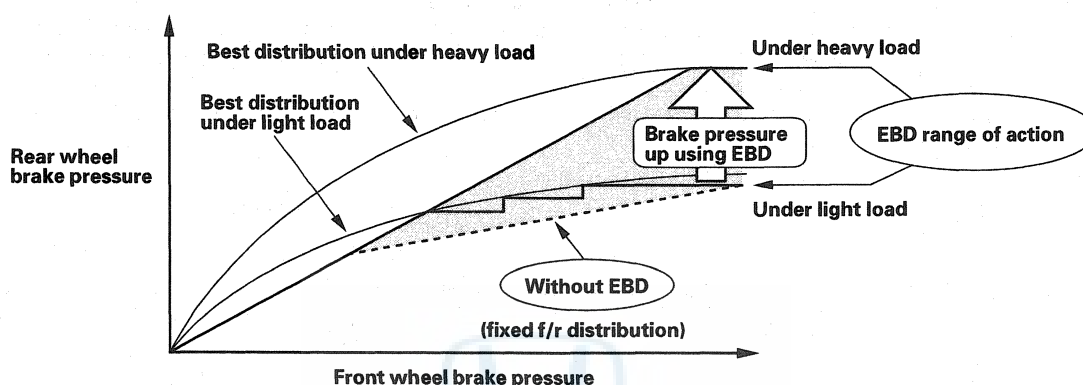
- Applies the brake to the rear inside wheel
- Controls the engine torque when accelerating



Electronic Brake Distribution (EBD)

Electronic Brake Distribution (EBD) has been added to the VSA system. EBD eliminates the need for an external, mechanical proportioning valve and improves overall braking performance.

When the vehicle is heavily loaded, most of the increase in weight is born by the rear wheels, increasing braking capability. Proportioning valves maintain a fixed distribution of brake pressure between the front and the rear wheels, making it very difficult to fully utilize increased rear wheel braking capability. EBD varies brake pressure distribution according to load, using input from the wheel speed sensors, which improves overall braking performance.



Normal Braking

Under normal braking conditions, brake pressure is evenly distributed between the front and rear brakes, and EBD is not used.

Firm Braking

Under hard braking conditions, the VSA modulator-control unit monitors wheel speed in order to allow a maximum amount of brake distribution individually to the rear wheels. Once the VSA modulator-control unit detects that one or both rear wheels are nearing their maximum braking potential, the inlet valve closes for one or both rear wheels, maintaining the current pressure. If the traction is improved, and the wheel(s) is no longer nearing its limits, the VSA modulator-control unit will open the inlet solenoid allowing additional pressure to be distributed to the rear wheel. The rear wheels are controlled independently of each other during EBD function.

If during EBD function the VSA modulator-control unit determines that the wheels are beginning to slip more than a predetermined amount, the control unit abandons EBD control and shifts to select low 3-channel ABS control.

(cont'd)

VSA System Components

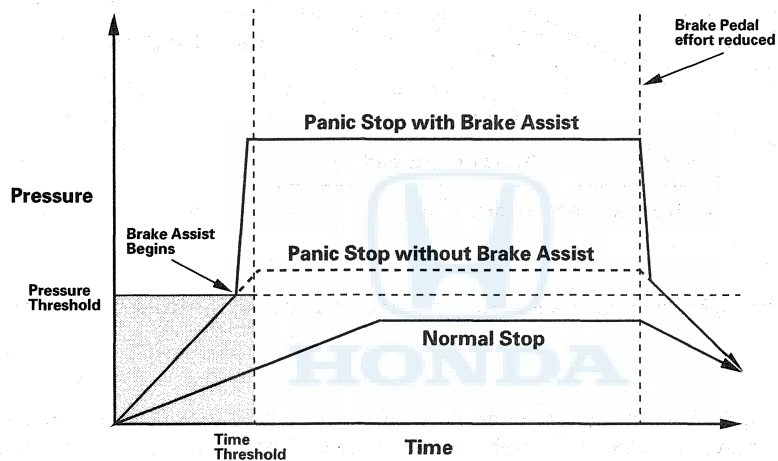
System Description (cont'd)

Brake Assist

Brake assist has been added to the VSA system. Brake assist helps ensure that any driver can achieve the full braking potential of the vehicle by increasing brake system pressure in a panic situation, bringing the vehicle into a full ABS stop.

Each time the ignition switch is turned ON (II), the VSA modulator-control unit learns the current driver's normal braking characteristics by monitoring the brake pressure sensor and the brake pedal position switch at each stop. Using these inputs and their values, the VSA modulator-control unit is able to learn the driver's normal braking habits, and then determine the difference between a normal stop and a panic stop for the individual driver of the vehicle. If during a panic stop the VSA modulator-control unit determines that the brake system pressure increases above a learned threshold in less than a learned amount of time, the VSA modulator-control unit engages brake assist.

Because the brake system pressure crossed the threshold before the time threshold had expired, the VSA modulator-control unit goes into brake assist mode.



Normal Braking

During normal braking conditions, brake assist does not affect brake system pressure.

Panic Stop

During a panic stop, the control unit turns the VSA pump ON, and opens the inlet valve. This brings the brake system pressure up high enough to cause a full ABS stop. As soon as the brake pedal is released, brake assist is stopped and the brake system returns to normal operation.

Modulator Unit

The modulator unit consists of the inlet solenoid valve, outlet solenoid valve, VSA normally open (NO) solenoid valve, VSA normally closed (NC) solenoid valve, reservoir, pump, pump motor, and the damping chamber.

The modulator controls the caliper fluid pressure directly. It is a circulating-type modulator because the brake fluid circulates through the caliper, the reservoir, and the master cylinder.

The hydraulic control has three modes: Pressure intensifying, pressure retaining, and pressure reducing.

The hydraulic circuit is an independent four channel type, one channel for each wheel.

ABS Control

Pressure Intensifying Mode

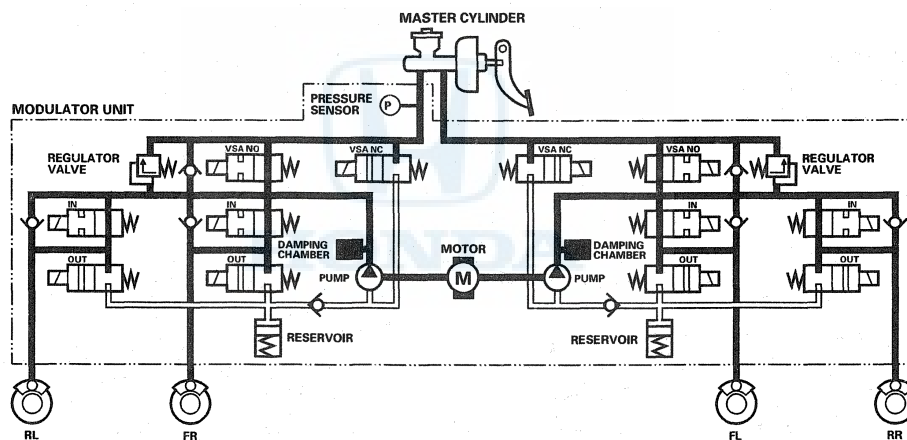
VSA NO valve open, VSA NC valve closed, inlet valve open, outlet valve closed.

Master cylinder fluid is pumped out to the caliper.

Pump Motor

When starting the pressure reducing mode, the pump motor is ON. When stopping ABS operation, the pump motor is OFF.

The reservoir fluid is pumped out by the pump, through the damping chamber, to the master cylinder.



(cont'd)

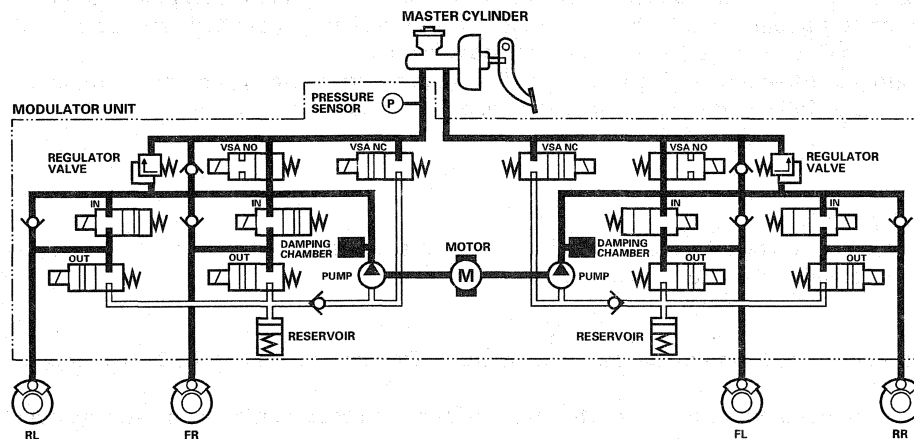
VSA System Components

System Description (cont'd)

Pressure Retaining Mode

VSA NO valve open, VSA NC valve closed, inlet valve closed, outlet valve closed.

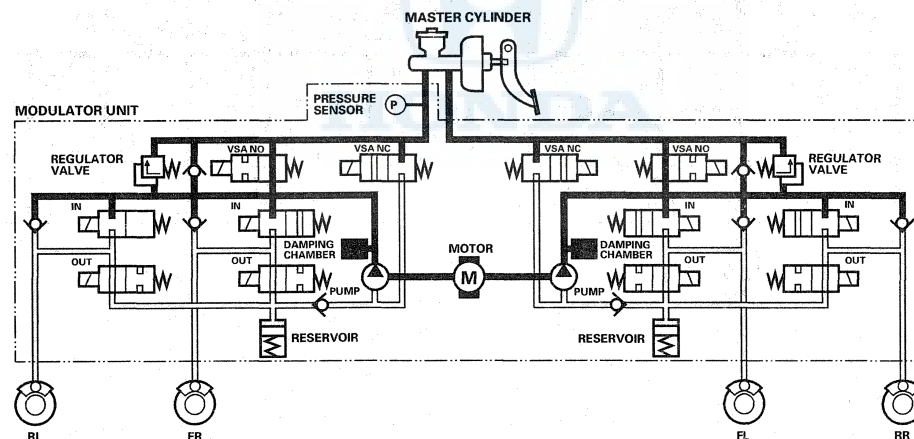
Caliper fluid is retained by the inlet valve and outlet valve.



Pressure Reducing Mode

VSA NO valve open, VSA NC valve closed, inlet valve closed, outlet valve open.

Caliper fluid flows through the outlet valve to the reservoir.

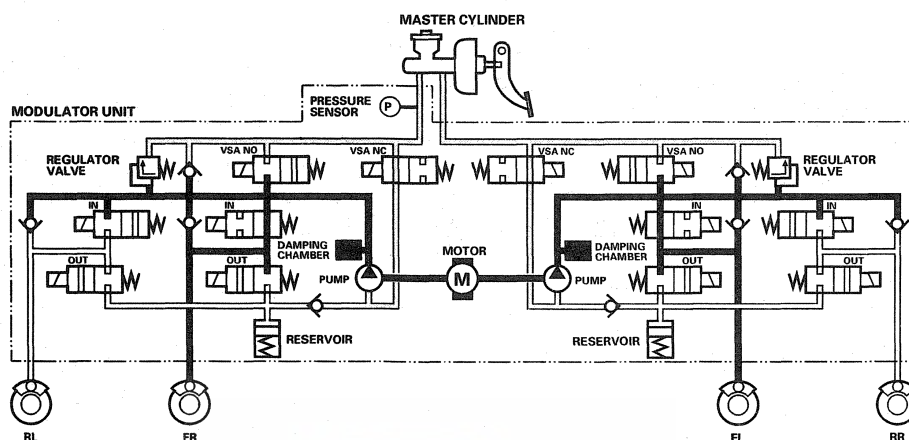


TCS Control

Pressure Intensifying Mode

VSA NO valve closed, VSA NC valve open, inlet valve open, outlet valve closed, pump motor ON.

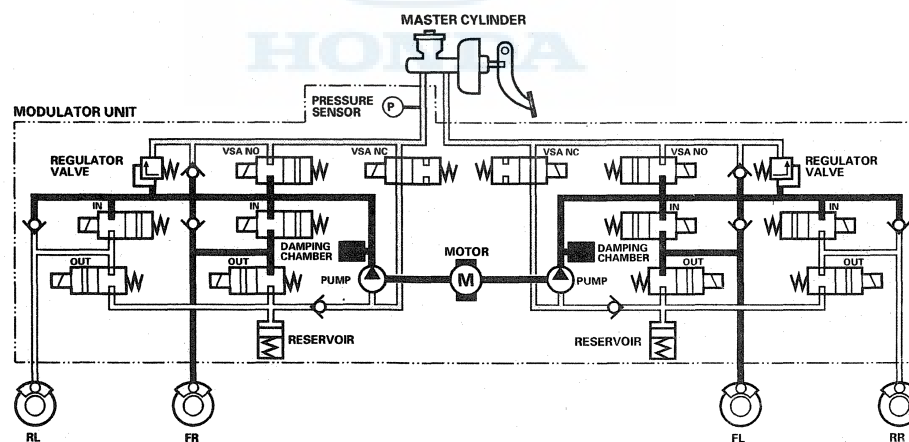
The reservoir and master cylinder fluid is pumped out by the pump, through the damping chamber, to the front caliper.



Pressure Retaining Mode

VSA NO valve closed, VSA NC valve open, inlet valve closed, outlet valve closed, pump motor ON.

Front caliper fluid is retained by the inlet valve and outlet valve.



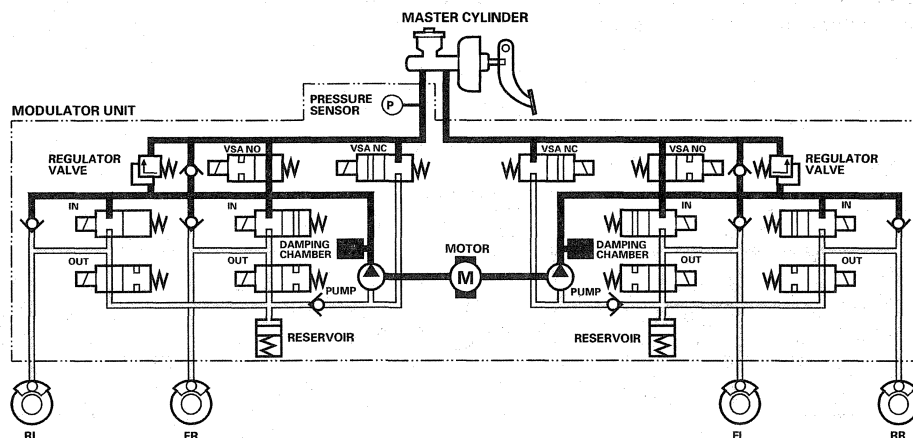
(cont'd)

VSA System Components

System Description (cont'd)

Pressure Reducing Mode

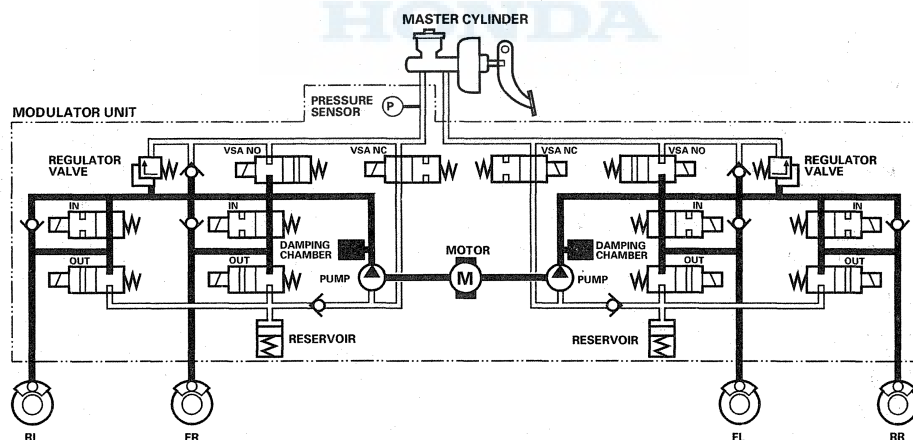
VSA NO valve open, VSA NC valve closed, inlet valve closed, front outlet valve open, pump motor ON.
Caliper fluid flows through the outlet valve to the reservoir.



VSA Control

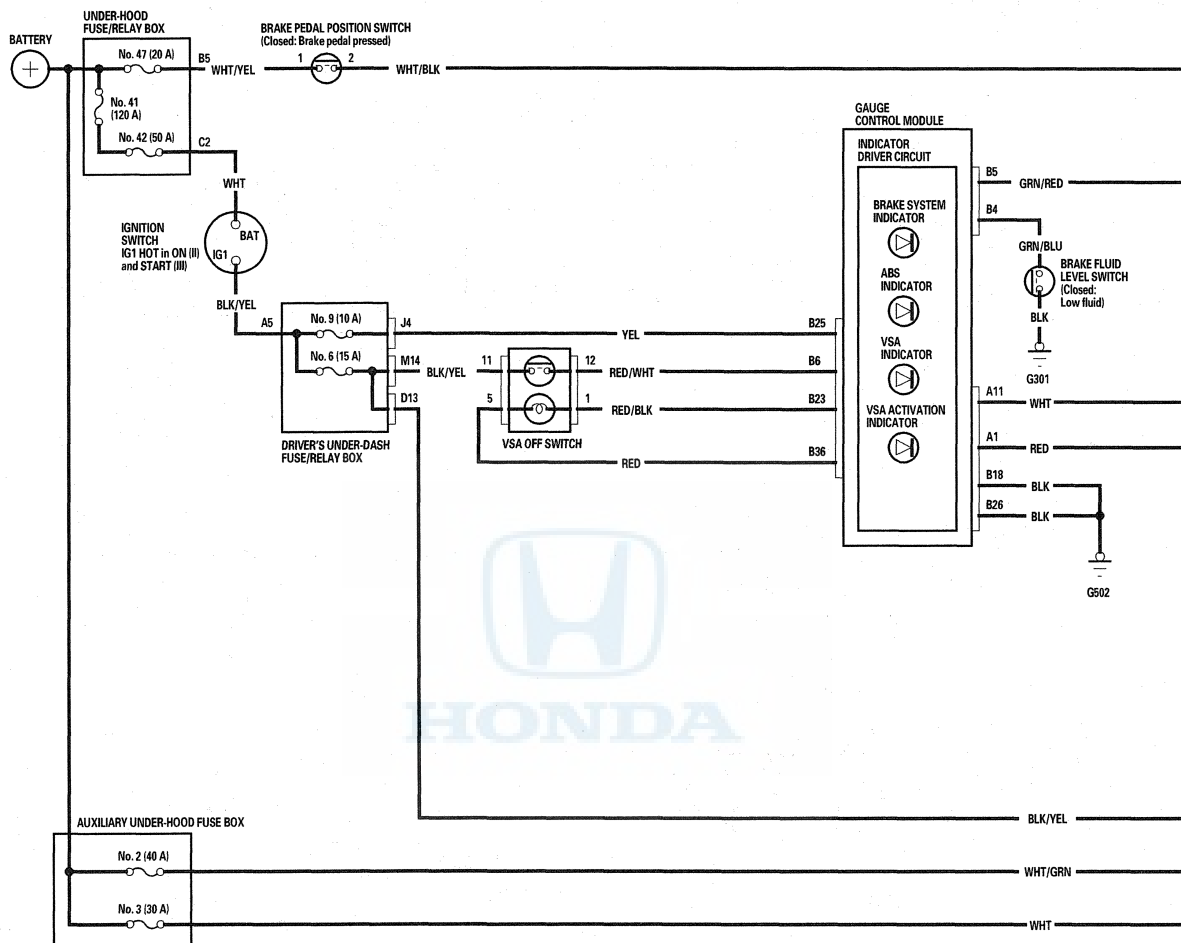
Pressure Intensifying Mode

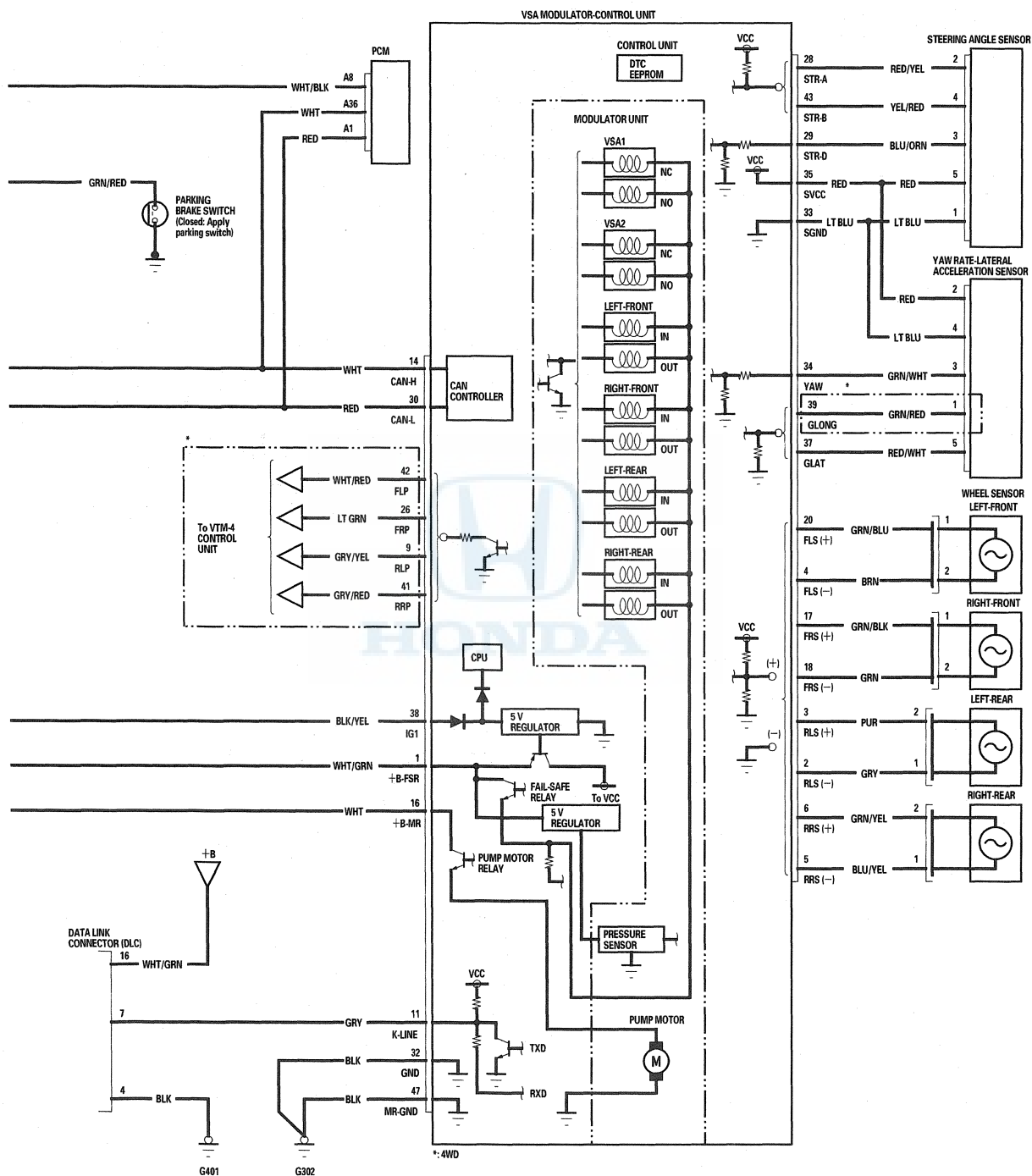
VSA NO valve closed, VSA NC valve open, inlet valve open, outlet valve closed, pump motor ON.
The reservoir and master cylinder fluid is pumped out by the pump, through the damping chamber, to the front and rear calipers.



VSA System Components

Circuit Diagram



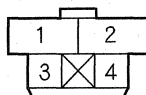


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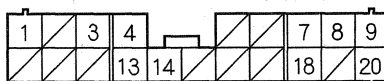
VSA System Components

Circuit Diagram (cont'd)

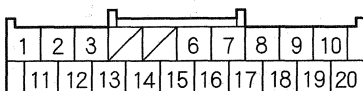
BRAKE PEDAL POSITION SWITCH 4P CONNECTOR



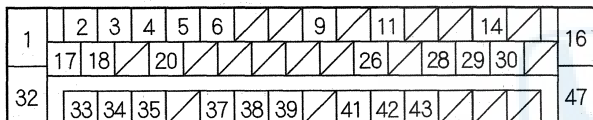
DRIVER'S UNDER-DASH FUSE/RELAY BOX CONNECTOR D (20P)



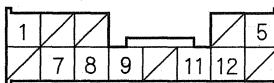
GAUGE CONTROL MODULE CONNECTOR A (20P)



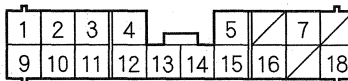
VSA MODULATOR-CONTROL UNIT 47P CONNECTOR



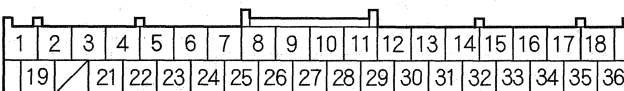
VSA OFF SWITCH 13P CONNECTOR



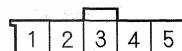
CONNECTOR J (18P)



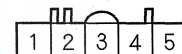
CONNECTOR B (36P)



STEERING ANGLE SENSOR 5P CONNECTOR

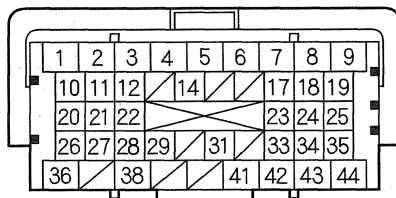


YAW RATE-LATERAL ACCELERATION SENSOR 5P CONNECTOR

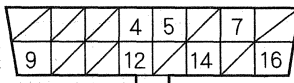


Wire side of female terminals

PCM CONNECTOR A (44P)



DATA LINK CONNECTOR (DLC)



Terminal side of female terminals

WHEEL SENSOR 2P CONNECTOR

FRONT



Terminal side of male terminals

REAR



Wire side of female terminals



DTC Troubleshooting

DTC 11, 13, 15, 17: Wheel Sensor (Short to Power/Short to Body Ground/Open)

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch OFF, then disconnect the HDS.
4. Test-drive the vehicle at 19 mph (30 km/h) or more.
5. Check for DTCs with the HDS.

Is DTC 11, 13, 15, and/or 17 indicated?

YES—Go to step 6.

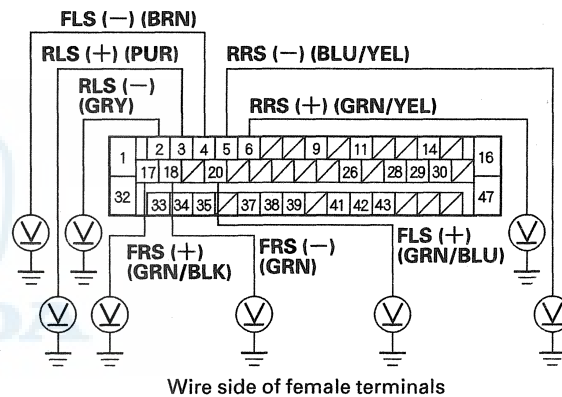
NO—Intermittent failure, the system is OK at this time (see page 19-38). Check for loose or poor connections. ■

6. Turn the ignition switch OFF.
7. Disconnect the VSA modulator-control unit 47P connector.
8. Start the engine.

9. Measure the voltage between body ground and the appropriate wheel sensor (+) and (−) terminals of the VSA modulator-control unit 47P connector individually (see table).

DTC	Appropriate Terminal	
	(+) Side	(−) Side
11 (Right-front)	No. 17: FRS (+)	No. 18: FRS (−)
13 (Left-front)	No. 20: FLS (+)	No. 4: FLS (−)
15 (Right-rear)	No. 6: RRS (+)	No. 5: RRS (−)
17 (Left-rear)	No. 3: RLS (+)	No. 2: RLS (−)

VSA MODULATOR-CONTROL UNIT 47P CONNECTOR



Wire side of female terminals

Is there 0.1 V or more?

YES—Repair short to power in the wire between the VSA modulator-control unit and the appropriate wheel sensor. ■

NO—Go to step 10.

10. Turn the ignition switch OFF.

(cont'd)

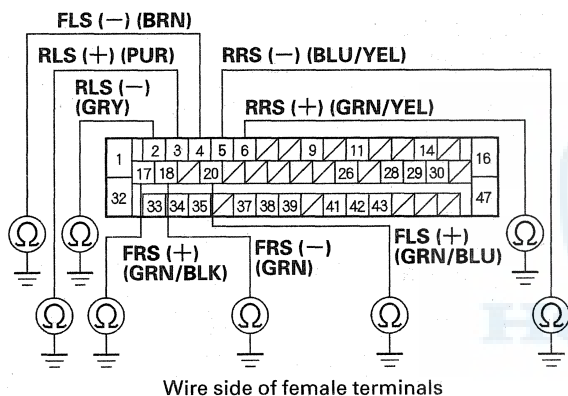
VSA System Components

DTC Troubleshooting (cont'd)

11. Check for continuity between body ground and the appropriate wheel sensor (+) and (−) terminals of the VSA modulator-control unit 47P connector individually (see table).

DTC	Appropriate Terminal	
	(+) Side	(−) Side
11 (Right-front)	No. 17: FRS (+)	No. 18: FRS (−)
13 (Left-front)	No. 20: FLS (+)	No. 4: FLS (−)
15 (Right-rear)	No. 6: RRS (+)	No. 5: RRS (−)
17 (Left-rear)	No. 3: RLS (+)	No. 2: RLS (−)

VSA MODULATOR-CONTROL UNIT 47P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Go to step 12.

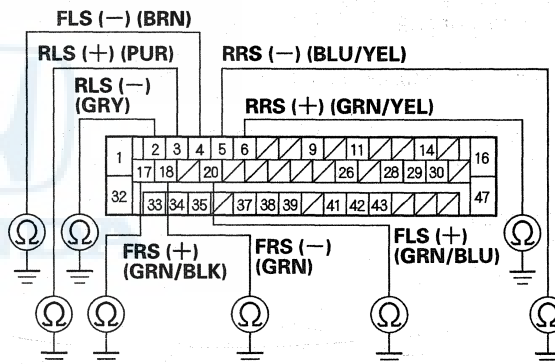
NO—Go to step 14.

12. Disconnect the appropriate wheel sensor 2P connector.

13. Check for continuity between body ground and the appropriate wheel sensor (+) and (−) terminals of the VSA modulator-control unit 47P connector individually (see table).

DTC	Appropriate Terminal	
	(+) Side	(−) Side
11 (Right-front)	No. 17: FRS (+)	No. 18: FRS (−)
13 (Left-front)	No. 20: FLS (+)	No. 4: FLS (−)
15 (Right-rear)	No. 6: RRS (+)	No. 5: RRS (−)
17 (Left-rear)	No. 3: RLS (+)	No. 2: RLS (−)

VSA MODULATOR-CONTROL UNIT 47P CONNECTOR



Wire side of female terminals

Is there continuity?

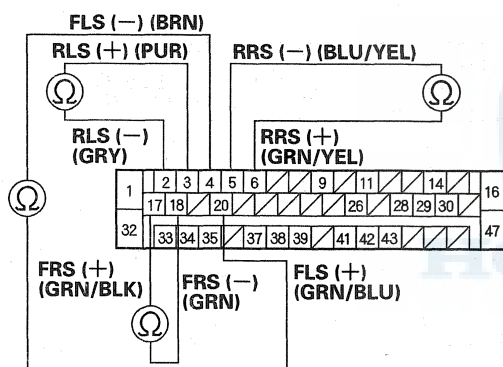
YES—Repair short to body ground in the wire between the VSA modulator-control unit and the wheel sensor. ■

NO—Replace the wheel sensor (see page 19-102). ■

14. Disconnect the appropriate wheel sensor 2P connector.
15. Check for continuity between the appropriate wheel sensor (+) and (−) terminals of the VSA modulator-control unit 47P connector (see table).

DTC	Appropriate Terminal	
	(+) Side	(−) Side
11 (Right-front)	No. 17: FRS (+)	No. 18: FRS (−)
13 (Left-front)	No. 20: FLS (+)	No. 4: FLS (−)
15 (Right-rear)	No. 6: RRS (+)	No. 5: RRS (−)
17 (Left-rear)	No. 3: RLS (+)	No. 2: RLS (−)

VSA MODULATOR-CONTROL UNIT 47P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair short in the wires between the VSA modulator-control unit and the wheel sensor. ■

NO—Go to step 16.

16. Substitute a known-good wheel sensor for the appropriate wheel sensor (see table).

DTC	Appropriate Wheel Sensor
11	Right-front
13	Left-front
15	Right-rear
17	Left-rear

17. Reconnect all connectors.
18. Turn the ignition switch ON (II).
19. Clear the DTC with the HDS.
20. Turn the ignition switch OFF, then disconnect the HDS.
21. Test-drive the vehicle at 19 mph (30 km/h) or more.
22. Check for DTCs with the HDS.

Is DTC 11, 13, 15, and/or 17 indicated?

YES—Check for loose terminals in the VSA modulator-control unit 47P connector. If necessary, substitute a known-good VSA modulator-control unit (see page 19-100), and retest. ■

NO—Replace the original wheel sensor (see page 19-102). ■

VSA System Components

DTC Troubleshooting (cont'd)

DTC 12, 14, 16, 18: Wheel Sensor (Electrical Noise/Intermittent Interruption)

NOTE: If the ABS and VSA indicators come on because of electrical noise, the indicator goes off when you test-drive the vehicle at 19 mph (30 km/h).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch OFF, then disconnect the HDS.
4. Test-drive the vehicle at 19 mph (30 km/h) or more.
5. Check for DTCs with the HDS.

Is DTC 12, 14, 16, and/or 18 indicated?

YES—Go to step 6.

NO—Intermittent failure, the system is OK at this time (see page 19-38). Check for loose or poor connections. ■

6. Turn the ignition switch OFF.
7. Check the appropriate wheel sensor and pulser for debris or damage and proper air gap (see page 19-102).

DTC	Appropriate Wheel Sensor
12	Right-front
14	Left-front
16	Right-rear
18	Left-rear

Are they OK?

YES—Go to step 8.

NO—Clean and reinstall or replace the appropriate wheel sensor or pulser. ■

8. Disconnect the VSA modulator-control unit 47P connector.

9. Check for continuity between the appropriate wheel sensor (+) terminal and other wheel sensor (+) terminals of the VSA modulator-control unit 47P connector (see table).

DTC	Appropriate (+) Terminal	Other (+) Terminals		
12	No. 17: FRS (+)	No. 20	No. 6	No. 3
14	No. 20: FLS (+)	No. 17	No. 6	No. 3
16	No. 6: RRS (+)	No. 17	No. 20	No. 3
18	No. 3: RLS (+)	No. 17	No. 20	No. 6

VSA MODULATOR-CONTROL UNIT 47P CONNECTOR

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48

Wire side of female terminals

Is there continuity?

YES—Repair short in the wire between the appropriate wheel sensor and the other wheel sensor. ■

NO—Go to step 10.



10. Substitute a known-good wheel sensor for the appropriate wheel sensor (see table).

DTC	Appropriate Wheel Sensor
12	Right-front
14	Left-front
16	Right-rear
18	Left-rear

11. Reconnect VSA modulator-control unit 47P connector.
12. Turn the ignition switch ON (II).
13. Clear the DTC with the HDS.
14. Turn the ignition switch OFF, then disconnect the HDS.
15. Test-drive the vehicle at 19 mph (30 km/h) or more.
16. Check for DTCs with the HDS.

Is DTC 12, 14, 16, and/or 18 indicated?

YES—Check for loose terminals in the VSA modulator-control unit 47P connector. If necessary, substitute a known-good VSA modulator-control unit (see page 19-100), and retest. ■

NO—Replace the original wheel sensor (see page 19-102). ■

DTC 21, 22, 23, 24: Pulser

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch OFF, then disconnect the HDS.
4. Test-drive the vehicle at 19 mph (30 km/h) or more.
5. Check for DTCs with the HDS.

Is DTC 21, 22, 23, and/or 24 indicated?

YES—Go to step 6.

NO—Intermittent failure, the system is OK at this time (see page 19-38). ■

6. Turn the ignition switch OFF.
7. Check the appropriate pulser for debris or damage and proper air gap (see table) (see page 19-102).

DTC	Appropriate Pulser
21	Right-front
22	Left-front
23	Right-rear
24	Left-rear

Is the pulser OK?

YES—Go to step 8.

NO—Clean and reinstall or replace the pulser. ■

(cont'd)

VSA System Components

DTC Troubleshooting (cont'd)

8. Substitute a known-good wheel sensor for the appropriate wheel sensor (see table).

DTC	Appropriate Wheel Sensor
21	Right-front
22	Left-front
23	Right-rear
24	Left-rear

9. Turn the ignition switch ON (II).
10. Clear the DTC with the HDS.
11. Turn the ignition switch OFF, then disconnect the HDS.
12. Test-drive the vehicle at 19 mph (30 km/h) or more.
13. Check for DTCs with the HDS.

Is DTC 21, 22, 23, and/or 24 indicated?

YES—Check for loose terminals in the VSA modulator-control unit 47P connector. If necessary, substitute a known-good VSA modulator-control unit (see page 19-100), and retest. ■

NO—Replace the original wheel sensor (see page 19-102). ■

DTC 25: Yaw Rate Sensor

NOTE: If DTC 64 is stored at the same time as DTC 25, troubleshoot DTC 64 first, then recheck for DTC 25.

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch OFF, then disconnect the HDS.
4. Test-drive the vehicle around a number of corners.
5. Check for DTCs with the HDS.

Is DTC 25 indicated?

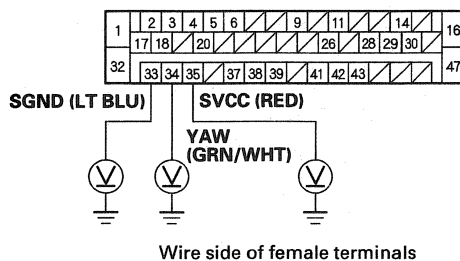
YES—Go to step 6.

NO—Intermittent failure, the system is OK at this time (see page 19-38), and recheck. ■

6. Turn the ignition switch OFF.
7. Disconnect the VSA modulator-control unit 47P connector, steering angle sensor 5P connector and yaw rate-lateral acceleration sensor 5P connector.
8. Turn the ignition switch ON (II).

9. Measure the voltage between body ground and VSA modulator-control unit 47P connector terminals No. 33, No. 34, and No. 35 individually.

VSA MODULATOR-CONTROL UNIT 47P CONNECTOR



Is there 0.1 V or more?

YES—Repair short to power in the wire between the VSA modulator-control unit, the yaw rate-lateral acceleration sensor and the steering angle sensor. ■

NO—Go to step 10.

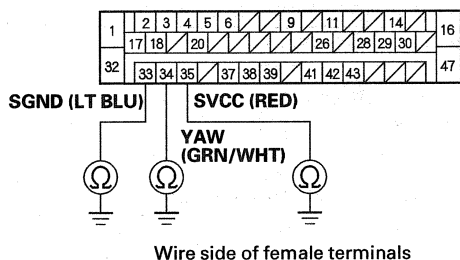
(cont'd)

VSA System Components

DTC Troubleshooting (cont'd)

10. Turn the ignition switch OFF.
11. Check for continuity between body ground and VSA modulator-control unit 47P connector terminals No. 33, No. 34, and No. 35 individually.

VSA MODULATOR-CONTROL UNIT 47P CONNECTOR



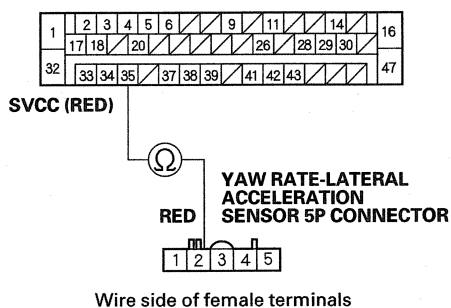
Is there continuity?

YES—Repair short to body ground in the wire between the VSA modulator-control unit, the yaw rate-lateral acceleration sensor and the steering angle sensor. ■

NO—Go to step 12.

12. Check for continuity between VSA modulator-control unit 47P connector terminal No. 35 and yaw rate-lateral acceleration sensor 5P connector terminal No. 2.

VSA MODULATOR-CONTROL UNIT 47P CONNECTOR
Wire side of female terminals



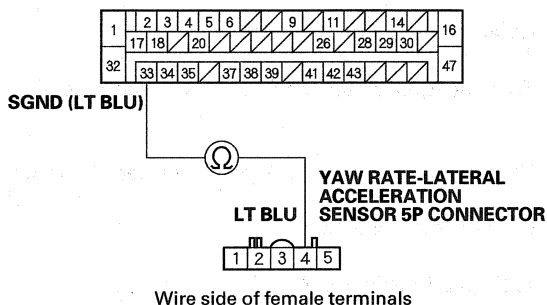
Is there continuity?

YES—Go to step 13.

NO—Repair open in the wire between the VSA modulator-control unit and the yaw rate-lateral acceleration sensor. ■

13. Check for continuity between VSA modulator-control unit 47P connector terminal No. 33 and yaw rate-lateral acceleration sensor 5P connector terminal No. 4.

VSA MODULATOR-CONTROL UNIT 47P CONNECTOR
Wire side of female terminals



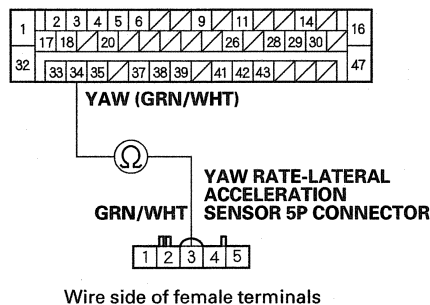
Is there continuity?

YES—Go to step 14.

NO—Repair open in the wire between the VSA modulator-control unit and the yaw rate-lateral acceleration sensor. ■

14. Check for continuity between VSA modulator-control unit 47P connector terminal No. 34 and yaw rate-lateral acceleration sensor 5P connector terminal No. 3.

VSA MODULATOR-CONTROL UNIT 47P CONNECTOR
Wire side of female terminals



Is there continuity?

YES—Go to step 15.

NO—Repair open in the wire between the VSA modulator-control unit and the yaw rate-lateral acceleration sensor. ■



15. Substitute a known-good yaw rate-lateral acceleration sensor.
16. Reconnect all connectors.
17. Turn the ignition switch ON (II).
18. Clear the DTC with the HDS.
19. Turn the ignition switch OFF, then disconnect the HDS.
20. Test-drive the vehicle around a number of corners.
21. Check for DTCs with the HDS.

Is DTC 25 indicated?

YES—Check for loose terminals in the VSA modulator-control unit 47P connector, and inspect for a loose or poor connection at G302. If necessary, substitute a known-good VSA modulator-control unit (see page 19-100), and retest. ■

NO—Replace the original yaw rate-lateral acceleration sensor (see page 19-97). ■

DTC 26: Lateral Acceleration Sensor

NOTE: If DTC 64 is stored at the same time as DTC 26, troubleshoot DTC 64 first, then recheck for DTC 26.

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch OFF, then disconnect the HDS.
4. Test-drive the vehicle around a number of corners.
5. Check for DTCs with the HDS.

Is DTC 26 indicated?

YES—Go to step 6.

NO—Intermittent failure, the system is OK at this time (see page 19-38), and recheck. ■

6. Turn the ignition switch OFF.
7. Disconnect the VSA modulator-control unit 47P connector, steering angle sensor 5P connector and yaw rate-lateral acceleration sensor 5P connector.
8. Turn the ignition switch ON (II).

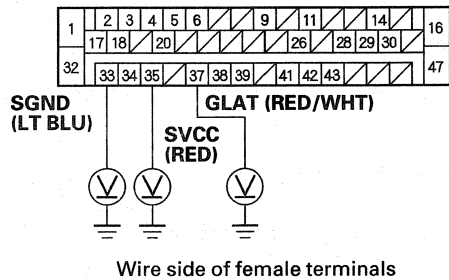
(cont'd)

VSA System Components

DTC Troubleshooting (cont'd)

9. Measure the voltage between body ground and VSA modulator-control unit 47P connector terminals No. 33, No. 35, and No. 37 individually.

VSA MODULATOR-CONTROL UNIT 47P CONNECTOR



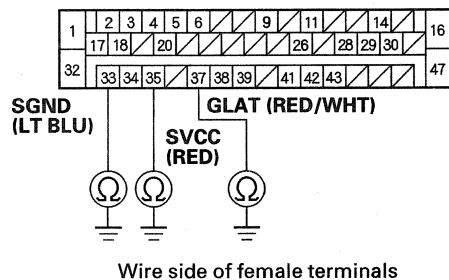
Is there 0.1 V or more?

YES—Repair short to power in the wire between the VSA modulator-control unit, the yaw rate-lateral acceleration sensor and the steering angle sensor. ■

NO—Go to step 10.

10. Turn the ignition switch OFF.
11. Check for continuity between body ground and VSA modulator-control unit 47P connector terminals No. 33, No. 35, and No. 37 individually.

VSA MODULATOR-CONTROL UNIT 47P CONNECTOR



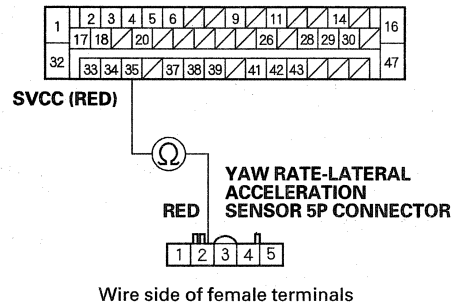
Is there continuity?

YES—Repair short to body ground in the wire between the VSA modulator-control unit, the yaw rate-lateral acceleration sensor and the steering angle sensor. ■

NO—Go to step 12.

12. Check for continuity between VSA modulator-control unit 47P connector terminal No. 35 and yaw rate-lateral acceleration sensor 5P connector terminal No. 2.

VSA MODULATOR-CONTROL UNIT 47P CONNECTOR
Wire side of female terminals



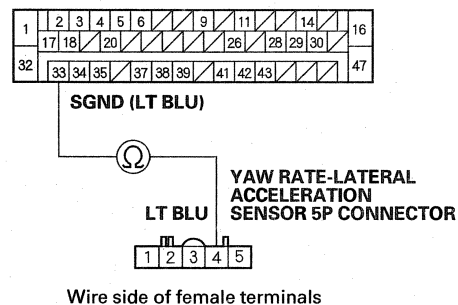
Is there continuity?

YES—Go to step 13.

NO—Repair open in the wire between the VSA modulator-control unit and the yaw rate-lateral acceleration sensor. ■

13. Check for continuity between VSA modulator-control unit 47P connector terminal No. 33 and yaw rate-lateral acceleration sensor 5P connector terminal No. 4.

VSA MODULATOR-CONTROL UNIT 47P CONNECTOR
Wire side of female terminals



Is there continuity?

YES—Go to step 14.

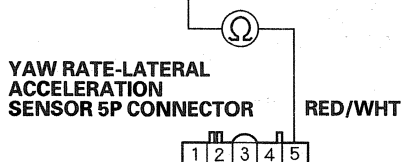
NO—Repair open in the wire between the VSA modulator-control unit and the yaw rate-lateral acceleration sensor. ■

14. Check for continuity between VSA modulator-control unit 47P connector terminal No. 37 and yaw rate-lateral acceleration sensor 5P connector terminal No. 5.

VSA MODULATOR-CONTROL UNIT 47P CONNECTOR
Wire side of female terminals



GLAT (RED/WHT)



Wire side of female terminals

Is there continuity?

YES—Go to step 15.

NO—Repair open in the wire between the VSA modulator-control unit and the yaw rate-lateral acceleration sensor. ■

15. Substitute a known-good yaw rate-lateral acceleration sensor.
16. Reconnect all connectors.
17. Turn the ignition switch ON (II).
18. Clear the DTC with the HDS.
19. Turn the ignition switch OFF, then disconnect the HDS.
20. Test-drive the vehicle around a number of corners.
21. Check for DTCs with the HDS.

Is DTC 25 indicated?

YES—Check for loose terminals in the VSA modulator-control unit 47P connector, and inspect for a loose or poor connection at G302. If necessary, substitute a known-good VSA modulator-control unit (see page 19-100), and retest. ■

NO—Replace the original yaw rate-lateral acceleration sensor (see page 19-97). ■

VSA System Components

DTC Troubleshooting (cont'd)

DTC 27: Steering Angle Sensor

NOTE: If DTC 64 is stored at the same time as DTC 27, troubleshoot DTC 64 first, then recheck for DTC 27.

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch OFF, then disconnect the HDS.
4. Test-drive the vehicle around a number of corners.
5. Check for DTCs with the HDS.

Is DTC 27 indicated?

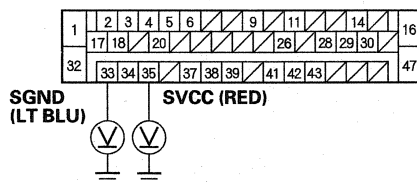
YES—Go to step 6.

NO—Intermittent failure, the system is OK at this time (see page 19-38), and recheck. ■

6. Turn the ignition switch OFF.
7. Disconnect the VSA modulator-control unit 47P connector, steering angle sensor 5P connector and yaw rate-lateral acceleration sensor 5P connector.
8. Turn the ignition switch ON (II).

9. Measure the voltage between body ground and VSA modulator-control unit 47P connector terminals No. 33, No. 35 individually.

VSA MODULATOR-CONTROL UNIT 47P CONNECTOR



Wire side of female terminals

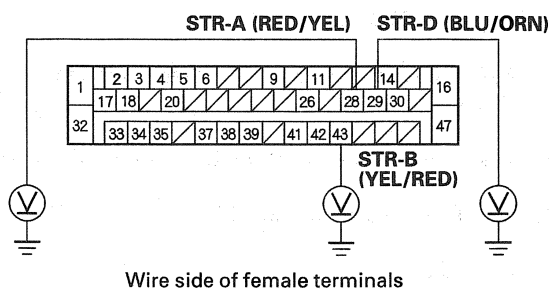
Is there 0.1 V or more?

YES—Repair short to power in the wire between the VSA modulator-control unit, the yaw rate-lateral acceleration sensor and the steering angle sensor. ■

NO—Go to step 10.

10. Measure the voltage between body ground and VSA modulator-control unit 47P connector terminals No. 28, No. 29, and No. 43 individually.

VSA MODULATOR-CONTROL UNIT 47P CONNECTOR



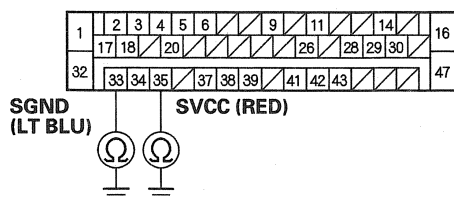
Is there 0.1 V or more?

YES—Repair short to power in the wire between the VSA modulator-control unit, the steering angle sensor and the yaw rate-lateral acceleration sensor. ■

NO—Go to step 11.

11. Turn the ignition switch OFF.
12. Check for continuity between body ground and VSA modulator-control unit 47P connector terminals No. 33, No. 35 individually.

VSA MODULATOR-CONTROL UNIT 47P CONNECTOR



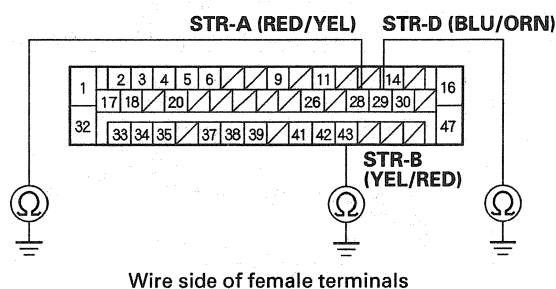
Is there continuity?

YES—Repair short to body ground in the wire between the VSA modulator-control unit, the steering angle sensor and the yaw rate-lateral acceleration sensor. ■

NO—Go to step 13.

13. Check for continuity between body ground and VSA modulator-control unit 47P connector terminals No. 28, No. 29, and No. 43 individually.

VSA MODULATOR-CONTROL UNIT 47P CONNECTOR



Is there continuity?

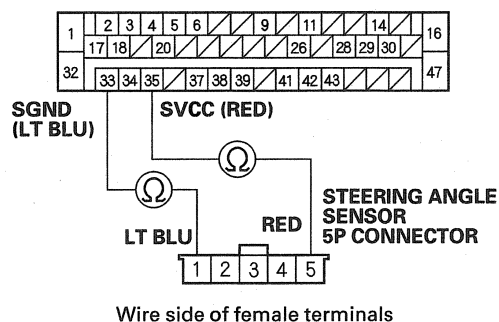
YES—Repair short to body ground in the wire between the VSA modulator-control unit, the steering angle sensor and the yaw rate-lateral acceleration sensor. ■

NO—Go to step 14.

14. Check for continuity between VSA modulator-control unit 47P connector terminals No. 33, No. 35 and steering angle sensor 5P connector terminals No. 1, No. 5 individually.

VSA MODULATOR-CONTROL UNIT 47P CONNECTOR

Wire side of female terminals



Is there continuity?

YES—Go to step 15.

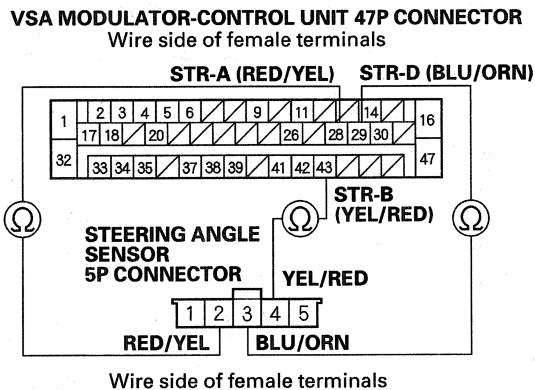
NO—Repair open in the wire between the VSA modulator-control unit and the steering angle sensor. ■

(cont'd)

VSA System Components

DTC Troubleshooting (cont'd)

15. Check for continuity between VSA modulator-control unit 47P connector terminals No. 28, No. 29, No. 43 and steering angle sensor 5P connector terminals No. 2, No. 3, and No. 4 individually.



Is there continuity?

YES—Go to step 16.

NO—Repair open in the wire between the VSA modulator-control unit and the steering angle sensor. ■

16. Substitute a known-good steering angle sensor.
17. Reconnect all connectors.
18. Turn the ignition switch ON (II).
19. Clear the DTC with the HDS.
20. Turn the ignition switch OFF, then disconnect the HDS.
21. Test-drive the vehicle around a number of corners.
22. Check for DTCs with the HDS.

Is DTC 27 indicated?

YES—Check for loose terminals in the VSA modulator-control unit 47P connector. Inspect for poor or loose connection at G302. If necessary, substitute a known-good VSA modulator-control unit (see page 19-100), and retest. ■

NO—Replace the original steering angle sensor (see page 19-96). ■

DTC 28: Longitudinal Acceleration Sensor (4WD)

NOTE: If DTC 64 is stored at the same time as DTC 28, troubleshoot DTC 64 first, then recheck for DTC 28.

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch OFF, then disconnect the HDS.
4. Test-drive the vehicle around a number of corners.
5. Check for DTCs with the HDS.

Is DTC 28 indicated?

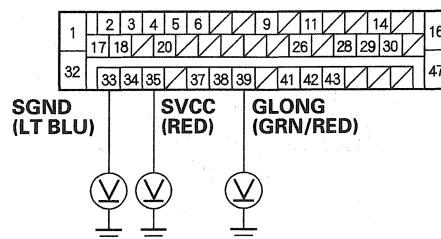
YES—Go to step 6.

NO—Intermittent failure, the system is OK at this time (see page 19-38), and recheck. ■

6. Turn the ignition switch OFF.
7. Disconnect the VSA modulator-control unit 47P connector, steering angle sensor 5P connector, and yaw rate-lateral acceleration sensor 5P connector.
8. Turn the ignition switch ON (II).

9. Measure the voltage between body ground and VSA modulator-control unit 47P connector terminals No. 33, No. 35, and No. 39 individually.

VSA MODULATOR-CONTROL UNIT 47P CONNECTOR



Wire side of female terminals

Is there 0.1 V or more?

YES—Repair short to power in the wire between the VSA modulator-control unit, the yaw rate-lateral acceleration sensor and the steering angle sensor. ■

NO—Go to step 10.

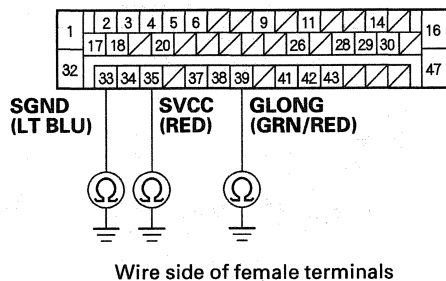
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VSA System Components

DTC Troubleshooting (cont'd)

10. Turn the ignition switch OFF.
11. Check for continuity between body ground and VSA modulator-control unit 47P connector terminals No. 33, No. 35, and No. 39 individually.

VSA MODULATOR-CONTROL UNIT 47P CONNECTOR



Is there continuity?

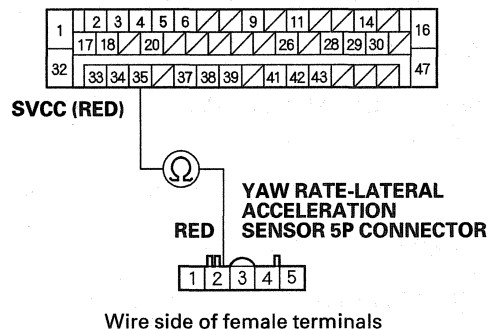
YES—Repair short to body ground in the wire between the VSA modulator-control unit, the yaw rate-lateral acceleration sensor and the steering angle sensor. ■

NO—Go to step 12.

12. Check for continuity between VSA modulator-control unit 47P connector terminal No. 35 and yaw rate-lateral acceleration sensor 5P connector terminal No. 2.

VSA MODULATOR-CONTROL UNIT 47P CONNECTOR

Wire side of female terminals



Is there continuity?

YES—Go to step 13.

NO—Repair open in the wire between the VSA modulator-control unit and the yaw rate-lateral acceleration sensor. ■

13. Check for continuity between VSA modulator-control unit 47P connector terminal No. 33 and yaw rate-lateral acceleration sensor 5P connector terminal No. 4.

VSA MODULATOR-CONTROL UNIT 47P CONNECTOR
Wire side of female terminals

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48

SGND (LT BLU)



LT BLU

**YAW RATE-LATERAL
ACCELERATION
SENSOR 5P CONNECTOR**

1	2	3	4	5
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Wire side of female terminals

Is there continuity?

YES—Go to step 14.

NO—Repair open in the wire between the VSA modulator-control unit and the yaw rate-lateral acceleration sensor. ■

14. Check for continuity between VSA modulator-control unit 47P connector terminal No. 39 and yaw rate-lateral acceleration sensor 5P connector terminal No. 1.

VSA MODULATOR-CONTROL UNIT 47P CONNECTOR
Wire side of female terminals

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48

GLONG (GRN/RED)



GRN/RED

**YAW RATE-LATERAL
ACCELERATION
SENSOR 5P CONNECTOR**

1	2	3	4	5
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Wire side of female terminals

Is there continuity?

YES—Go to step 15.

NO—Repair open in the wire between the VSA modulator-control unit and the yaw rate-lateral acceleration sensor. ■

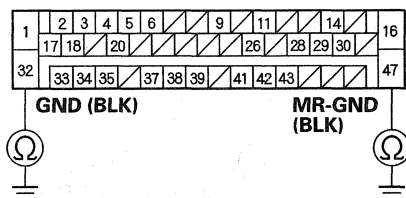
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VSA System Components

DTC Troubleshooting (cont'd)

15. Check for continuity between body ground and VSA modulator-control unit 47P connector terminals No. 32 and No. 47 individually.

VSA MODULATOR-CONTROL UNIT 47P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Go to step 16.

NO—Repair open in the wire between the VSA modulator-control unit and G302. If the wire is OK, check for a poor connection at G302. ■

16. Substitute a known-good yaw rate-lateral acceleration sensor.
17. Reconnect all connectors.
18. Turn the ignition switch ON (II).
19. Clear the DTC with the HDS.
20. Turn the ignition switch OFF, then disconnect the HDS.
21. Test-drive the vehicle around a number of corners.
22. Check for DTCs with the HDS.

Is DTC 28 indicated?

YES—Check for loose terminals in the VSA modulator-control unit 47P connector. If necessary, substitute a known-good VSA modulator-control unit (see page 19-100), and retest. ■

NO—Replace the original yaw rate-lateral acceleration sensor (see page 19-97). ■

DTC 31, 32, 33, 34, 35, 36, 37, 38: ABS Solenoid

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch OFF, then turn it ON (II) again.
4. Check for DTCs with the HDS.

Is DTC 31, 32, 33, 34, 35, 36, 37, and/or 38 indicated?

YES—Check for loose terminals in the VSA modulator-control unit 47P connector. If necessary, substitute a known-good VSA modulator-control unit (see page 19-100), and retest. ■

NO—Intermittent failure, the system is OK at this time (see page 19-38). ■



DTC 41, 42, 43, 44: Wheel Lock

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch OFF, then disconnect the HDS.
4. Test-drive the vehicle, and check for brake drag by duplicating city driving at speeds over 30 mph (50 km/h). Use the brakes often.

Do the brakes drag?

YES—Repair the brake drag. ■

NO—Go to step 5.

5. Check the installation of the appropriate wheel sensor and the pulser for damage, debris, or excessive air gap (see page 19-102).

DTC	Appropriate Wheel Sensor
41	Right-front
42	Left-front
43	Right-rear
44	Left-rear

Is it correct?

YES—If the DTC does not reappear, the most probable cause for the DTC is that the vehicle might have lost traction in poor weather and spun around. ■

NO—Reinstall or replace the wheel sensor (see page 19-102). ■

DTC 51: Motor Lock

DTC 52: Motor Stuck OFF

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch OFF, then disconnect the HDS.
4. Test-drive the vehicle at 10 mph (15 km/h) or more.
5. Check for DTCs with the HDS.

Is DTC 51 or 52 indicated?

YES—Go to step 6.

NO—Intermittent failure, the system is OK at this time (see page 19-38). Check for loose terminals at the VSA modulator-control unit 47P connector. ■

6. Turn the ignition switch OFF.
7. Check the No. 3 (30 A) fuse in the auxiliary under-hood fuse box.

Is the fuse OK?

YES—Reinstall the fuse, and go to step 8.

NO—Replace the fuse, and recheck. ■

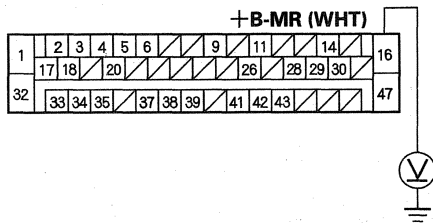
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VSA System Components

DTC Troubleshooting (cont'd)

8. Disconnect the VSA modulator-control unit 47P connector.
9. Measure the voltage between VSA modulator-control unit 47P connector terminal No. 16 and body ground.

VSA MODULATOR-CONTROL UNIT 47P CONNECTOR



Wire side of female terminals

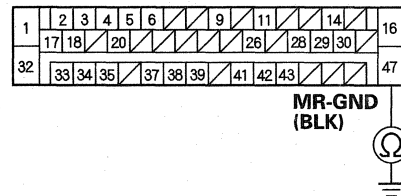
Is there battery voltage?

YES—Go to step 10.

NO—Repair open in the wire between the No. 3 (30 A) fuse in the auxiliary under-hood fuse box and the VSA modulator-control unit. ■

10. Check for continuity between VSA modulator-control unit 47P connector terminal No. 47 and body ground.

VSA MODULATOR-CONTROL UNIT 47P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Go to step 11.

NO—Repair open in the wire between the VSA modulator-control unit and body ground (G302). ■

11. Turn the ignition switch ON (II).
12. Clear the DTC with the HDS.
13. Turn the ignition switch OFF, then disconnect the HDS.
14. Test-drive the vehicle at 10 mph (15 km/h) or more.
15. Check for DTCs with the HDS.

Is DTC 51 or 52 indicated?

YES—Check for loose terminals in the VSA modulator-control unit 47P connector. If necessary, substitute a known-good VSA modulator-control unit (see page 19-100), and retest. ■

NO—Intermittent failure, the system is OK at this time (see page 19-38). ■

DTC 53: Motor Stuck ON

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch OFF, then disconnect the HDS.
4. Test-drive the vehicle at 10 mph (15 km/h) or more.
5. Check for DTCs with the HDS.

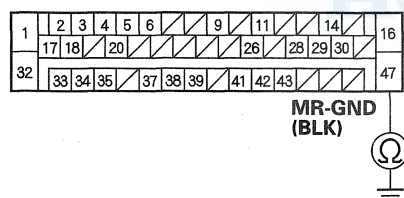
Is DTC 53 indicated?

YES—Go to step 6.

NO—Intermittent failure, the system is OK at this time (see page 19-38). ■

6. Turn the ignition switch OFF.
7. Check for continuity between VSA modulator-control unit 47P connector terminal No. 47 and body ground.

VSA MODULATOR-CONTROL UNIT 47P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Check for loose terminals in the VSA modulator-control unit 47P connector, and inspect for a loose or poor connection at G302. If necessary, substitute a known-good VSA modulator-control unit (see page 19-100), and retest. ■

NO—Repair open in the wire between the VSA modulator-control unit and body ground (G302). ■

DTC 54: Fail-safe Relay

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch OFF, then disconnect the HDS.
4. Test-drive the vehicle.
5. Check for DTCs with the HDS.

Is DTC 54 indicated?

YES—Go to step 6.

NO—Intermittent failure, the system is OK at this time (see page 19-38). ■

6. Turn the ignition switch OFF.

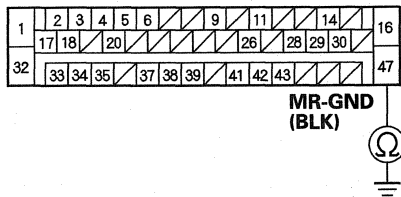
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VSA System Components

DTC Troubleshooting (cont'd)

7. Check for continuity between VSA modulator-control unit 47P connector terminal No. 47 and body ground.

VSA MODULATOR-CONTROL UNIT 47P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Check for loose terminals in the VSA modulator-control unit 47P connector, and inspect for a loose or poor connection at G302. If necessary, substitute a known-good VSA modulator-control unit (see page 19-100), and retest. ■

NO—Repair open in the wire between the VSA modulator-control unit and body ground (G302). ■

DTC 61: Low +B-FSR Voltage

DTC 62: High +B-FSR Voltage

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch OFF, then disconnect the HDS.
4. Test-drive the vehicle.
5. Check for DTCs with the HDS.

Is DTC 61 or 62 indicated?

YES—Check the battery (see page 22-81) and the charging system (see page 4-26). If the battery tests good, check for loose terminals in the VSA modulator-control unit 47P connector. Inspect for loose or poor connection at G302. If necessary, substitute a known-good VSA modulator-control unit (see page 19-100), and retest. ■

NO—Intermittent failure, the system is OK at this time (see page 19-38). ■

DTC 64: Sensor Power Voltage

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch OFF, then disconnect the HDS.
4. Test-drive the vehicle around a number of corners.
5. Check for DTCs with the HDS.

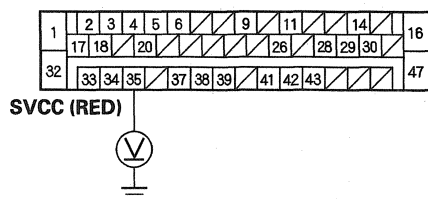
Is DTC 64 indicated?

YES—Go to step 6.

NO—Intermittent failure, the system is OK at this time (see page 19-38). Check connections at the VSA modulator-control unit 47P connector and G302. ■

6. Turn the ignition switch OFF.
7. Disconnect the VSA modulator-control unit 47P connector.
8. Start the engine.
9. Measure the voltage between VSA modulator-control unit 47P connector terminal No. 35 and body ground.

VSA MODULATOR-CONTROL UNIT 47P CONNECTOR



Wire side of female terminals

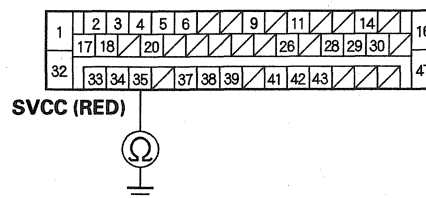
Is there 0.1 V or more?

YES—Repair short to power in the wire between the VSA modulator-control unit and yaw rate-lateral acceleration sensor and steering angle sensor. ■

NO—Go to step 10.

10. Check for continuity between VSA modulator-control unit 47P connector terminal No. 35 and body ground.

VSA MODULATOR-CONTROL UNIT 47P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair short to body ground in the wire between the VSA modulator-control unit and yaw rate-lateral acceleration sensor and steering angle sensor. ■

NO—Check for loose terminals in the VSA modulator-control unit 47P connector. If necessary, substitute a known-good VSA modulator-control unit (see page 19-100), and retest. ■

VSA System Components

DTC Troubleshooting (cont'd)

DTC 65: Brake Fluid Level

1. Check the brake fluid level.

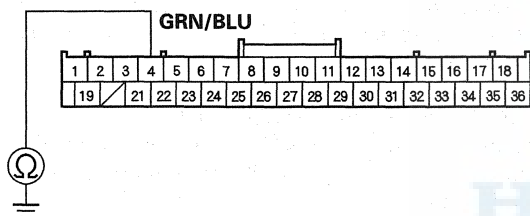
Is the level correct?

YES—Go to step 2.

NO—Check for leaks in the brake system. If no leaks are found, inspect the brake lining and replace any worn brake pads. ■

2. Disconnect the gauge control module connector B (36P), and brake fluid level switch connector.
3. Check for continuity between terminal No. 4 of the gauge control module connector B (36P) and body ground.

GAUGE CONTROL MODULE CONNECTOR B (36P)



Wire side of female terminals

Is there continuity?

YES—Repair short to body ground in the wire between the gauge control module connector B and the brake fluid level switch. ■

NO—Go to step 4.

4. Check the brake fluid level switch (see page 19-10).

Is the switch OK?

YES—Do the troubleshooting for the gauge control module (see page 22-90). ■

NO—Replace the brake fluid level switch. ■

DTC 66: VSA Pressure Sensor (Inside of VSA Modulator-control Unit)

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch OFF, then disconnect the HDS.
4. Test-drive the vehicle.
5. Check for DTCs with the HDS.

Is DTC 25, 26, 27, and/or 64 indicated?

YES—Do the appropriate troubleshooting for the DTC. ■

NO—Go to step 6.

6. Do the VSA sensor neutral position memorization (see page 19-98).
7. Clear the DTC with the HDS.
8. Turn the ignition switch OFF, then disconnect the HDS.
9. Test-drive the vehicle.
10. Check for DTCs with the HDS.

Is DTC 66 indicated?

YES—Check for loose terminals in the VSA modulator-control unit 47P connector. If necessary, substitute a known-good VSA modulator-control unit (see page 19-100), and retest. ■

NO—Intermittent failure, the system is OK at this time (see page 19-38). ■



DTC 68: Brake Pedal Position Switch

1. Turn the ignition switch ON (II).
2. Check for fuel and emissions systems DTCs with the HDS. (see page 11-3).

Are any DTCs indicated?

YES—Do the applicable troubleshooting for the PCM. ■

NO—Go to step 3.

3. Check the brake pedal position switch (see page 19-5).

Is the brake pedal position switch OK?

YES—Go to step 4.

NO—Adjust the brake pedal position switch (see page 19-5). ■

4. Clear the DTC with the HDS.
5. Turn the ignition switch OFF, then disconnect the HDS.
6. Test-drive the vehicle.

7. Check for DTCs with the HDS.

Is DTC 68 indicated?

YES—Go to step 8.

NO—Intermittent failure, the system is OK at this time (see page 19-38). ■

8. Troubleshoot the brake pedal position switch circuit (see page 11-356).

Is the brake pedal position switch circuit OK?

YES—Substitute a known-good PCM and recheck:

- If the problem is gone, replace the original PCM. ■
- If the problem continues, replace the VSA modulator-control unit (see page 19-100). ■

NO—Repair the brake pedal position switch circuit. ■

VSA System Components

DTC Troubleshooting (cont'd)

DTC 71: Different Diameter Tire

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch OFF, then disconnect the HDS.
4. Test-drive the vehicle.
5. Check for DTCs with the HDS.

Is DTC 71 indicated?

YES—Go to step 6.

NO—Intermittent failure, confirm that tire inflation is set to spec (see page 19-38). The vehicle is OK at this time. ■

6. Check that all four tires are the specified size and are inflated to the proper specification.

Are all four tires the correct size and properly inflated?

YES—Go to step 7.

NO—Install the correct tires or set the tires to the correct inflation (see page 18-5), and retest. ■

7. With the vehicle on level ground, mark each tire with a small spot of grease. Roll the vehicle until each of the tires makes two grease spots on the floor.
8. Measure and record the distance between the two grease spots.

Is the difference between the shortest and the longest measurement more than 10 %?

YES—Replace the tire/tires that is smaller or larger than the others. ■

NO—Check for loose terminals in the VSA modulator-control unit 47P connector. If necessary, substitute a known-good VSA modulator-control unit (see page 19-100), and retest. ■

DTC 81: Central Processing Unit (CPU)

1. Turn the ignition switch ON (II).
2. Check for other DTCs with the HDS.

Is another DTC indicated?

YES—Do the appropriate troubleshooting for the DTC. ■

NO—Go to step 3.

3. Clear the DTC with the HDS.
4. Turn the ignition switch OFF, then disconnect the HDS.
5. Test-drive the vehicle.
6. Check for DTCs with the HDS.

Is DTC 81 indicated?

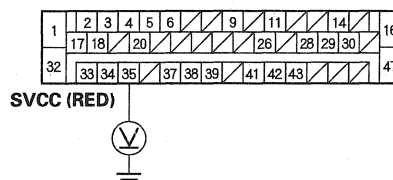
YES—Go to step 7.

NO—Intermittent failure, the vehicle is OK at this time (see page 19-38). ■

7. Turn the ignition switch OFF.
8. Disconnect the VSA modulator-control unit 47P connector, the steering angle sensor 5P connector, and the yaw rate-lateral acceleration sensor 5P connector.
9. Start the engine.

10. Measure the voltage between VSA modulator-control unit 47P connector terminal No. 35 and body ground.

VSA MODULATOR-CONTROL UNIT 47P CONNECTOR



Wire side of female terminals

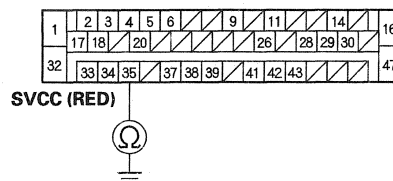
Is there 0.1 V or more?

YES—Repair short to power in the wire between the VSA modulator-control unit, the yaw rate-lateral acceleration sensor, and the steering angle sensor. ■

NO—Go to step 11.

11. Check for continuity between VSA modulator-control unit 47P connector terminal No. 35 and body ground.

VSA MODULATOR-CONTROL UNIT 47P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair short to body ground in the wire between the VSA modulator-control unit, the yaw rate-lateral acceleration sensor, and the steering angle sensor. ■

NO—Check for loose terminals in the VSA modulator-control unit 47P connector. If necessary, substitute a known-good VSA modulator-control unit (see page 19-100), and retest. ■

VSA System Components

DTC Troubleshooting (cont'd)

DTC 83: PCM

1. Turn the ignition switch ON (II).
2. Check for other DTCs with the HDS.

Is DTC 86 indicated?

YES—Do the troubleshooting for DTC 86 (see page 19-85). ■

NO—Go to step 3.

3. Clear the DTC with the HDS.
4. Turn the ignition switch OFF, then disconnect the HDS.
5. Test-drive the vehicle.
6. Check for DTCs with the HDS.

Is DTC 83 indicated?

YES—Go to step 7.

NO—Intermittent failure, the system is OK at this time (see page 19-38). ■

7. Check for fuel and emissions systems DTCs with the HDS. (see page 11-3).

Are any DTCs indicated?

YES—Do the applicable troubleshooting for the PCM. ■

NO—Go to step 8.

8. Check the VSA system for DTCs with the HDS.

Is DTC 83 indicated and no PCM's DTC?

YES—Substitute a known-good PCM, and recheck. If the code returns, check for loose terminals in the VSA modulator-control unit 47P connector. If necessary, substitute a known-good VSA modulator-control unit (see page 19-100), and retest. ■

NO—Intermittent failure, the system is OK at this time (see page 19-38). ■



DTC 84: VSA Sensor Neutral Position

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch OFF, then disconnect the HDS.
4. Test-drive the vehicle.
5. Check for DTCs with the HDS.

Is DTC 84 indicated?

YES—Go to step 6.

NO—Intermittent failure, the system is OK at this time (see page 19-38). ■

6. Check for other system DTCs with the HDS.

Are any other DTCs indicated?

YES—Troubleshoot the appropriate DTC. ■

NO—Go to step 7.

7. Do the VSA sensor neutral position memorization (see page 19-98).
8. Clear the DTC with the HDS.
9. Turn the ignition switch OFF, then disconnect the HDS.
10. Test-drive the vehicle.
11. Check for DTCs with the HDS.

Is DTC 84 indicated?

YES—Check for loose terminals in the VSA modulator-control unit 47P connector. If necessary, substitute a known-good VSA modulator-control unit (see page 19-100), and retest. ■

NO—Intermittent failure, the system is OK at this time (see page 19-38). ■

DTC 86: F-CAN Communication

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start and run the engine for at least 5 seconds, then turn the engine off.
4. Check for DTCs with the HDS.

Is DTC 86 indicated?

YES—Go to step 5.

NO—Intermittent failure, the F-CAN communication line is OK at this time (see page 19-38). ■

5. Check for fuel and emissions systems DTCs with the HDS. (see page 11-3).

Are any DTCs indicated?

YES—Do the applicable troubleshooting for the PCM. ■

NO—Check for loose terminals in the VSA modulator-control unit 47P connector. Inspect for loose or poor ground at G302. If necessary, substitute a known-good VSA modulator-control unit (see page 19-100), and retest. ■

VSA System Components

DTC Troubleshooting (cont'd)

DTC 107: TCS Operation

DTC 108: VSA Operation

NOTE: The ABS/VSA indicators do not come on by memorizing the DTC 107 or 108.

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch OFF, then disconnect the HDS.
4. Test-drive the vehicle.
5. Check for DTCs with the HDS.

Is DTC 107 or 108 indicated?

YES—Check for loose terminals in the VSA modulator-control unit 47P connector. If necessary, substitute a known-good VSA modulator-control unit (see page 19-100), and retest. ■

NO—Intermittent failure, the system is OK at this time (see page 19-38). ■

DTC 112: Internal Power Source Stuck OFF

NOTE: If the battery cable was disconnected three times with the ignition switch ON (II), this DTC may be stored.

1. Turn the ignition switch ON (II).
2. Check for other DTCs with the HDS.

Is another system DTC indicated?

YES—Do the appropriate troubleshooting for the DTC. ■

NO—Go to step 3.

3. Clear the DTC with the HDS.
4. Turn the ignition switch OFF, then disconnect the HDS.
5. Test-drive the vehicle.
6. Check for DTCs with the HDS.

Is DTC 112 indicated?

YES—Go to step 7.

NO—Intermittent failure, the system is OK at this time (see page 19-38). ■

7. Turn the ignition switch OFF.

8. Inspect G302 for a clean and tight connection.

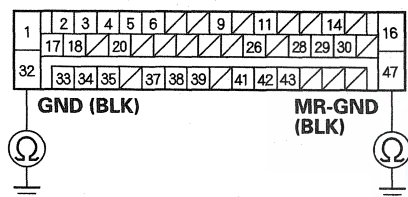
Is G302 clean and properly connected?

YES—Go to step 9.

NO—Repair the connection at G302. ■

9. Disconnect the VSA modulator-control unit 47 P connector.
10. Check for continuity between body ground and VSA modulator-control unit 47P connector terminals No. 32 and No. 47 individually.

VSA MODULATOR-CONTROL UNIT 47P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Check for loose terminals in the VSA modulator-control unit 47P connector. If necessary, substitute a known-good VSA modulator-control unit (see page 19-100), and retest. ■

NO—Repair open in the wire between the VSA modulator-control unit and body ground (G302). ■

DTC 121, 122, 123, 124: VSA Solenoid

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch OFF, then disconnect the HDS.
4. Test-drive the vehicle.
5. Check for DTCs with the HDS.

Is DTC 121, 122, 123, or 124 indicated?

YES—Check for loose terminals in the VSA modulator-control unit 47P connector. If necessary, substitute a known-good VSA modulator-control unit (see page 19-100), and retest. ■

NO—Intermittent failure, the system is OK at this time (see page 19-38). ■

VSA System Components

Symptom Troubleshooting

ABS indicator does not come on

1. Turn the ignition switch ON (II), and watch the ABS indicator.

Does the ABS indicator come on for several seconds?

YES—Intermittent failure, the system is OK at this time (see page 19-38). ■

NO—Go to step 2.

2. Apply the parking brake.

Does the brake system indicator come on?

YES—Go to step 3.

NO—Repair open in the gauge control module indicator power source circuit. ■

3. Turn the ignition switch OFF.
4. Disconnect the VSA modulator-control unit 47P connector.
5. Turn the ignition switch ON (II).

Does the VSA indicator come on?

YES—Go to step 6.

NO—Do the troubleshooting for the gauge control module (see page 22-90). ■

6. Turn the ignition switch OFF.
7. Substitute a known-good VSA modulator-control unit (see page 19-100).
8. Turn the ignition switch ON (II).

Does the ABS indicator come on?

YES—Replace the original VSA modulator-control unit (see page 19-100). ■

NO—Do the troubleshooting for the gauge control module (see page 22-90). ■

ABS indicator does not go off, and no DTCs are stored

1. Turn the ignition switch OFF.
2. Check the No. 2 (40 A) fuse in the auxiliary under-hood fuse box.

Is the fuse OK?

YES—Reinstall the fuse, and go to step 3.

NO—Replace the fuse, and recheck. If the fuse is blown, check for a short to body ground in this fuse circuit. If the circuit is OK, replace the VSA modulator-control unit (see page 19-100). ■

3. Check the No. 6 (15 A) fuse in the driver's under-dash fuse/relay box.

Is the fuse OK?

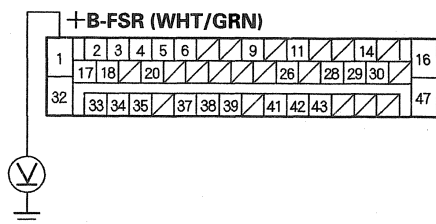
YES—Reinstall the fuse, and go to step 4.

NO—Replace the fuse, and recheck. If the fuse is blown, check for a short to body ground in this fuse circuit. If the circuit is OK, replace the VSA modulator-control unit (see page 19-100). ■

4. Disconnect the VSA modulator-control unit 47P connector.

5. Measure the voltage between VSA modulator-control unit 47P connector terminal No. 1 and body ground.

VSA MODULATOR-CONTROL UNIT 47P CONNECTOR



Wire side of female terminals

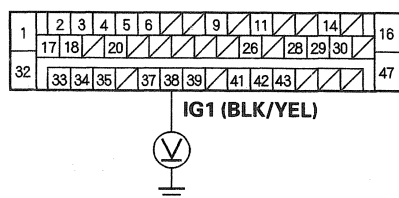
Is there battery voltage?

YES—Go to step 6.

NO—Repair open in the wire between the No. 2 (40 A) fuse in the auxiliary under-hood fuse box and the VSA modulator-control unit. ■

6. Turn the ignition switch ON (II).
7. Measure the voltage between VSA modulator-control unit 47P connector terminal No. 38 and body ground.

VSA MODULATOR-CONTROL UNIT 47P CONNECTOR



Wire side of female terminals

Is there battery voltage?

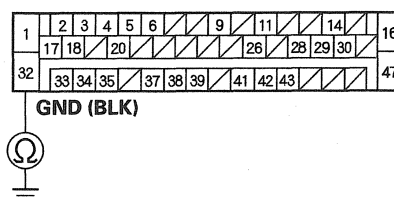
YES—Go to step 8.

NO—Repair open in the wire between the No. 6 (15 A) fuse in the driver's under-dash fuse/relay box and the VSA modulator-control unit. ■

8. Turn the ignition switch OFF.

9. Check for continuity between the VSA modulator-control unit 47P connector terminal No. 32 and body ground.

VSA MODULATOR-CONTROL UNIT 47P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Check for loose terminals in the VSA modulator-control unit 47P connector. Substitute a known-good gauge control module, and recheck. If the test results are the same, substitute a known-good VSA modulator-control unit (see page 19-100), and retest. ■

NO—Repair open in the wire between the VSA modulator-control unit and body ground (G302). ■

VSA System Components

Symptom Troubleshooting (cont'd)

Brake system indicator does not come on (Check bulb operation with parking brake)

1. With the parking brake applied, turn the ignition switch ON (II), and watch the brake system indicator.

Does the brake system indicator come on?

YES—Go to step 3.

NO—Go to step 2.

2. Turn the ignition switch OFF, then turn it ON (II) again.

Does the ABS indicator come on for several seconds?

YES—Replace the gauge control module (see page 22-102). ■

NO—Repair open in the indicator power source circuit. If necessary, substitute a known-good gauge control module, and recheck. ■

3. Turn the ignition switch OFF.
4. Release the parking brake.
5. Turn the ignition switch ON (II).

Does the brake system indicator come on for several seconds then go off?

YES—Go to step 6.

NO—Check for loose terminals in the gauge control module connectors. If necessary, substitute a known-good gauge control module, and recheck. ■

6. Apply the parking brake.

Does the brake system indicator come on?

YES—Intermittent failure, the system is OK at this time (see page 19-38). ■

NO—Go to step 7.

7. Turn the ignition switch OFF.
8. Disconnect the parking brake switch connector (see page 19-10).

9. Turn the ignition switch ON (II).

10. Measure the voltage between the parking brake switch connector terminal and body ground.

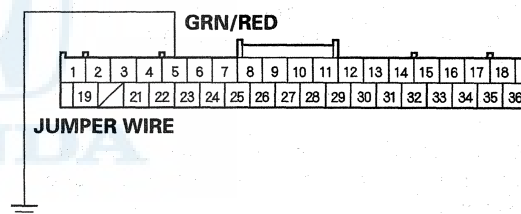
Is there battery voltage?

YES—Replace the parking brake switch (see page 19-10). ■

NO—Go to step 11.

11. Turn the ignition switch OFF.
12. Remove the gauge control module (see page 22-102), and leave the gauge control module connectors.
13. Connect gauge control module connector B (36P) terminal No. 5 and body ground with a jumper wire.

GAUGE CONTROL MODULE CONNECTOR B (36P)



Wire side of female terminals

14. Turn the ignition switch ON (II).

Does the brake system indicator come on and stay on?

YES—Repair open in the wire between the gauge control module, and the parking brake switch. ■

NO—Replace the gauge control module (see page 22-102). ■



Brake system indicator does not go off, and no DTCs are stored

1. Turn the ignition switch ON (II).

2. Release the parking brake.

Does the brake system indicator go off after several seconds?

YES—Intermittent failure, the system is OK at this time (see page 19-38). ■

NO—Go to step 3.

3. Check the brake fluid level (see page 19-8).

Is the level OK?

YES—Go to step 4.

NO—Check for leaks in the brake system. If no leaks are found, inspect the brake lining, and replace the worn brake pads. ■

4. Check the ABS indicator.

Does the ABS indicator stay on?

YES—Read the DTC (see page 19-39), and do the applicable troubleshooting for the DTC. ■

NO—Check the brake system indicator circuit:

- Short to body ground between the gauge control module and the parking brake switch. ■
- Short to body ground between the gauge control module and the brake fluid level switch. ■
- Parking brake switch stuck ON. ■
- Brake fluid level switch stuck ON. ■
- Faulty gauge control module. ■

VSA indicator does not come on

1. Turn the ignition switch ON (II), and watch the VSA indicator.

Does the VSA indicator come on for several seconds?

YES—Intermittent failure, the system is OK at this time (see page 19-38). ■

NO—Go to step 2.

2. Apply the parking brake.

Does the brake system indicator come on?

YES—Go to step 3.

NO—Repair open in the gauge control module indicator power source circuit. ■

3. Turn the ignition switch OFF.

4. Disconnect the VSA modulator-control unit 47P connector.

5. Turn the ignition switch ON (II).

Does the ABS indicator come on?

YES—Go to step 6.

NO—Do the troubleshooting for the gauge control module (see page 22-90). ■

6. Turn the ignition switch OFF.

7. Substitute a known-good VSA modulator-control unit (see page 19-100). ■

8. Turn the ignition switch ON (II).

Does the VSA indicator come on?

YES—Replace the original VSA modulator-control unit (see page 19-100). ■

NO—Do the troubleshooting for the gauge control module (see page 22-90). ■

VSA System Components

Symptom Troubleshooting (cont'd)

VSA indicator does not go off, and no DTCs are stored

1. Turn the ignition switch OFF.
2. Check the No. 2 (40 A) fuse in the auxiliary under-hood fuse box.

Is the fuse OK?

YES—Reinstall the fuse, and go to step 3.

NO—Replace the fuse, and recheck. If the fuse is blown, check for a short to body ground in this fuse circuit. If the circuit is OK, replace the VSA modulator-control unit (see page 19-100). ■

3. Check the No. 6 (15 A) fuse in the driver's under-dash fuse/relay box.

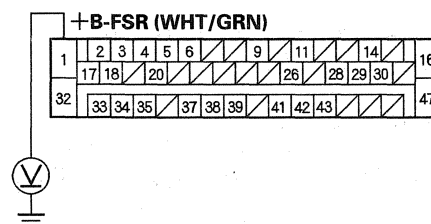
Is the fuse OK?

YES—Reinstall the fuse, and go to step 4.

NO—Replace the fuse, and recheck. If the fuse is blown, check for a short to body ground in this fuse circuit. If the circuit is OK, replace the VSA modulator-control unit (see page 19-100). ■

4. Disconnect the VSA modulator-control unit 47P connector.
5. Measure the voltage between VSA modulator-control unit 47P connector terminal No. 1 and body ground.

VSA MODULATOR-CONTROL UNIT 47P CONNECTOR



Wire side of female terminals

Is there battery voltage?

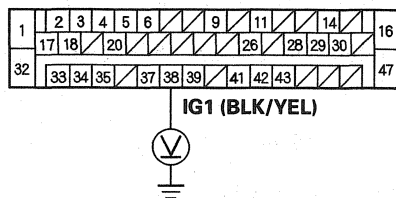
YES—Go to step 6.

NO—Repair open in the wire between the No. 2 (40 A) fuse in the auxiliary under-hood fuse box and the VSA modulator-control unit. ■

6. Turn the ignition switch ON (II).

7. Measure the voltage between VSA modulator-control unit 47P connector terminal No. 38 and body ground.

VSA MODULATOR-CONTROL UNIT 47P CONNECTOR



Wire side of female terminals

Is there battery voltage?

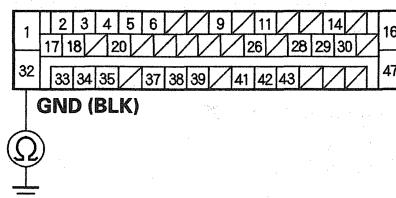
YES—Go to step 8.

NO—Repair open in the wire between the No. 6 (15 A) fuse in the driver's under-dash fuse/relay box and the VSA modulator-control unit. ■

8. Turn the ignition switch OFF.

9. Check for continuity between the VSA modulator-control unit 47P connector terminal No. 32 and body ground.

VSA MODULATOR-CONTROL UNIT 47P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Check for loose terminals in the VSA modulator-control unit 47P connector. Substitute a known-good gauge control module, and retest. If the test results are the same, substitute a known-good VSA modulator-control unit (see page 19-100), and retest. ■

NO—Repair open in the wire between the VSA modulator-control unit and body ground (G302). ■

VSA System Components

Symptom Troubleshooting (cont'd)

VSA activation indicator does not come on at start-up (bulb check)

1. Turn the ignition switch ON (II), and watch the VSA activation indicator.

Does the VSA activation indicator come on for several seconds?

YES—Intermittent failure, the system is OK at this time (see page 19-38). ■

NO—Go to step 2.

2. Apply the parking brake.

Does the brake system indicator come on?

YES—Go to step 3.

NO—Repair open in the gauge control module indicator power source circuit. ■

3. Turn the ignition switch OFF.
4. Substitute a known-good VSA modulator-control unit (see page 19-100).
5. Turn the ignition switch ON (II).

Does the VSA activation indicator come on?

YES—Replace the original VSA modulator-control unit (see page 19-100), and retest. ■

NO—Do the troubleshooting for the gauge control module (see page 22-90). ■

VSA activation indicator does not go off, and no DTCs are stored

1. Turn the ignition switch ON (II), and watch the VSA activation indicator.

Does the VSA activation indicator go off?

YES—Intermittent failure, the system is OK at this time (see page 19-38). ■

NO—Go to step 2.

2. Turn the ignition switch OFF.
3. Check the VSA OFF switch (see page 19-99).

Is the VSA OFF switch OK?

YES—Go to step 4.

NO—Replace the VSA OFF switch (see page 19-99). ■

4. Do the VSA sensor neutral memorization (see page 19-98).
5. Check the VSA activation indicator.

Does the VSA activation indicator go off?

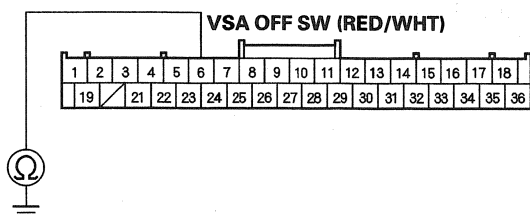
YES—Intermittent failure, the system is OK at this time (see page 19-38). ■

NO—Go to step 6.

6. Turn the ignition switch OFF.
7. Disconnect the gauge control module connector B (36P).

8. Disconnect the VSA OFF switch 13P connector.
9. Check for continuity between the gauge control module connector B (36P) terminal No. 6 and body ground.

GAUGE CONTROL MODULE CONNECTOR B (36P)



Wire side of female terminals

Is there continuity?

YES—Repair short to body ground in the wire between the gauge control module and the VSA OFF switch. ■

NO—Go to step 10.

10. Reconnect the gauge control module connector B (36P).

11. Substitute a known-good VSA modulator-control unit (see page 19-100).

12. Reconnect all connectors.

13. Turn the ignition switch ON (II).

14. Clear the DTC with the HDS.

15. Turn the ignition switch OFF, then disconnect the HDS.

16. Test-drive the vehicle.

Does the VSA activation indicator go off?

YES—Replace the original VSA modulator-control unit (see page 19-100). ■

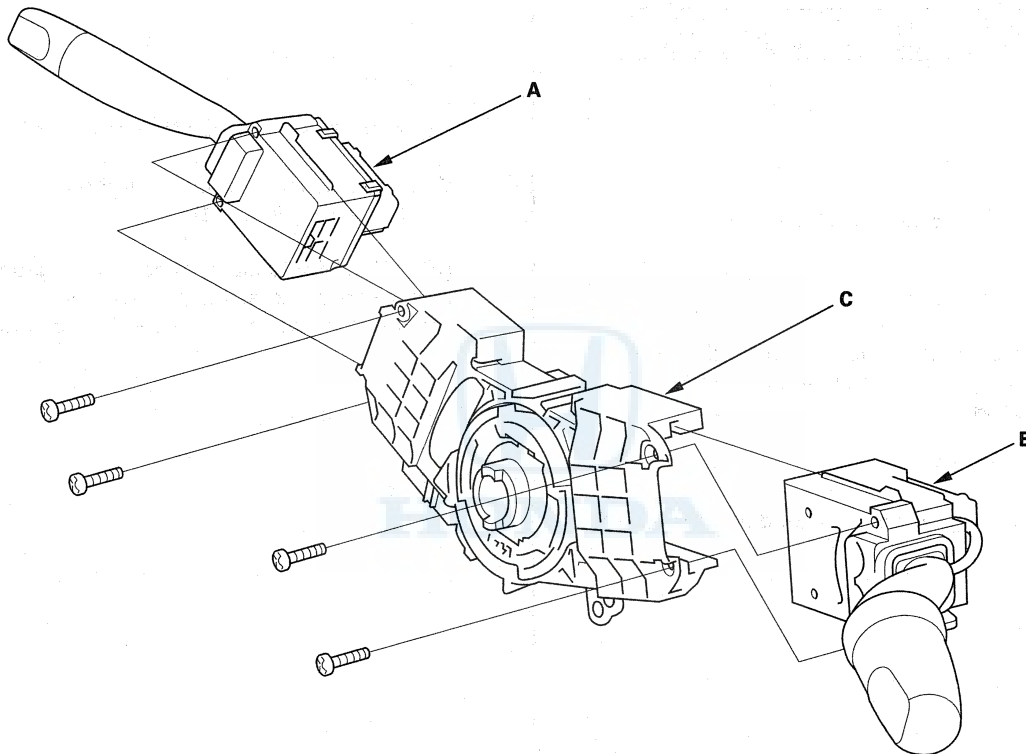
NO—Check for loose terminals in the gauge control module connectors. If necessary, substitute a known-good gauge control module, and recheck. ■

VSA System Components

Steering Angle Sensor Replacement

NOTE: Do not damage or drop the combination switch as the steering angle sensor is sensitive to shock and vibration.

1. Remove the steering wheel (see page 17-22).
2. Remove the steering column covers (see page 17-25) and the cable reel (see page 23-212).
3. Remove the combination switch assembly (see page 17-25).
4. Remove the combination light/turn switch (A) and the wiper/washer switch (B).



5. Replace the combination switch body assembly (C).
6. Install the combination switch in the reverse order of removal.

NOTE:

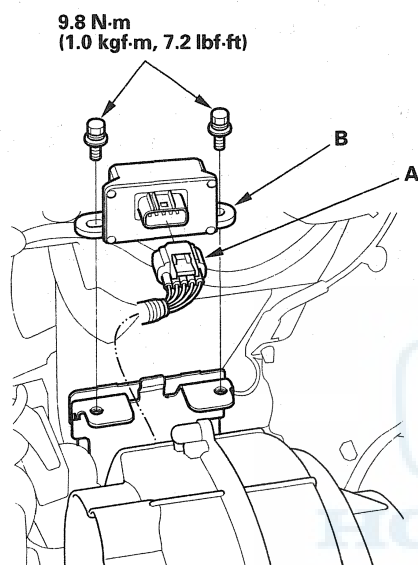
- Do not remove the steering angle sensor from the combination switch body.
- When installing the cable reel, set the turn signal canceling sleeve position (see page 23-213).

Yaw Rate-Lateral Acceleration Sensor Replacement

NOTE:

- Do not damage or drop the sensor as it is sensitive.
- Do not use power tools.

1. Make sure the ignition switch OFF.
2. Remove the center console (see page 20-88).
3. Disconnect the connector (A).



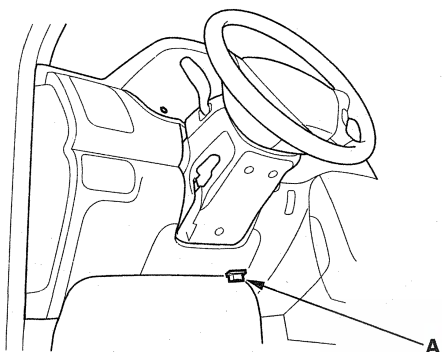
4. Remove the yaw rate-lateral acceleration sensor (B).
5. Install the sensor in the reverse order of removal.
6. Do the VSA sensor neutral position memorization (see page 19-98).

VSA System Components

VSA Sensor Neutral Position Memorization

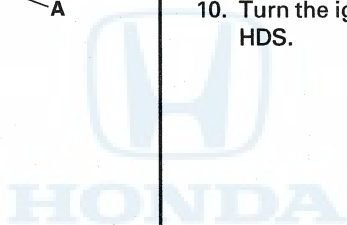
NOTE: Do not press the brake pedal during this procedure.

1. Park the vehicle on a flat and level surface.
2. With the ignition switch OFF, connect the HDS to the data link connector (DLC) (A) under the driver's side of the dashboard.



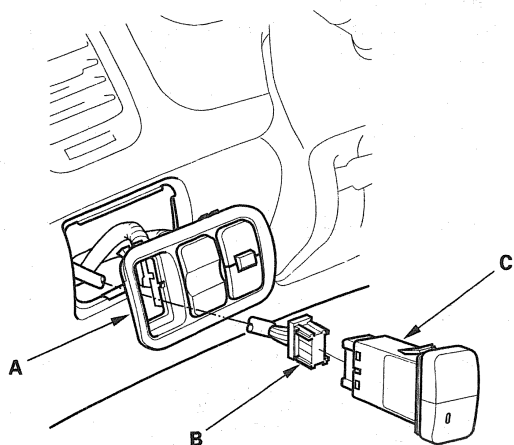
3. Short the SCS circuit using the HDS.

4. Turn the ignition switch ON (II) with the brake pedal position switch released.
5. The ABS indicator comes on for 2 seconds and goes off.
6. After the ABS indicator goes off, press and release the VSA OFF switch once within 0.5 seconds.
7. After the ABS indicator comes on, press and release the VSA OFF switch once within 0.5 seconds.
8. The VSA activation indicator blinks two times and goes off in 1 second, then the system completes the VSA sensor neutral position memorization.
9. When the ABS indicator, VSA indicator and VSA activation indicator go off, the memorizing is done. If the indicators do not go off, retry these steps.
10. Turn the ignition switch OFF, then disconnect the HDS.



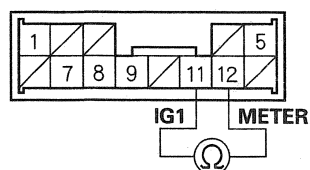
VSA OFF Switch Test

1. Make sure the ignition switch OFF.
2. Remove the switch panel (A).



3. Disconnect the VSA OFF switch 13P connector (B).
4. Remove the VSA OFF switch (C) from the switch panel.
5. Check for continuity between the VSA OFF switch 13P connector terminals No. 1 and No. 5. There should be continuity when the switch is pressed, and no continuity when the switch is released.

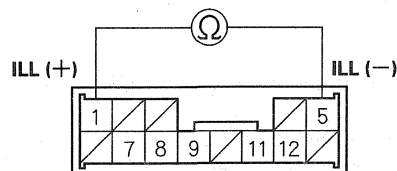
VSA OFF SWITCH 13P CONNECTOR



Terminal side of male terminals

6. Check for continuity between the VSA OFF switch 13P connector terminals No. 1 and No. 5. There should be continuity at all times.

VSA OFF SWITCH 13P CONNECTOR



Terminal side of male terminals

VSA System Components

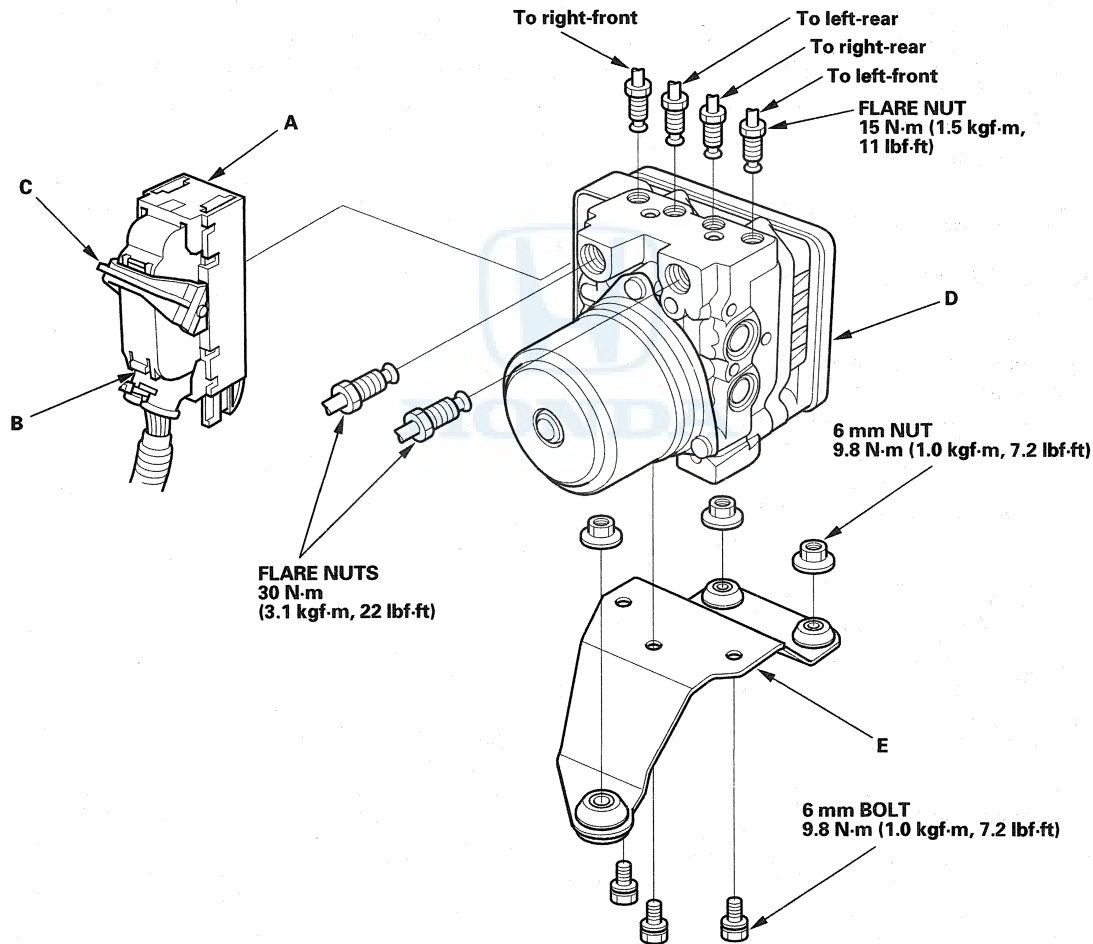
VSA Modulator-Control Unit Removal and Installation

NOTE:

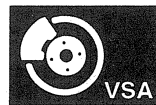
- Do not spill brake fluid on the vehicle; it may damage the paint; if brake fluid gets on the paint, wash it off immediately with water.
- Be careful not to damage or deform the brake lines during removal and installation.
- To prevent the brake fluid from flowing, plug and cover the hose ends and joints with a shop towel or equivalent material.

Removal

1. Make sure the ignition switch OFF.
2. Disconnect the VSA modulator-control unit 47P connector (A) by pushing the lock (B) and pulling up the lever (C); the connector disconnects itself.



3. Disconnect the six brake lines from the VSA modulator-control unit (D).
4. Remove the VSA modulator-control unit with bracket (E) from the body.
5. Remove the VSA modulator-control unit from the bracket.



Installation

1. Install the VSA modulator-control unit on the bracket.
2. Install the bracket with the VSA modulator-control unit to the body.
3. Reconnect the six brake lines, then tighten the flare nuts to the specified torque.
4. Align the connecting surface of the VSA modulator-control unit 47P connector to the VSA modulator-control unit.
5. Lower the lock of the VSA modulator-control unit 47P connector, then confirm the connector is fully seated.
6. Bleed the brake system (see page 19-8).
7. Do the VSA sensor neutral position memorization (see page 19-98).
8. Start the engine, and check that the ABS and VSA indicators go off.
9. Test-drive the vehicle, and check that the ABS and VSA indicators do not come on.

NOTE: If the brake pedal is spongy, there may be air trapped in the modulator and then induced into the normal brake system during modulation. Bleed the brake system again (see page 19-8).



VSA System Components

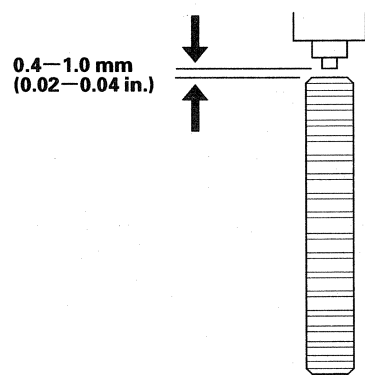
Wheel Sensor Inspection

1. Inspect the front and rear pulsers for chipped or damaged teeth.
2. Measure the air gap between the wheel sensor and pulser all the way around while rotating the pulser. If the gap exceeds 1.0 mm (0.04 in.), repair as needed.

Standard:

Front/Rear: 0.4—1.0 mm (0.02—0.04 in.)

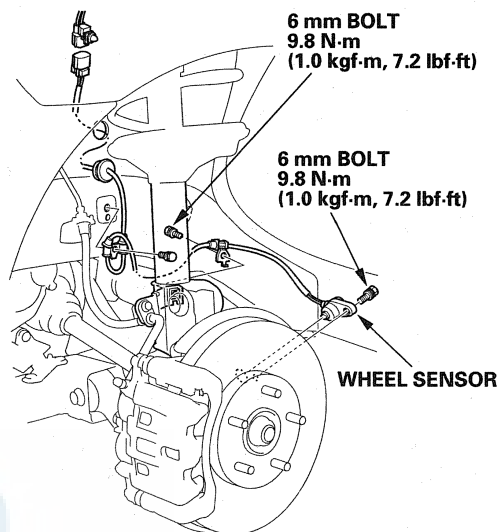
Front/Rear



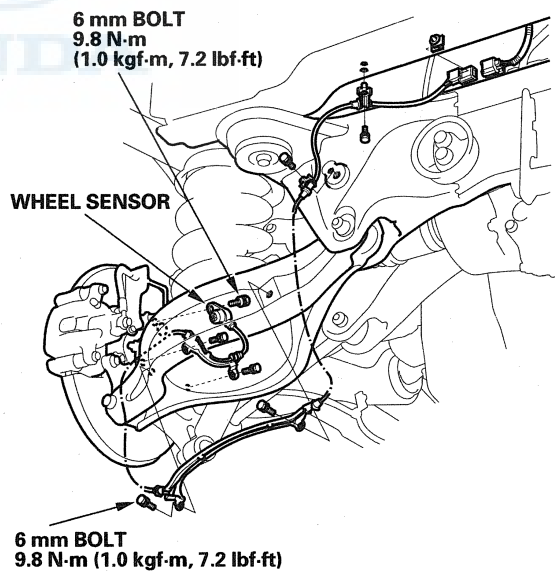
Wheel Sensor Replacement

NOTE: Install the sensors carefully to avoid twisting the wires.

Front



Rear



SUPPLEMENTAL RESTRAINT SYSTEM (SRS) (If body maintenance is required)

The Pilot SRS includes a driver's airbag in the steering wheel hub, a passenger's airbag in the dashboard above the glove box, seat belt tensioners in the front seat belt retractors, side curtain airbags in the side of the roof, and side airbags in the front seat-backs. Information necessary to safely service the SRS is included in this Service Manual. Items marked with an asterisk (*) on the contents page include or are located near SRS components. Servicing, disassembling, or replacing these items requires special precautions and tools, and should be done by an authorized Honda dealer.

- To avoid rendering the SRS inoperative, which could lead to personal injury or death in the event of a severe frontal or side collision, all SRS service work should be done by an authorized Honda dealer.
- Improper service procedures, including incorrect removal and installation of the SRS, could lead to personal injury caused by unintentional deployment of the airbags and/or side airbags.
- Do not bump or impact the SRS unit, front impact sensors, or side impact sensors when the ignition switch is ON (II), or for at least 3 minutes after the ignition switch is turned OFF; otherwise, the system may fail in a collision, or the airbags may deploy.
- SRS electrical connectors are identified by yellow color coding. Related components are located in the steering column, front console, dashboard, dashboard lower panel, in the dashboard above the glove box, in the front seats, in the roof side, and around the floor. Do not use electrical test equipment on these circuits.



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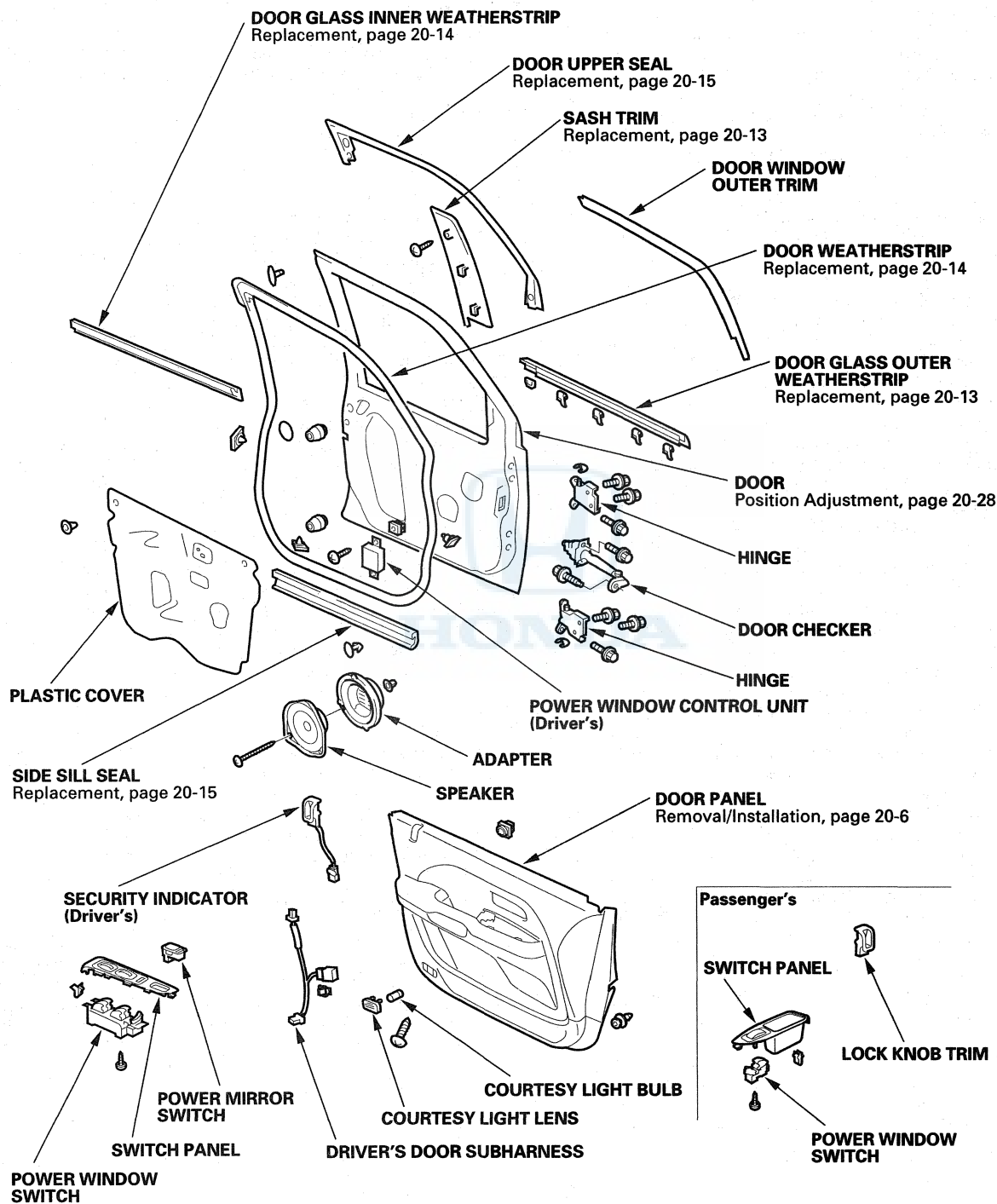
Frame

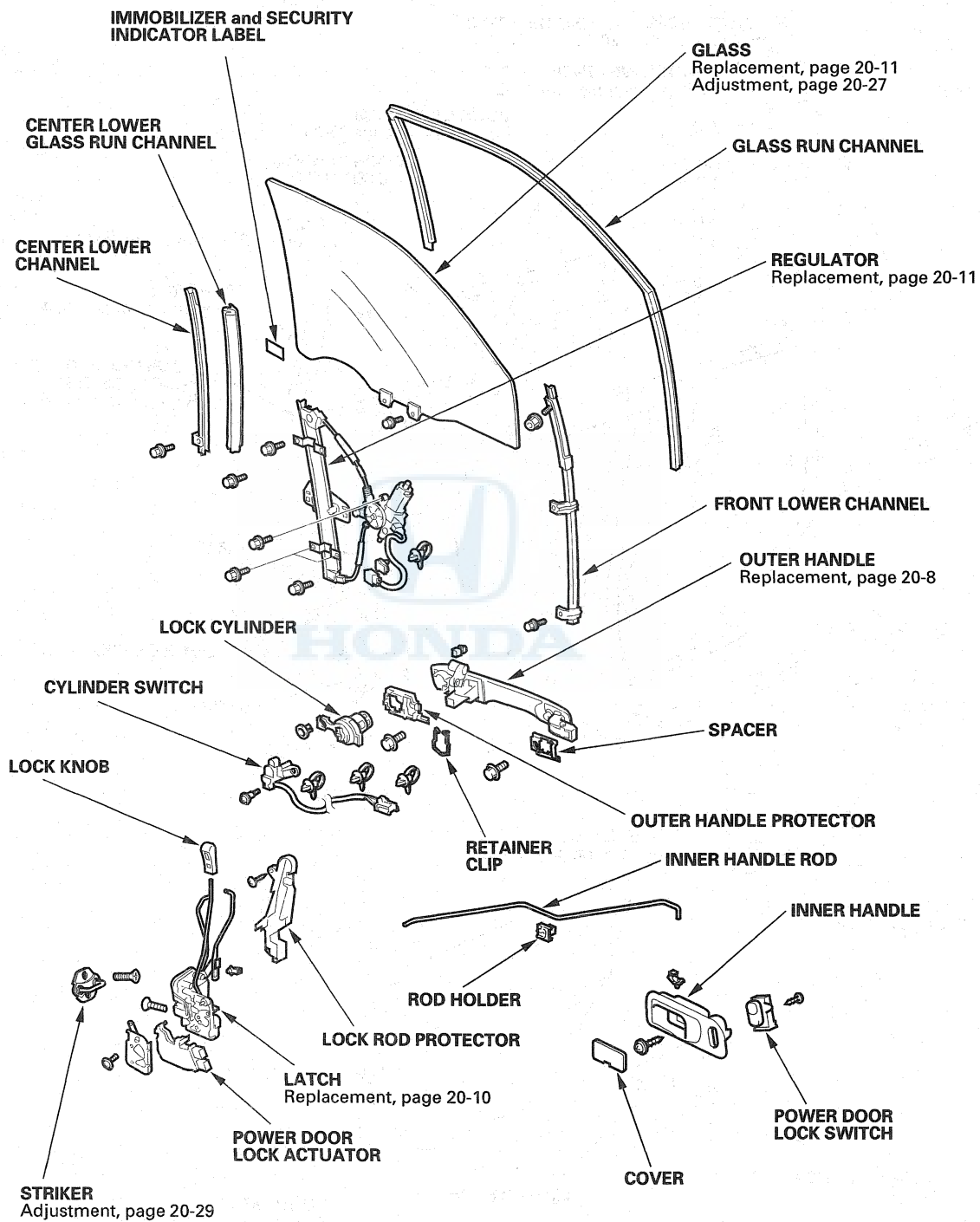
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Doors

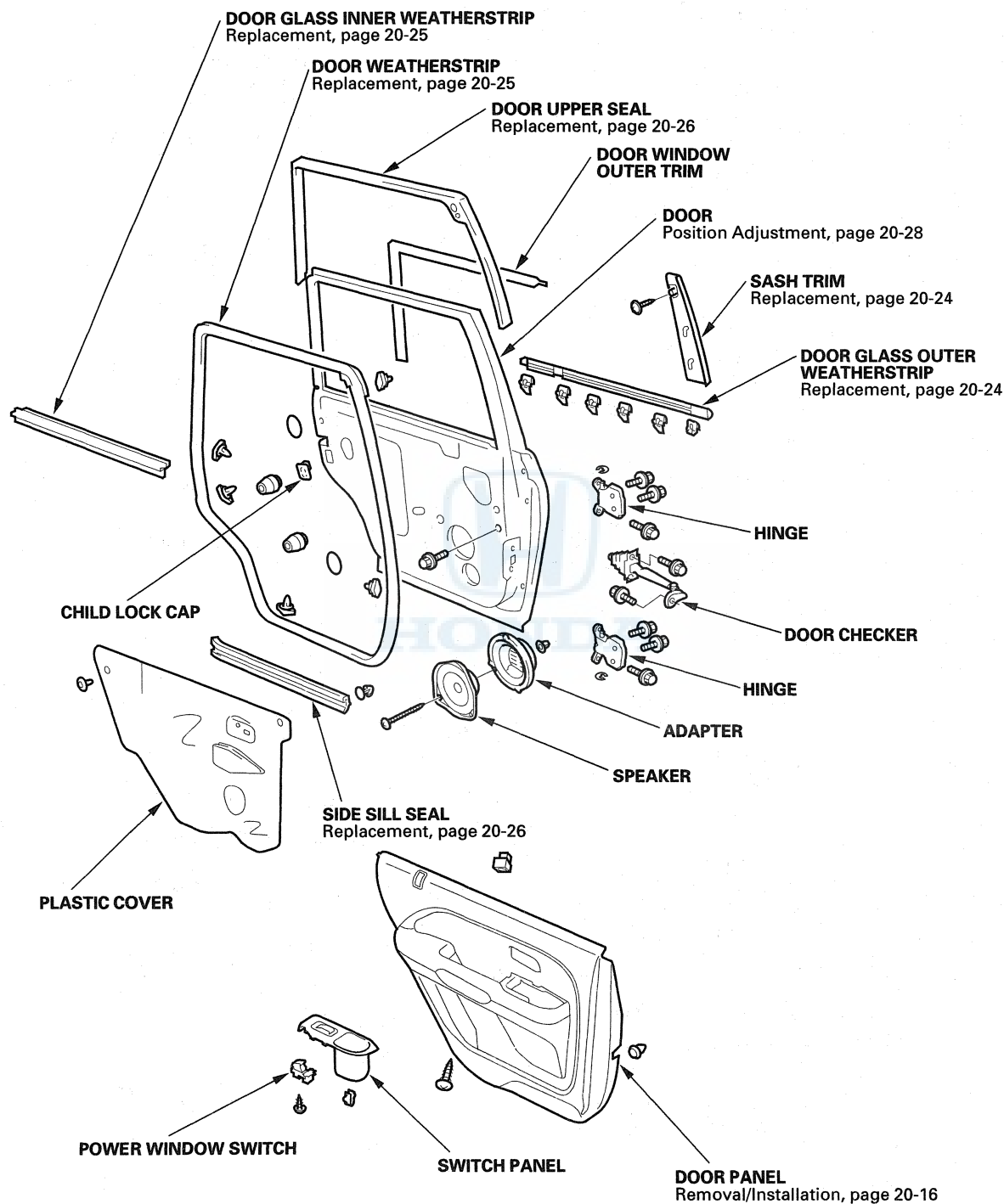
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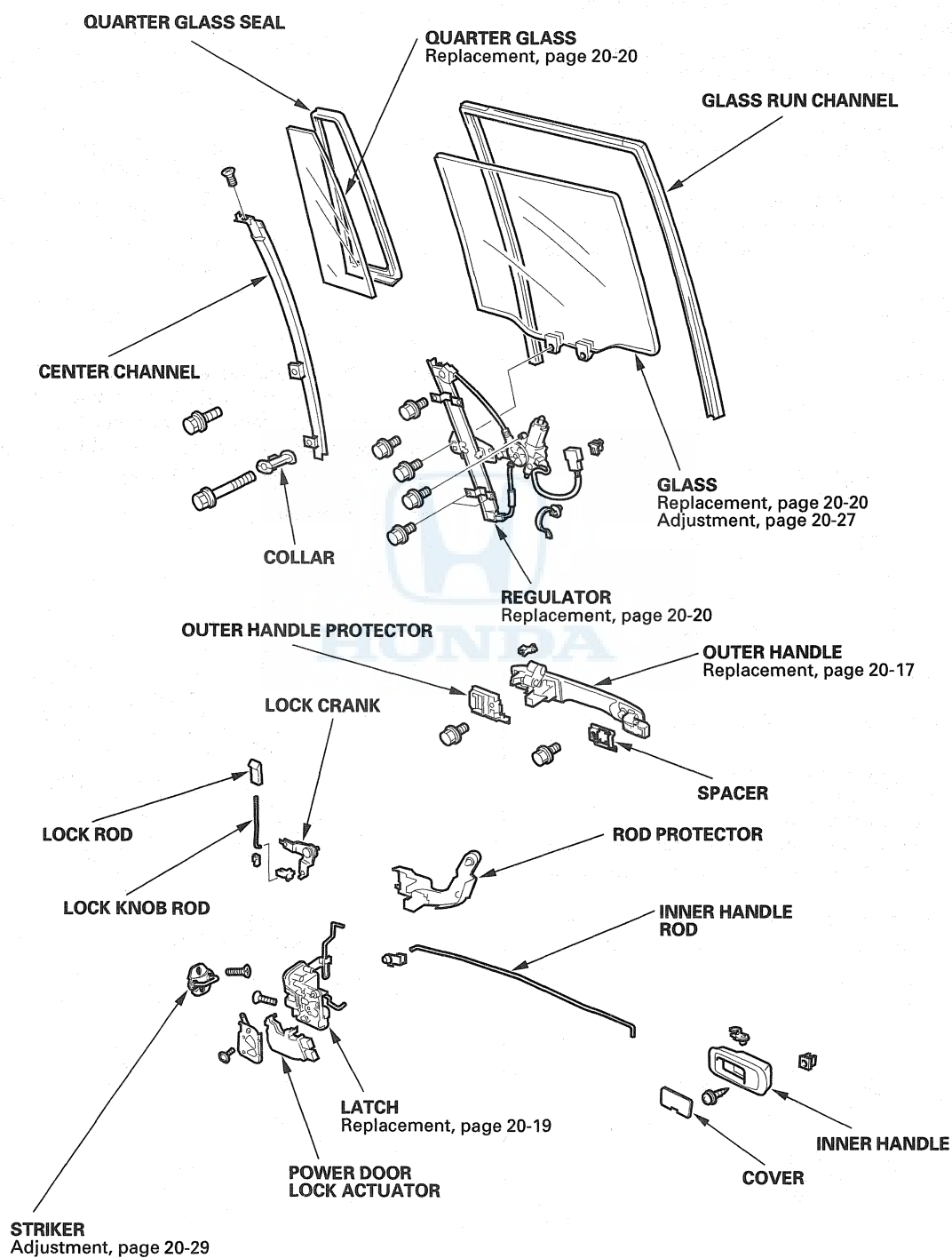




Doors

Component Location Index - Rear Door





Doors

Front Door Panel Removal/Installation

Special Tools Required

- KTC trim tool set SOJATP2014 *
- Trim pad remover, Snap-on A 177A or equivalent, commercially available

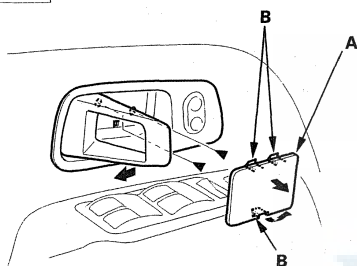
* Available through the American Honda Tool and Equipment Program; call 888-424-6857

NOTE: Use the appropriate tool from the KTC trim tool set to avoid damage when prying components.

1. Using a flat-tip screwdriver wrapped with protective tape, pry out on the lower portion of the cover (A) to release the hooks (B), then remove the cover.

Fastener Locations

► : Screw, 2

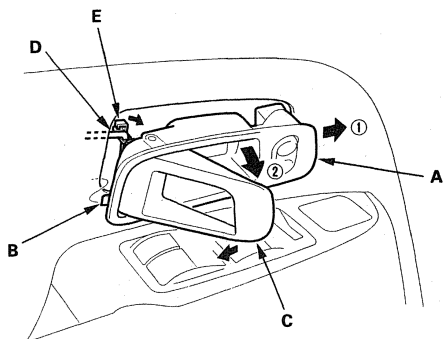


2. Remove the screws.

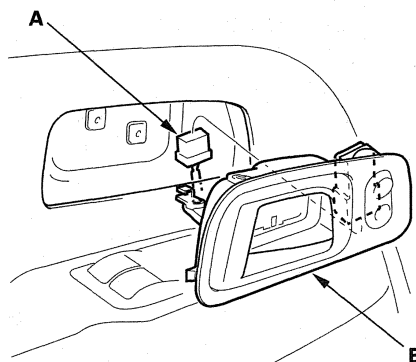
3. Remove the inner handle (A) from the door panel.

- 1 Pull the handle forward and out half-way to release the hook (B).
- 2 Pull out the top of the handle.
- 3 While pulling on the handle (C), disconnect the inner handle rod (D) from the joint bushing (E).

NOTE: Check for damaged or stress-whitened joint bushing, and replace if necessary.



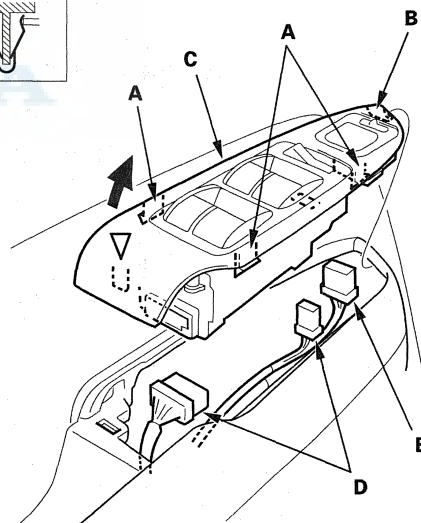
4. Disconnect the power door lock switch connector (A), then remove the inner handle (B).



5. Detach the clip and release the hooks (A, B), then remove the switch panel (C). Take care not to scratch the door panel. Disconnect the power window switch connectors (D). On driver's side, disconnect the power mirror switch connector (E).

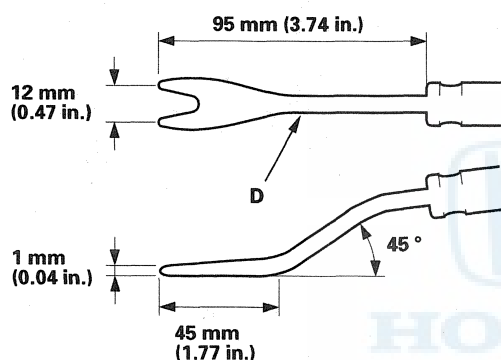
Fastener Location

▷ : Clip, 1



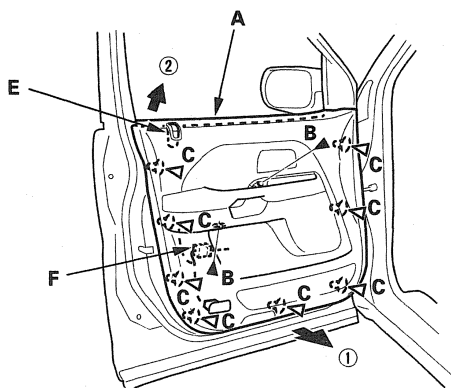
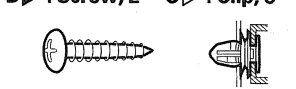


6. Remove the mirror mount cover (see step 2 on page 20-31).
7. Remove the door panel (A) with as little bending as possible to avoid creasing or breaking it.
 - 1 Remove the screws (B).
 - 2 Release the clips (C) that hold the door panel with a commercially available trim pad remover (D).
 - 3 Starting at the rear, pull the door panel upward, then release the lock knob (E).
 - 4 On driver's side, disconnect the front door subharness connector (F). On passenger's side, disconnect the courtesy light bulb socket, and detach the harness clip from the panel.



Fastener Locations

B ► : Screw, 2 C ► : Clip, 8



8. Install the door panel in the reverse order of removal, and note these items:

- Check if the clips are damaged or stress-whitened, and if necessary, replace them with new ones.
- Make sure the connectors are plugged in properly.
- Push the clips into place securely.
- Do the power window control unit reset procedure (see page 22-255).
- Check the window and power door lock operations.
- When reinstalling the door panel, make sure the plastic cover is installed properly and sealed around its outside perimeter to seal out water.
- Check for water leaks.

Doors

Front Door Outer Handle Replacement

NOTE: Put on gloves to protect your hands.

1. Remove these items:

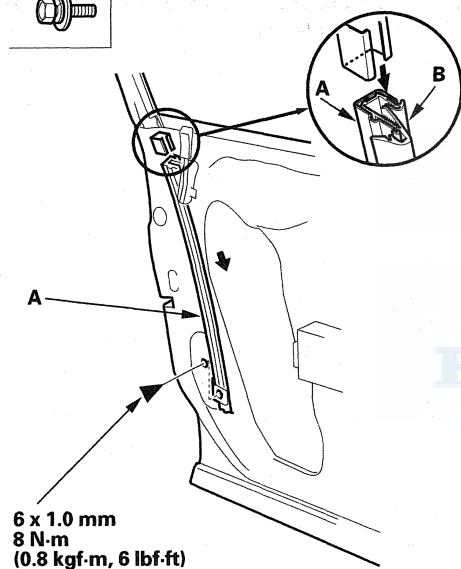
- Door panel (see page 20-6)
- Plastic cover, as necessary (see page 20-2)

2. Raise the glass fully.

3. Remove the bolt, then remove the center lower channel (A) with the center lower glass run channel (B) by pulling it downward.

Fastener Location

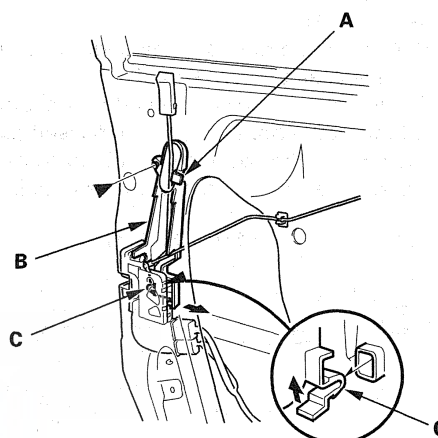
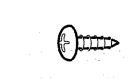
► : Bolt, 1



4. Remove the screw, and release the hook (A), then remove the lock rod protector (B) by detaching the clip (C).

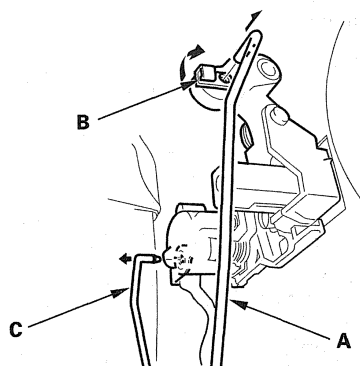
Fastener Location

► : Screw, 1



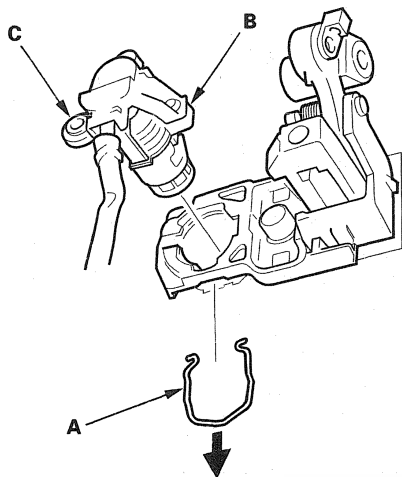
5. Disconnect the outer handle rod (A) from the joint bushing (B) and cylinder rod (C).

NOTE: Check for damaged or stress-whitened joint bushing, and replace if necessary.





6. Release the retainer clip (A) with a hook-shaped tool. Remove the lock cylinder (B).



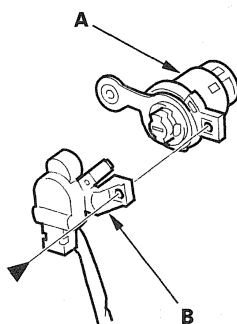
7. Replace the bushing (C) with a new one on the lock cylinder.

NOTE: If the cylinder lock-rod is disconnected, replace the bushing.

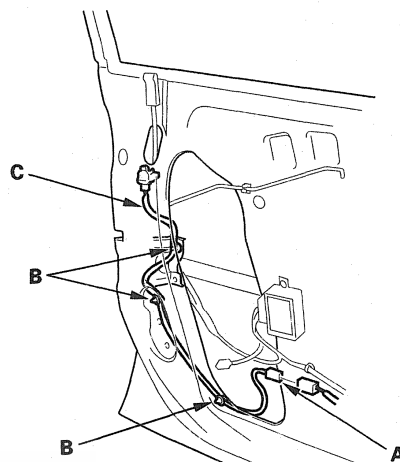
8. Remove the screw, then separate the lock cylinder (A) and cylinder switch (B).

Fastener Location

► : Screw, 1



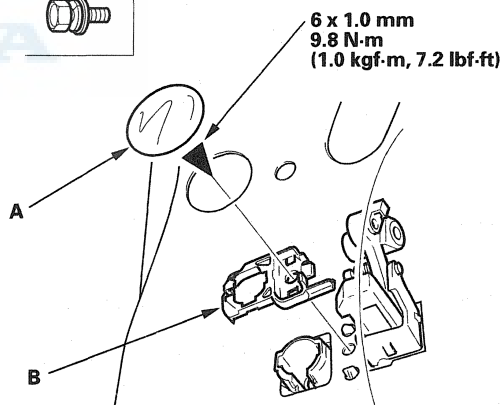
9. Disconnect the cylinder switch connector (A), and detach the harness clips (B), and remove the cylinder switch harness (C).



10. Remove the maintenance seal (A), and remove the bolt, then remove the cylinder protector (B).

Fastener Location

► : Bolt, 1



(cont'd)

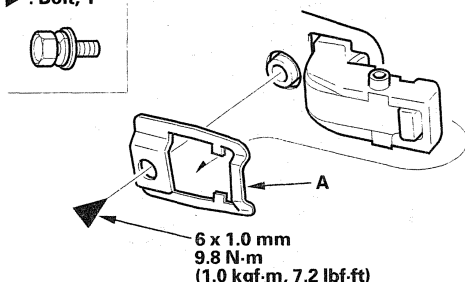
Doors

Front Door Outer Handle Replacement (cont'd)

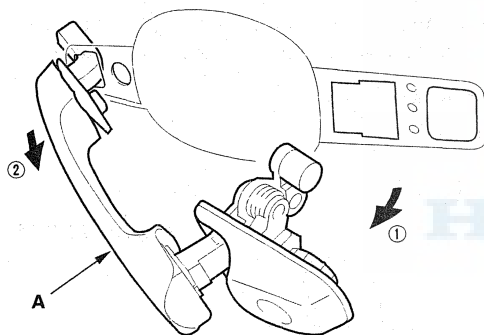
11. Remove the bolt, then remove the spacer (A).

Fastener Location

► : Bolt, 1



12. While pulling the outer handle (A), remove the handle from the holes in the door panel. Take care not to scratch the door.



13. Install the handle in the reverse order of removal, and note these items:

- Make sure the cylinder switch harness is routed properly.
- Make sure the connector is plugged in properly, and each rod is connected securely.
- Make sure the door locks and opens properly.
- When installing the lock cylinder, leave the outer door handle bolts loose so the inner protector does not interfere with the lock cylinder installation, then tighten the handle bolts.
- Install the lock cylinder retaining clip on the handle, then install the lock cylinder. Be sure the clip is fully seated in the slot on the lock cylinder.
- When reinstalling the door panel, make sure the plastic cover is installed properly and sealed around its outside perimeter to seal out water.
- Check for water leaks.
- Do the power window control unit reset procedure (see page 22-255).

Front Door Latch Replacement

NOTE: Put on gloves to protect your hands.

1. Remove these items:

- Door panel (see page 20-6)
- Plastic cover, as necessary (see page 20-2)

2. Raise the glass fully, and remove these items:

- Center lower channel (see step 3 on page 20-8)
- Lock rod protector (see step 4 on page 20-8)

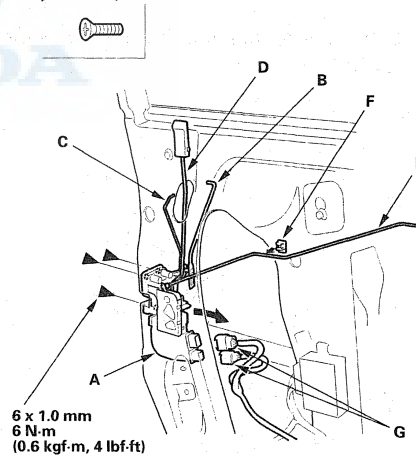
3. Disconnect the outer handle rod and cylinder rod (see step 5 on page 20-8).

4. Remove the latch (A). Take care not to bend the outer handle rod (B), cylinder rod (C), lock rod (D), and inner handle rod (E).

- 1 Release the inner handle rod from the rod holder (F).
- 2 Disconnect the connectors (G).
- 3 Remove the screws.
- 4 Remove the latch from the hole in the door.

Fastener Locations

► : Screw, 3



5. Install the latch in the reverse order of removal, and note these items:

- Make sure the actuator connectors are plugged in properly, and each rod is connected securely.
- Make sure the door locks and opens properly.
- When reinstalling the door panel, make sure the plastic cover is installed properly and sealed around its outside perimeter to seal out water.
- Check for water leaks.



Front Door Glass and Regulator Replacement

NOTE: Put on gloves to protect your hands.

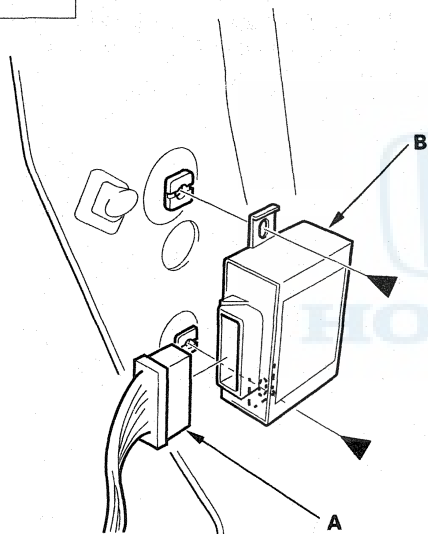
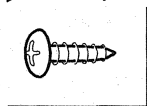
1. Remove these items:

- Door panel (see page 20-6)
- Plastic cover, as necessary (see page 20-2)
- Door glass inner weatherstrip (see page 20-14)

2. Driver's side: Disconnect the power window control unit connector (A), and remove the screws, then remove the power window control unit (B).

Fastener Locations

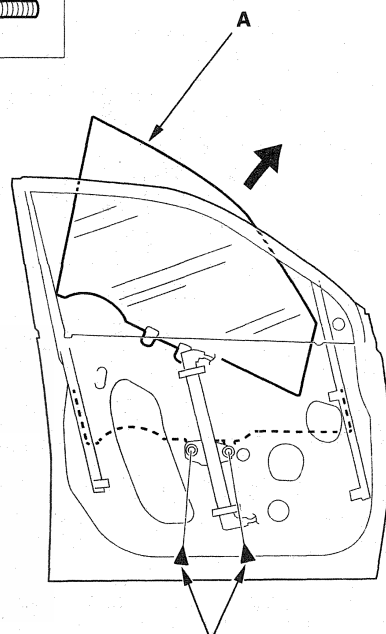
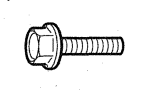
► : Screw, 2



3. Carefully move the glass (A) until you can see the bolts, then remove them. Carefully pull the glass out through the window slot. Take care not to drop the glass inside the door.

Fastener Locations

► : Bolt, 2



6 x 1.0 mm
9.8 N·m
(1.0 kgf-m, 7.2 lbf-ft)

(cont'd)

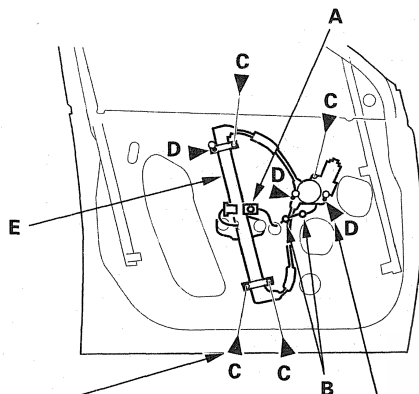
Doors

Front Door Glass and Regulator Replacement (cont'd)

4. Disconnect and detach the connector (A) and harness clips (B) from the door.

Fastener Locations

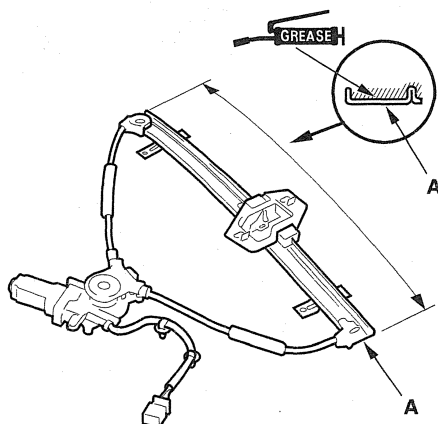
C ► : Bolt, 4 D ► : Bolt, 3



6 x 1.0 mm
8 N·m (0.8 kgf·m, 6 lbf·ft)

6 x 1.0 mm
8 N·m
(0.8 kgf·m, 6 lbf·ft)

5. Remove the bolts (C), and loosen the bolts (D), then remove the regulator (E) through the hole in the door.
6. Apply multipurpose grease to all the sliding surfaces of the regulator (A) where shown.



7. Install the glass and regulator in the reverse order of removal, and note these items:

- Make sure the connectors are plugged in properly.
- Roll the glass up and down to see if it moves freely without binding.
- Make sure that there is no clearance between the glass and glass run channel when the glass is closed.
- Adjust the position of the glass as necessary (see page 20-27).
- Do the power window control unit reset procedure (see page 22-255).
- When reinstalling the door panel, make sure the plastic cover is installed properly and sealed around its outside perimeter to seal out water.
- Check for water leaks (see step 7 on page 20-27).
- Test-drive and check for wind noise and rattles.



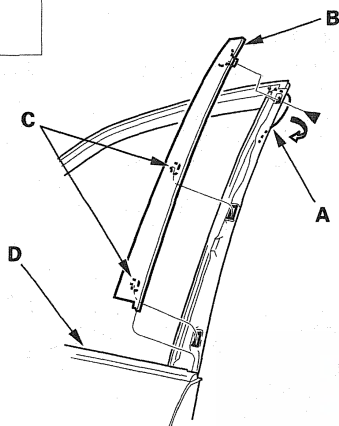
Front Door Sash Trim Replacement

NOTE: Take care not to scratch the door.

1. Turn the door weatherstrip (A) at the rear upper corner portion, then remove the screw.

Fastener Location

► : Screw, 1



2. Pull up the sash trim (B) to release the hooks (C), then remove the trim. Take care not to damage the door glass outer weatherstrip (D).
3. Install the sash trim in the reverse order of removal.

Front Door Glass Outer Weatherstrip Replacement

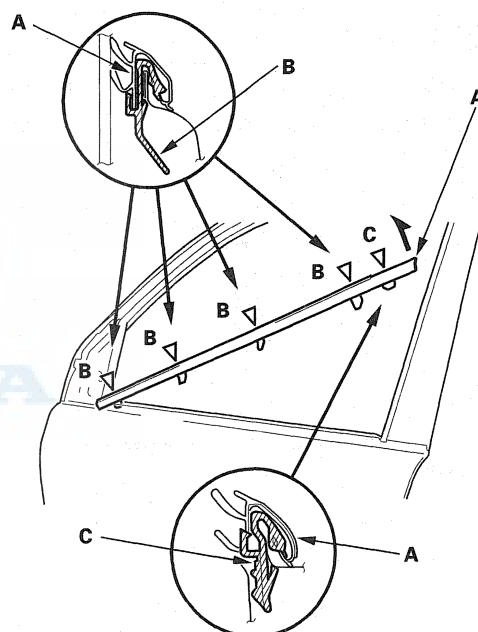
NOTE:

- Put on gloves to protect your hands.
- Take care not to scratch the door.

1. Remove the power mirror (see page 20-31).
2. Starting at the rear, pry the door glass outer weatherstrip (A) up to detach the clips (B, C), then remove the weatherstrip.

Fastener Locations

B► : Clip, 4 C► : Clip, 1



3. Install the weatherstrip in the reverse order of removal, and note these items:
 - Check if the clips are damaged or stress-whitened, and if necessary, replace them with new ones.
 - Push the clips into place securely.

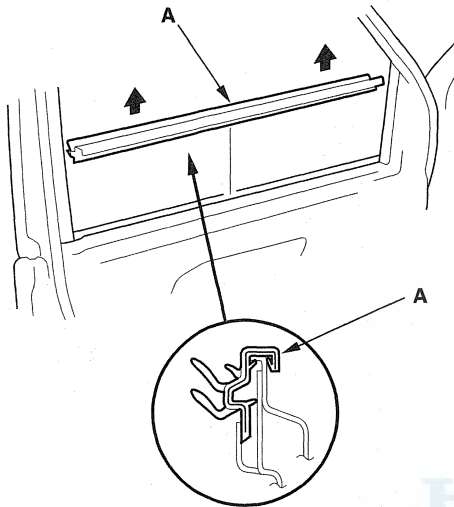
Doors

Front Door Glass Inner Weatherstrip Replacement

NOTE:

- Put on gloves to protect your hands.
- Take care not to scratch the door and molding.

1. Remove the door panel (see page 20-6).
2. Pull the door glass inner weatherstrip (A) up, then remove it.



3. Install the weatherstrip in the reverse order of removal.

Front Door Weatherstrip Replacement

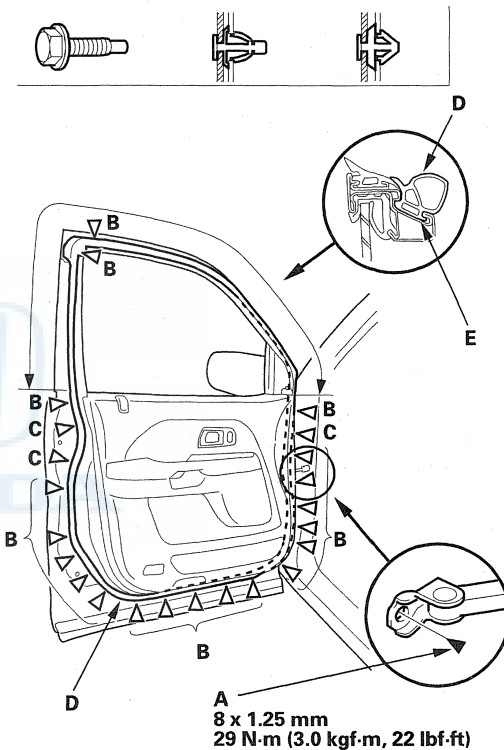
NOTE:

- Take care not to scratch the door.
- Use a clip remover to remove the clips.

1. At the A-pillar, remove the door checker mounting bolt (A).

Fastener Locations

A ► : Bolt, 1 B ► : Clip, 20 C ► : Clip, 3



2. Detach the clips (B, C), then remove the door weatherstrip (D).
3. Install the weatherstrip in the reverse order of removal, and note these items:
 - Check if the clips are damaged or stress-whitened, and if necessary, replace them with new ones.
 - Push the clips into place securely.
 - Make sure the weatherstrip is installed in the holder (E) securely.
 - Apply liquid thread lock to the door checker mounting bolt before installation.
 - Check for water leaks.
 - Test-drive and check for wind noise and rattles.



Front Door Upper Seal Replacement

NOTE:

- Take care not to scratch the door.
- Use a clip remover to remove the clip.

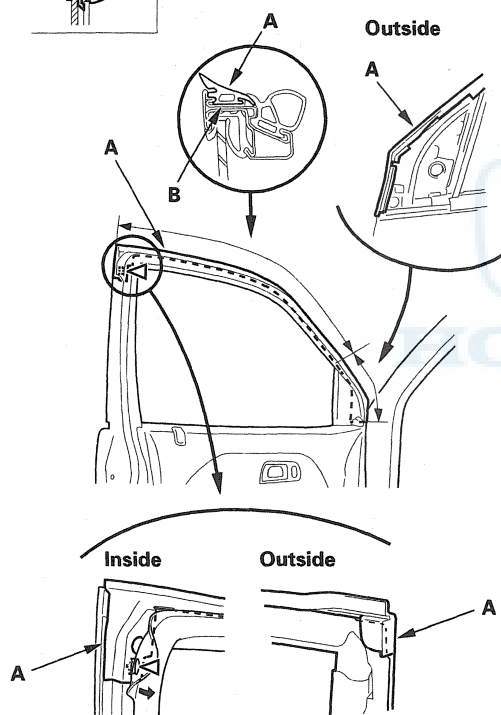
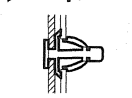
1. Remove these items:

- Power mirror (see page 20-31)
- Door sash trim (see page 20-13)

2. Detach the door weatherstrip clip, then remove the door upper seal (A).

Fastener Location

▷ : Clip, 1



3. Install the upper seal in the reverse order of removal, and note these items:

- Check if the clip is damaged or stress-whitened, and if necessary, replace it with new one.
- Push the clip into place securely.
- Make sure the upper seal is installed in the holder (B) securely.

Front Door Side Sill Seal Replacement

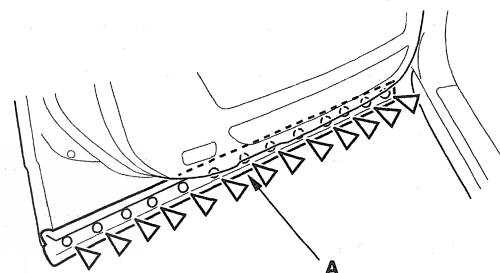
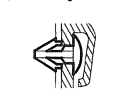
NOTE:

- Take care not to scratch the door.
- Use a clip remover to remove the clips.

1. Detach the clips, then remove the door side sill seal (A).

Fastener Locations

▷ : Clip, 13



2. Install the side sill seal in the reverse order of removal, and note these items:

- Check if the clips are damaged or stress-whitened, and if necessary, replace them with new ones.
- Push the clips into place securely.

Doors

Rear Door Panel Removal/Installation

Special Tools Required

- KTC trim tool set SOJATP2014 *
- Trim pad remover, Snap-on A 177A or equivalent, commercially available
- * Available through the American Honda Tool and Equipment Program; call 888-424-6857

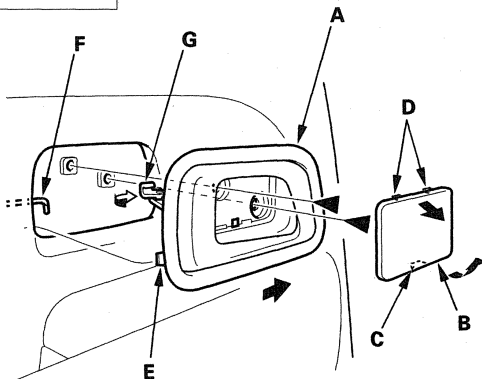
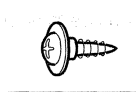
NOTE: Use the appropriate tool from the KTC trim tool set to avoid damage when prying components.

1. Lower the glass fully.
2. Remove the inner handle (A). Take care not to scratch the door panel.
 - 1 Using a flat-tip screwdriver wrapped with protective tape, pry out on the lower portion of the cover (B) to release the hooks (C, D), then remove the cover.
 - 2 Remove the screws.
 - 3 Pull the inner handle forward and out half-way to release the hook (E).
 - 4 Disconnect the inner handle rod (F) from the joint bushing (G).

NOTE: Check for damaged or stress-whitened joint bushing, and replace if necessary.

Fastener Locations

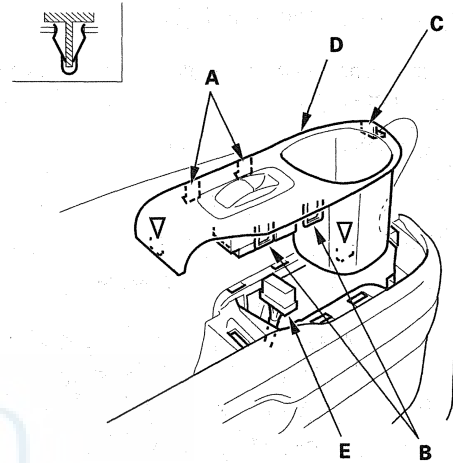
► : Screw, 2



3. Detach the clips, and release the hooks (A, B, C), then remove the switch panel (D). Take care not to scratch the door panel. Disconnect the power window switch connector (E).

Fastener Locations

▷ : Clip, 2





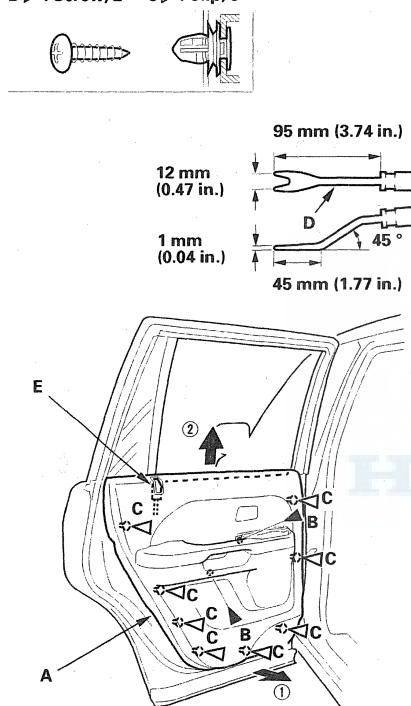
Rear Door Outer Handle Replacement

4. Remove the door panel (A) with as little bending as possible to avoid creasing or breaking it.

- 1 Remove the screws (B).
- 2 Release the clips (C) that hold the door panel with a commercially available trim pad remover (D).
- 3 Starting at the rear, pull the door panel upward, then release the lock knob (E).

Fastener Locations

B ▶ : Screw, 2 C ▶ : Clip, 8



5. Install the panel in the reverse order of removal, and note these items:

- Check if the clips are damaged or stress-whitened, and if necessary, replace them with new ones.
- Make sure the connector is plugged in properly and the rod is connected properly.
- Push the clips into place securely.
- Check the window and power door lock operations.
- When reinstalling the door panel, make sure the plastic cover is installed properly and sealed around its outside perimeter to seal out water.
- Check for water leaks.

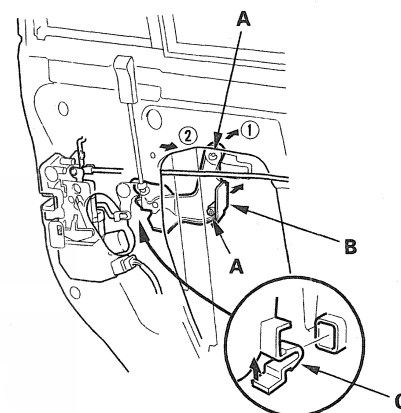
NOTE: Put on gloves to protect your hands.

1. Remove these items:

- Door panel (see page 20-16)
- Plastic cover, as necessary (see page 20-4)

2. Raise the glass fully.

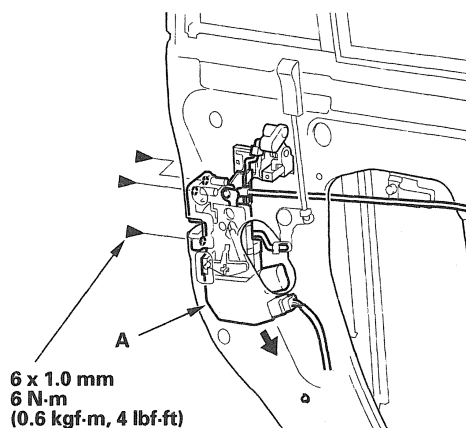
3. Release the hooks (A), then remove the rod protector (B) by detaching the clip (C).



4. Remove the screws securing the latch (A), then lower the latch.

Fastener Locations

▶ : Screw, 3



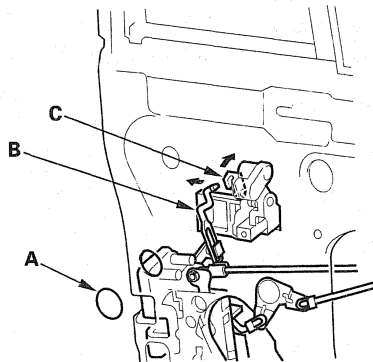
(cont'd)

Doors

Rear Door Outer Handle Replacement (cont'd)

5. Remove the maintenance seal (A), then disconnect the outer handle rod (B) from the joint bushing (C).

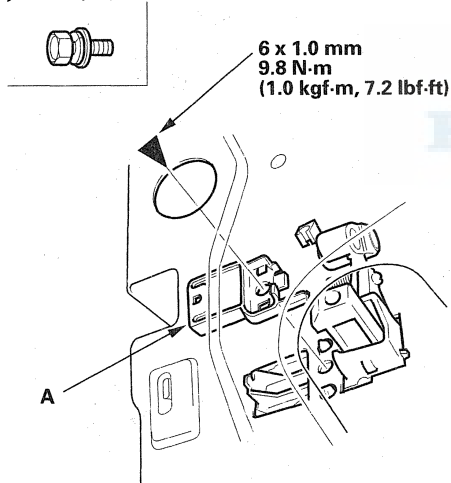
NOTE: Check for damaged or stress-whitened joint bushing, and replace if necessary.



6. Remove the bolt, then remove the protector (A).

Fastener Location

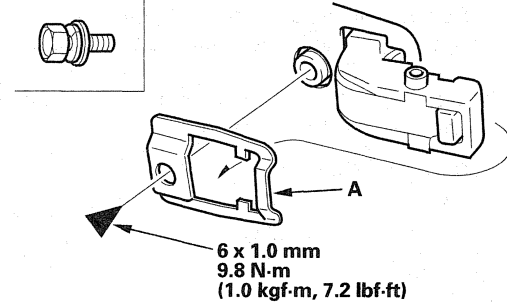
► : Bolt, 1



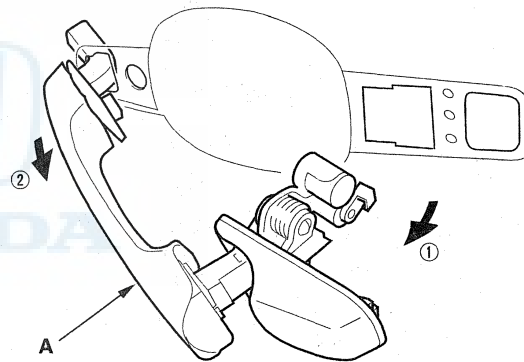
7. Remove the bolt, then remove the spacer (A).

Fastener Location

► : Bolt, 1



8. While pulling the outer handle (A), remove the handle from the holes in the door. Take care not to scratch the door.



9. Install the handle in the reverse order of removal, and note these items:

- Make sure the outer handle rod is connected securely.
- Make sure the door locks and opens properly.
- Make sure the childproof door locks operate properly.
- When reinstalling the door panel, make sure the plastic cover is installed properly and sealed around its outside perimeter to seal out water.
- Check for water leaks.



Rear Door Latch Replacement

NOTE: Put on gloves to protect your hands.

1. Remove these items:

- Door panel (see page 20-16)
- Plastic cover, as necessary (see page 20-4)
- Rod protector (see step 3 on page 20-17)

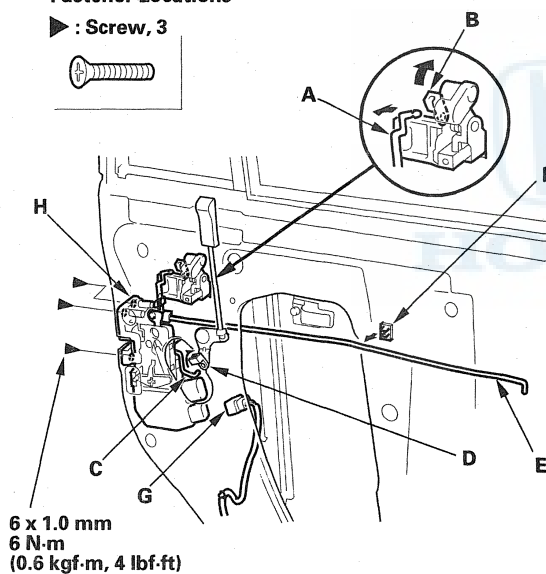
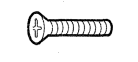
2. Raise the glass fully.

3. Disconnect the outer handle rod (A) from the joint bushing (B) and lock rod (C) from the joint bushing (D). Detach the inner handle rod (E) from the rod holder (F), and disconnect the actuator connector (G). Take care not to bend any of the rods.

NOTE: Check for damaged or stress-whitened joint bushing, and replace if necessary.

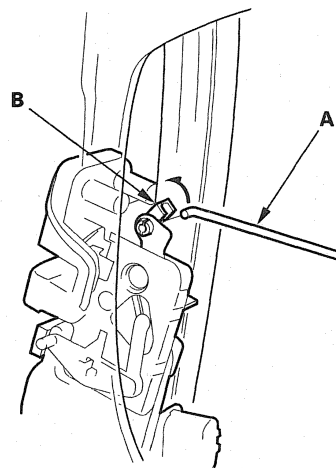
Fastener Locations

► : Screw, 3

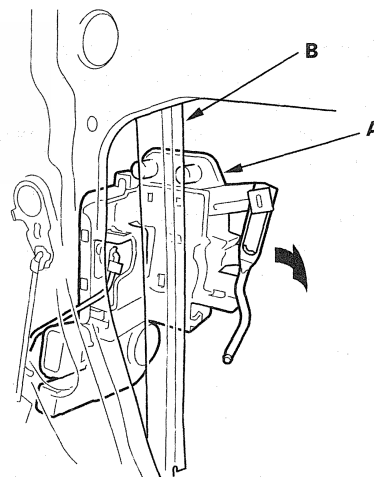


4. Remove the screws securing the latch (H).

5. Disconnect the inner handle rod (A) from the joint bushing (B).



6. Move the latch (A) through the gap between the center channel (B) and door, then remove it.

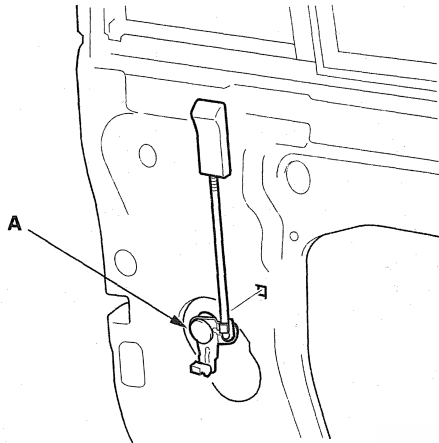


(cont'd)

Doors

Rear Door Latch Replacement (cont'd)

7. If necessary, detach the lock crank (A) from the door.



8. Install the latch in the reverse order of removal, and note these items:

- Make sure the actuator connector is plugged in properly, and each rod is connected securely.
- Make sure the door locks and opens properly.
- Make sure the childproof door locks operate properly.
- When reinstalling the door panel, make sure the plastic cover is installed properly and sealed around its outside perimeter to seal out water.
- Check for water leaks.

Rear Door Glass, Quarter Glass, and Regulator Replacement

NOTE: Put on gloves to protect your hands.

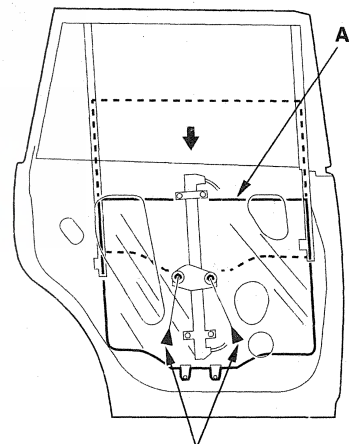
1. Remove these items:

- Door panel (see page 20-16)
- Plastic cover (see page 20-4)
- Door glass inner weatherstrip (see page 20-25)
- Door glass outer weatherstrip (see page 20-24)

2. Carefully move the glass (A) until you can see the bolts, then remove them. Carefully lower the glass. Take care not to drop the glass inside the door.

Fastener Locations

► : Bolt, 2



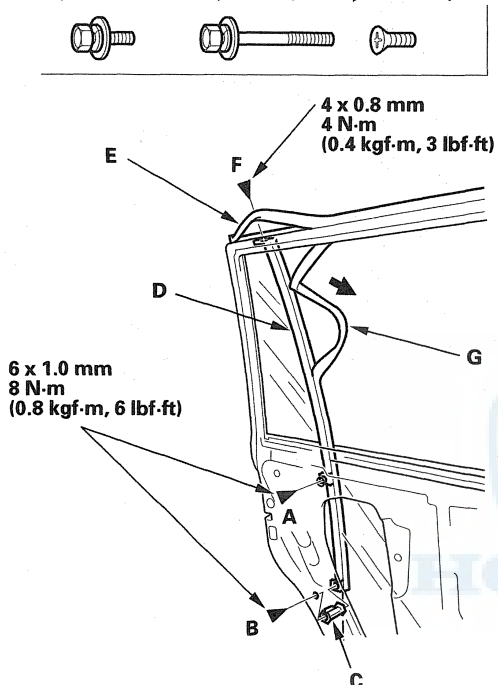
6 x 1.0 mm
9.8 N·m
(1.0 kgf·m, 7.2 lbf·ft)



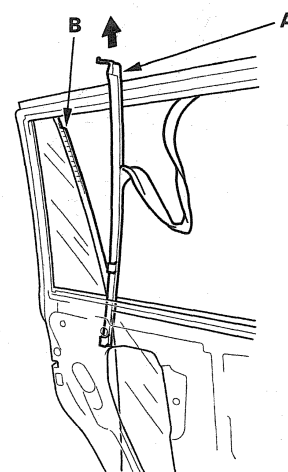
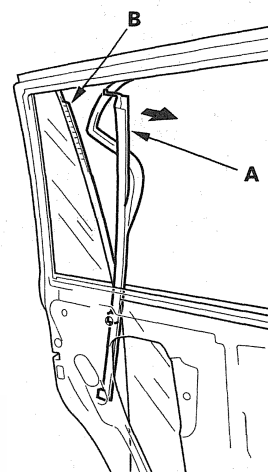
3. Remove the bolts (A, B) and collar (C) from the center channel (D). Pull the upper seal (E) away as needed, and remove the screw (F). Pull the glass run channel (G) away as needed from the center channel.

Fastener Locations

A ▶ : Bolt, 1 B ▶ : Bolt, 1 F ▶ : Screw, 1



4. Pull the upper portion of the center channel (A) forward to remove it from the door quarter glass seal (B), and pull up the center channel through the window slot. Take care not to scratch the door, and damage the door quarter glass seal.

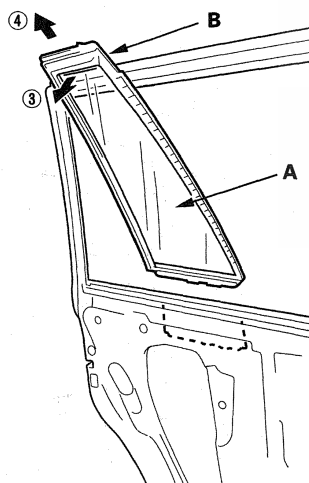
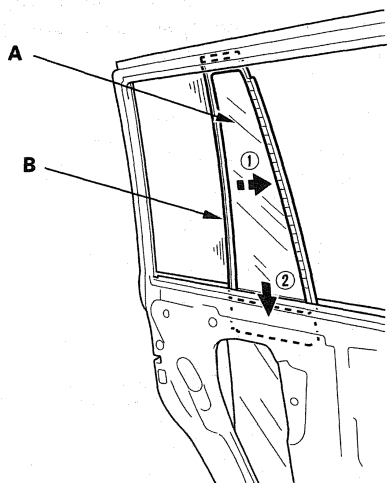


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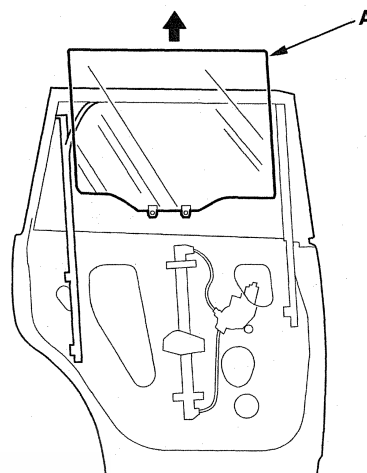
Doors

Rear Door Glass, Quarter Glass, and Regulator Replacement (cont'd)

5. Remove the door quarter glass (A) and seal (B) as an assembly from the door.



6. Carefully remove the glass (A) out through the window slot. Take care not to drop the glass inside the door.



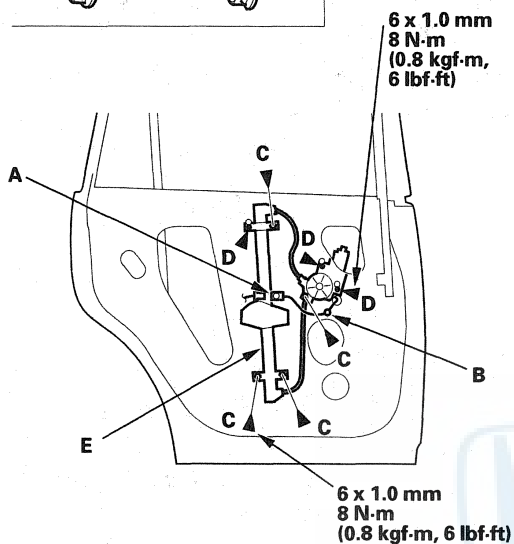


7. Disconnect and detach the connector (A) and harness clip (B) from the door.

Fastener Locations

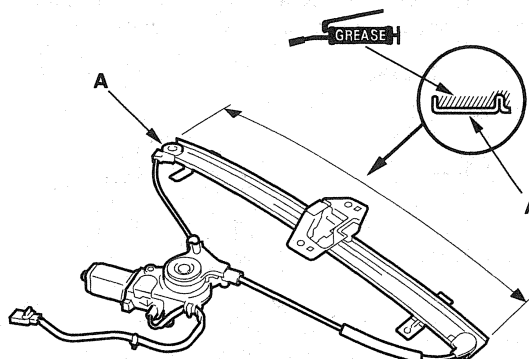
C ► : Bolt, 4

D ► : Bolt, 3



8. Remove the bolts (C), and loosen the bolts (D), then remove the regulator (E) through the hole in the door.

9. Apply multipurpose grease to all the sliding surfaces of the regulator (A) where shown.



10. Install the glass and regulator in the reverse order of removal, and note these items:

- Make sure the connector is plugged in properly.
- Roll the glass up and down to see if it moves freely without binding.
- Make sure that there is no clearance between the glass and glass run channel when the glass is closed.
- Adjust the position of the glass as necessary (see page 20-27).
- When reinstalling the door panel, make sure the plastic cover is installed properly and sealed around its outside perimeter to seal out water.
- Check for water leaks (see step 7 on page 20-27).
- Test-drive and check for wind noise and rattles.

Doors

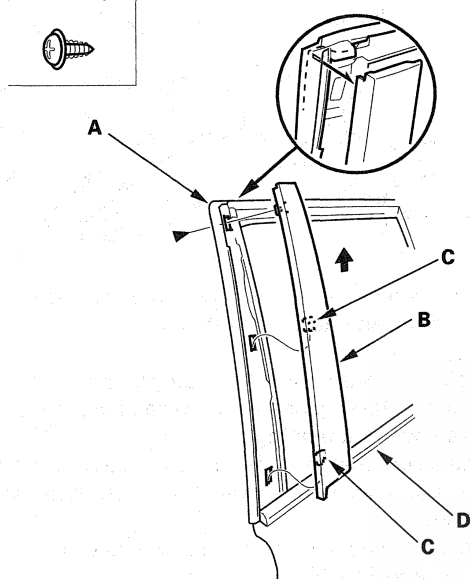
Rear Door Sash Trim Replacement

NOTE: Take care not to scratch the door.

1. Turn the door weatherstrip (A) at the front upper corner portion, then remove the screw.

Fastener Location

► : Screw, 1



2. Pull up the sash trim (B) to release the hooks (C), then remove the trim. Take care not to damage the door glass outer weatherstrip (D).
3. Install the sash trim in the reverse order of removal.

Rear Door Glass Outer Weatherstrip Replacement

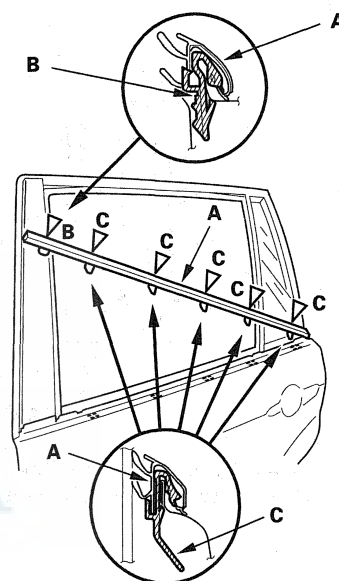
NOTE:

- Put on gloves to protect your hands.
- Take care not to scratch the door and molding.

1. Starting at the front, pry the door glass outer weatherstrip (A) up to detach the clip (B).

Fastener Locations

B► : Clip, 1 C► : Clip, 5



2. Detach the clips (C), then remove the weatherstrip.
3. Install the outer weatherstrip in the reverse order of removal, and note these items:
 - Check if the clips are damaged or stress-whitened, and if necessary, replace them with new ones.
 - Push the clips into place securely.
 - Make sure the end of the outer weatherstrip is attached to the quarter glass seal securely.

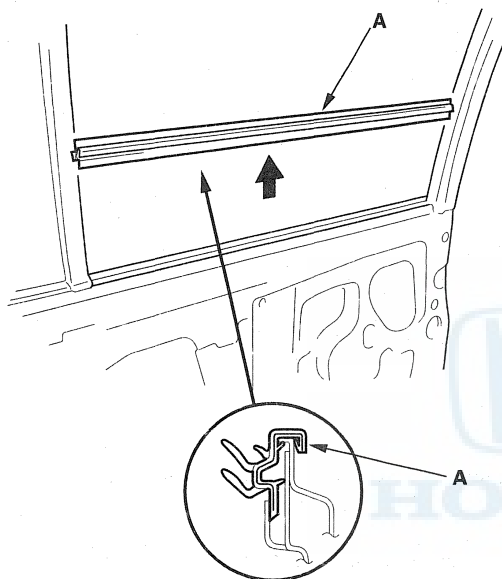


Rear Door Glass Inner Weatherstrip Replacement

NOTE:

- Put on gloves to protect your hands.
- Take care not to scratch the door and molding.

1. Remove the door panel (see page 20-16).
2. Pull the door glass inner weatherstrip (A) up, then remove it.



3. Install the weatherstrip in the reverse order of removal.

Rear Door Weatherstrip Replacement

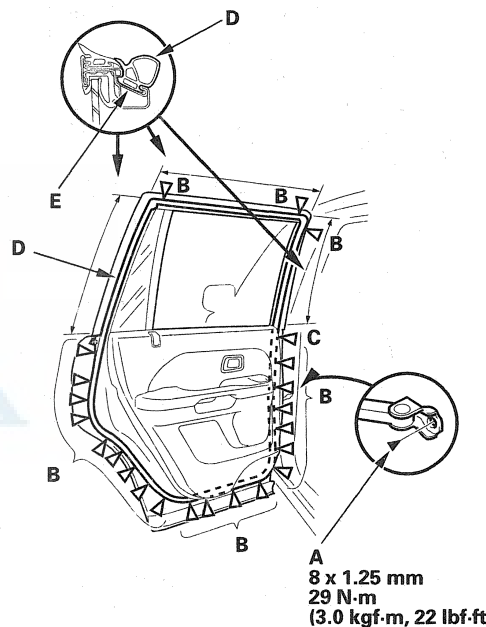
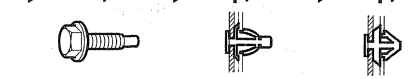
NOTE:

- Take care not to scratch the door.
- Use a clip remover to remove the clips.

1. At the B-pillar, remove the door checker mounting bolt (A).

Fastener Locations

A▶ : Bolt, 1 B▷ : Clip, 22 C▷ : Clip, 1



2. Detach the clips (B, C), then remove the door weatherstrip (D).
3. Install the weatherstrip in the reverse order of removal, and note these items:
 - Check if the clips are damaged or stress-whitened, and if necessary, replace them with new ones.
 - Push the clips into place securely.
 - Make sure the weatherstrip is installed in the holder (E) securely.
 - Apply liquid thread lock to the door checker mounting bolt before installation.
 - Check for water leaks.
 - Test-drive and check for wind noise and rattles.

Doors

Rear Door Upper Seal Replacement

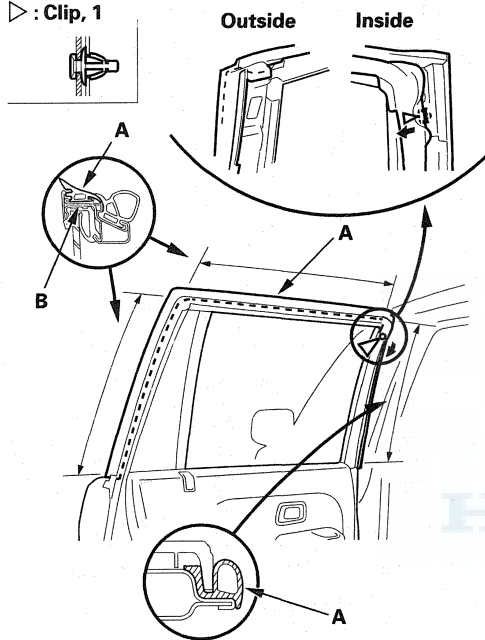
NOTE:

- Take care not to scratch the door.
- Use a clip remover to remove the clip.

1. Remove the door sash trim (see page 20-24).
2. Detach the door weatherstrip clip, then remove the door upper seal (A).

Fastener Location

▷ : Clip, 1



3. Install the upper seal in the reverse order of removal, and note these items:

- Check if the clip is damaged or stress-whitened, and if necessary, replace it with new one.
- Push the clip into place securely.
- Make sure the upper seal is installed in the holder (B) securely.

Rear Door Side Sill Seal Replacement

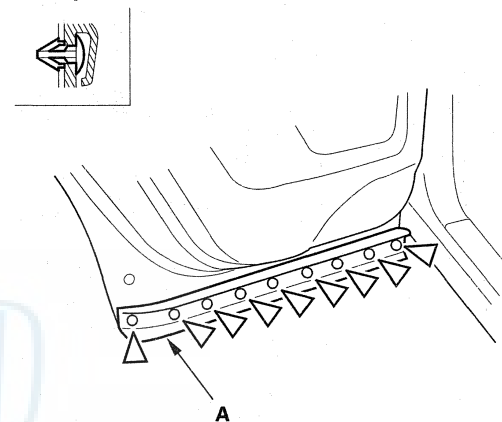
NOTE:

- Take care not to scratch the door.
- Use a clip remover to remove the clips.

1. Detach the clips, then remove the door side sill seal (A).

Fastener Locations

▷ : Clip, 9



2. Install the side sill seal in the reverse order of removal, and note these items:

- Check if the clips are damaged or stress-whitened, and if necessary, replace them with new ones.
- Push the clips into place securely.



Front and Rear Door Glass Adjustment

NOTE:

- Check the weatherstrips and glass run channel for damage or deterioration, and replace them if necessary.
- Wipe the run channel clean with a shop towel.
- Lubricate the run channel with Shin-Etsu grease P/N 08798-9013.

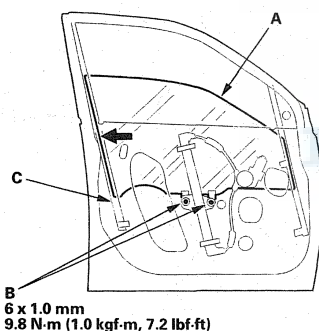
1. Place the vehicle on a firm, level surface.

2. Remove these items:

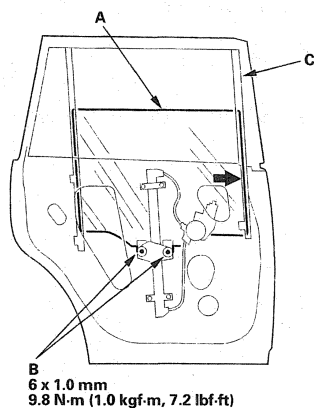
- Front door panel (see page 20-6), rear door panel (see page 20-16)
- Front door plastic cover (see page 20-2), rear door plastic cover (see page 20-4)
- Front door power window control unit, driver's side (see step 5 on page 20-6)

3. Carefully move the glass (A) until you can see the glass mounting bolts (B), then loosen them.

Front



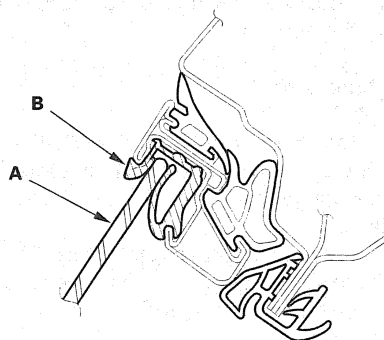
Rear



4. Push the glass against the center channel (C), then tighten the glass mounting bolts.

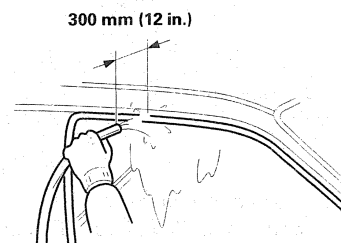
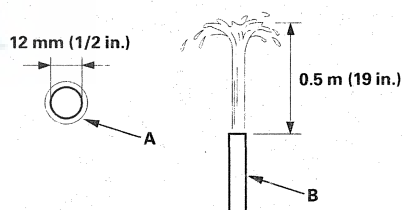
5. Check that the glass moves smoothly.

6. Raise the glass fully, and check for gaps. Check that the glass (A) contacts the glass run channel (B) evenly.



7. Check for water leaks. Run water over the roof and on the sealing area as shown, and note these items:

- Use a 12 mm (1/2 in.) diameter hose (A).
- Adjust the rate of water flow as shown (B).
- Do not use a nozzle.
- Hold the hose about 300 mm (12 in.) away from the door.



8. Attach the plastic cover making sure it is sealed around its outside perimeter to seal out water, then install the door panel:

- Front door (see page 20-6)
- Rear door (see page 20-16)

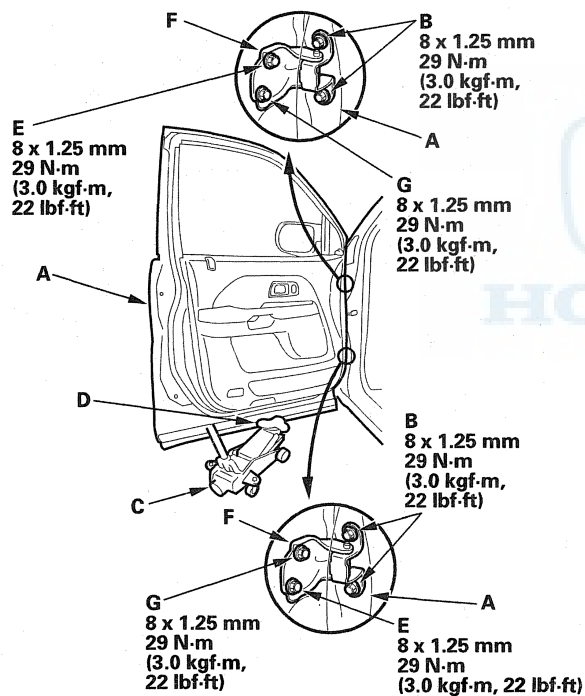
9. Test-drive and check for wind noise.

Doors

Front and Rear Door Position Adjustment

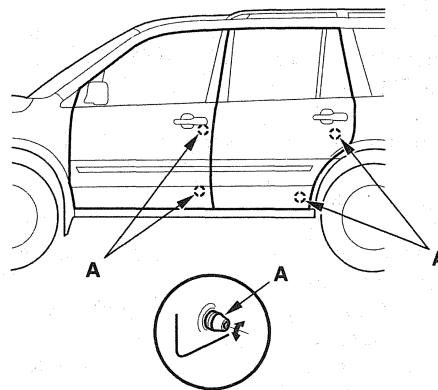
NOTE: Check for a flush fit with the body, then check for equal gaps between the front, rear, and bottom door edges and the body. Check that the door and body edges are parallel.

1. Place the vehicle on a firm, level surface when adjusting the doors.
2. Adjust at the door (A):
 - Loosen the door mounting bolts (B) slightly, and move the door up or down as necessary to equalize the gaps, and in or out until it's flush with the body.
 - Pad a floor jack (C) with shop towels (D), then use the jack to support the door to prevent damage to the door while adjusting it.

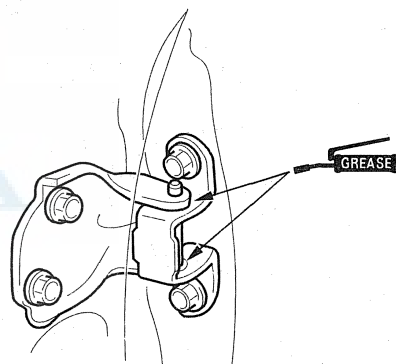


3. If necessary, replace the hinge mounting bolts (E) with the adjusting bolts (P/N 90102-SFA-305) made specifically for door adjustment, then adjust at the hinges (F): Loosen the hinge mounting bolts (E, G) slightly, and move the door backward or forward, up or down as necessary to equalize the gaps.

4. Check that the door and body edges are parallel. If necessary, adjust the door cushions (A) to make the rear of the doors flush with the body.



5. Apply multipurpose grease to the pivot portions of the hinges indicated by the arrows.



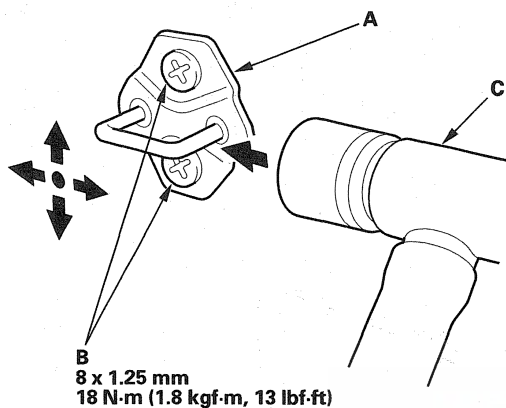
6. Apply touch-up paint to the hinge mounting bolts, and around the hinges.
7. Check for water leaks.
8. Test-drive and check for wind noise.



Front and Rear Door Striker Adjustment

Make sure the door latches securely without slamming it. If necessary, adjust the striker (A): The striker nuts are fixed, but the striker can be adjusted slightly up or down, and in or out.

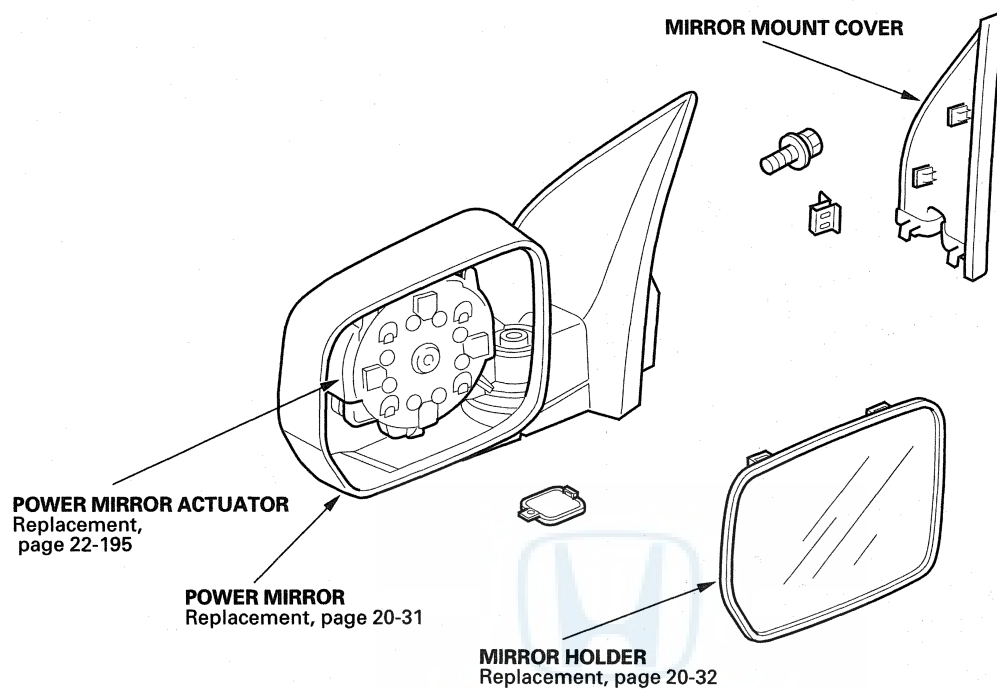
1. Loosen the screws (B).



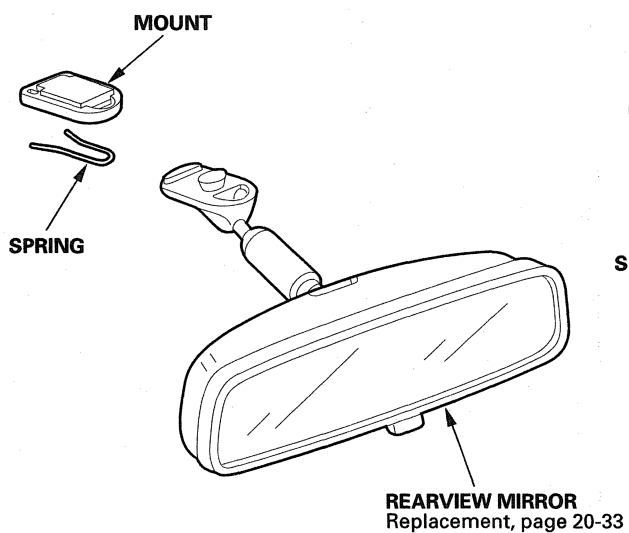
2. Wrap the striker with a shop towel, then adjust the striker by tapping it with a plastic hammer (C). Do not tap the striker too hard.
3. Lightly tighten the screws.
4. Hold the outer handle out, and push the door against the body to be sure the striker allows a flush fit. If the door latches properly, tighten the screws and recheck.

Mirrors

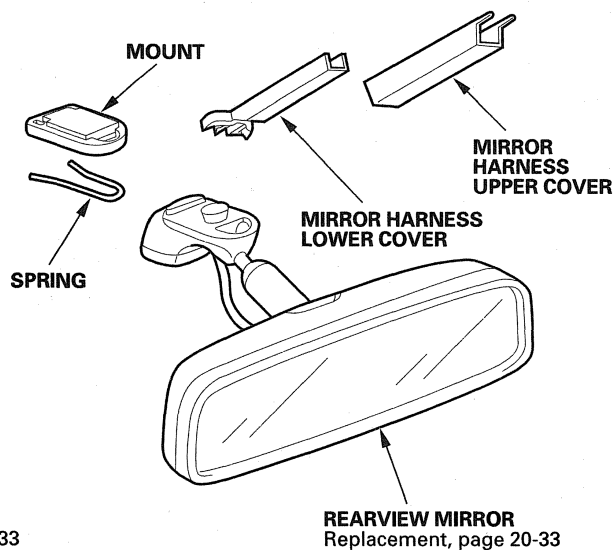
Component Location Index



Without Compass



With Compass



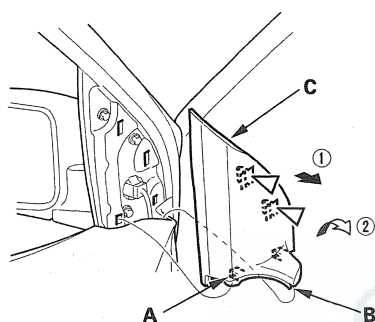
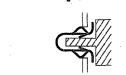


Power Mirror Replacement

1. Lower the door glass fully.
2. Carefully detach the clips, and release the hooks (A, B), then pry out the mirror mount cover (C) by hand in the sequence shown.

Fastener Locations

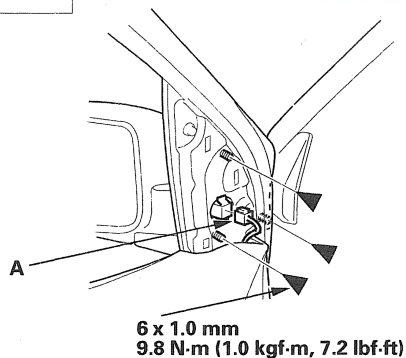
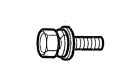
▷ : Clip, 2



3. Disconnect the connector (A).

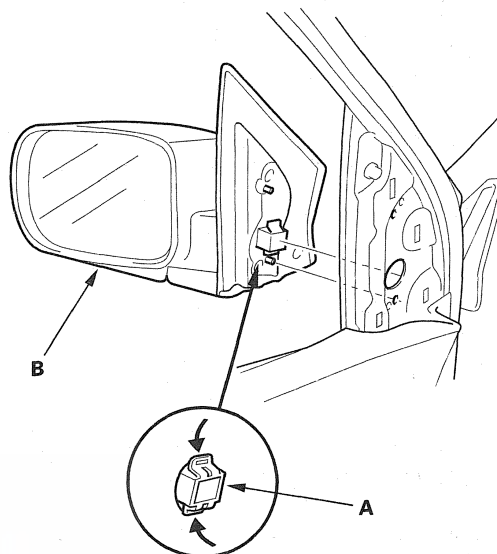
Fastener Locations

▷ : Bolt, 3



4. While holding the mirror, remove the bolts securing the mirror.

5. While holding the mirror, push in on the connector clips (A), then push out to remove the mirror (B). Take care not to scratch the door.



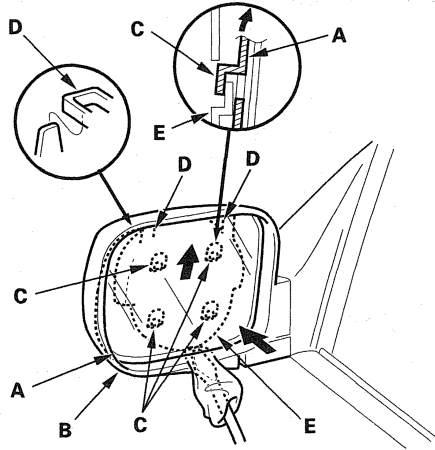
6. Install the mirror in the reverse order of removal, and note these items:

- Make sure the connector is plugged in properly.
- Check if the clips are damaged or stress-whitened, and if necessary, replace them with new ones.
- Push the clips into place securely.

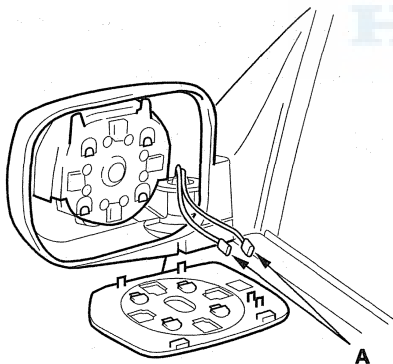
Mirrors

Mirror Holder Replacement

1. Push in the bottom of the mirror holder (A).



2. Insert a flat-tip screwdriver wrapped with a shop towel at the bottom gap between the mirror holder and mirror (B). Push the mirror holder upward to release the hooks (C, D) from the actuator adapter plate (E) while holding the mirror holder.
3. If equipped, disconnect the mirror defogger terminals (A).

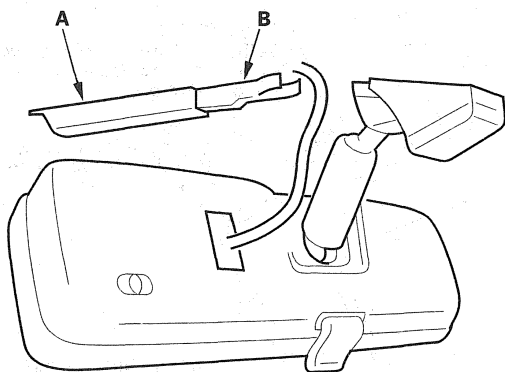


4. Install the mirror holder in the reverse order of removal, and note these items:
 - Make sure the terminals are plugged in properly.
 - Push the mirror holder downward to lock in the hooks.
 - Push in the bottom of the mirror fully before you push on the mirror holder.
 - Check the operation of the actuator.

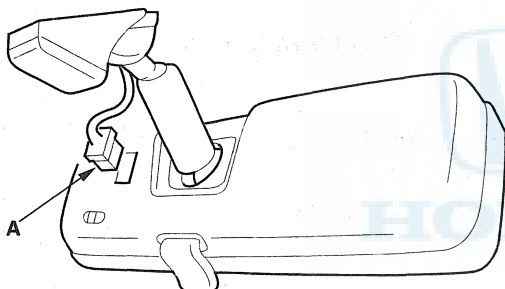


Rearview Mirror Replacement

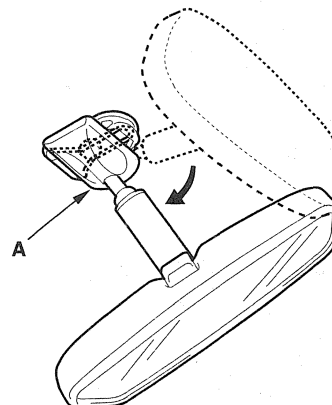
1. With compass: Slide the mirror harness upper cover (A) forward, then remove the mirror harness lower cover (B).



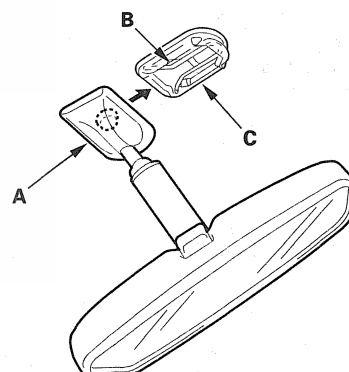
2. With compass: Disconnect the connector (A).



3. Turn the rearview mirror base (A) 90°.



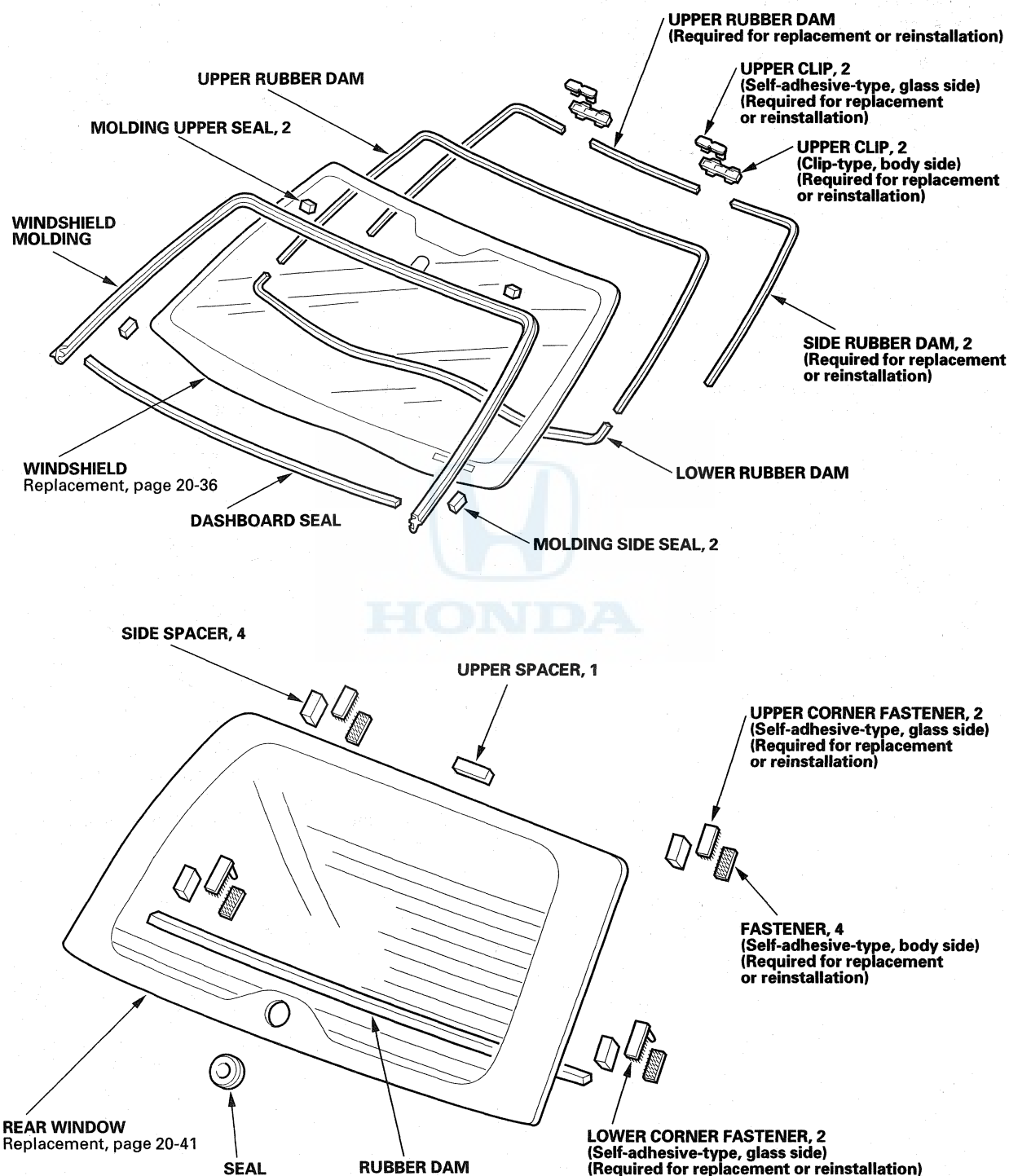
4. Slide the rearview mirror (A) down toward the bottom of the windshield to detach it from the spring (B) in the mount (C).



5. If necessary, remove the spring from the mount.
6. Install the rearview mirror in the reverse order of removal.

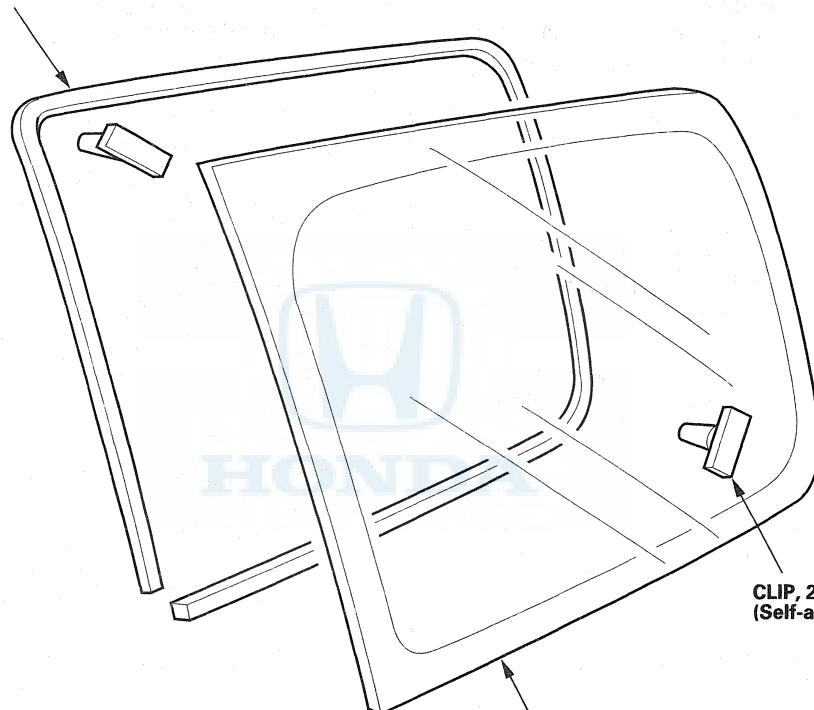
Glass

Component Location Index





RUBBER DAM



CLIP, 2
(Self-adhesive-type, glass side)

QUARTER GLASS
Replacement, page 20-45

Glass

Windshield Replacement

Special Tools Required

KTC trim tool set SOJATP2014 *

* Available through the American Honda Tool and Equipment Program; call 888-424-6857

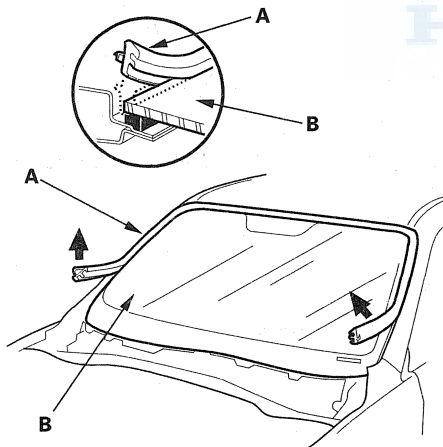
NOTE:

- Put on gloves to protect your hands.
- Use the appropriate tool from the KTC trim tool set to avoid damage when prying components.
- Wear eye protection while cutting the glass adhesive with a piano wire.
- Use seat covers to avoid damaging any surfaces.
- When replacing a broken windshield, a commercially available windshield cutter can be efficiently used for cutting the adhesive. For details, follow the instructions of the tool manufacturer.

1. Remove these items:

- Rearview mirror (see page 20-33)
- A-pillar trim, both sides (see page 20-67)
- Windshield wiper arms (see page 22-201)
- Cowl covers (see page 20-147)

2. Remove the molding (A) from the edge of the windshield (B). If necessary, cut the molding with a utility knife.

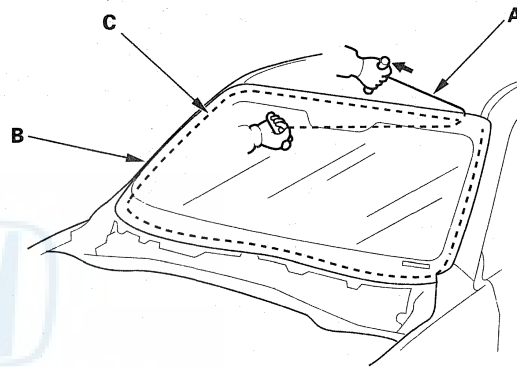


3. If the old windshield will be reinstalled, make alignment marks across the glass and body with a grease pencil.

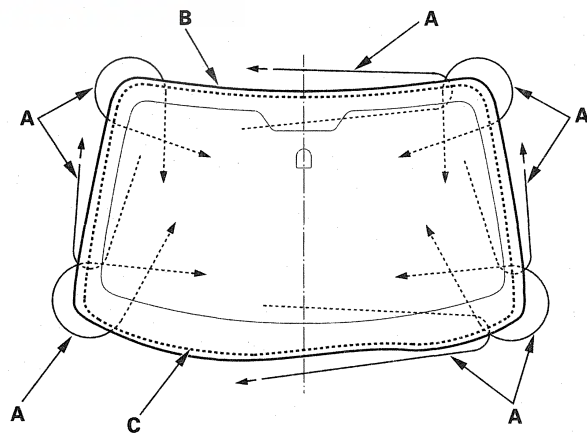
4. Pull down the front portion of the headliner (see page 20-83). Take care not to bend the headliner excessively, as you may crease or break it.

5. Apply protective tape along the edge of the dashboard and body. Using an awl, make a hole through the rubber dam, adhesive, and dashboard seal from inside the vehicle at the corner portion of the glass. Push a piece of piano wire through the hole, and wrap each end around a piece of wood.

6. With a helper on the outside, pull the piano wire (A) back and forth in a sawing motion. Hold the piano wire as close to the windshield (B) as possible to prevent damage to the body and dashboard. Carefully cut through the rubber dam and adhesive (C) around the entire windshield.



Cutting positions



7. Carefully remove the windshield.



8. With a knife, scrape the old adhesive smooth to a thickness of about 2 mm (0.08 in.) on the bonding surface around the entire windshield opening flange:

- Do not scrape down to the painted surface of the body; damaged paint will interfere with proper bonding.
- Remove the rubber dam and fasteners from the body.

9. Clean the body bonding surface with a sponge dampened in alcohol. After cleaning, keep oil, grease and water from getting on the clean surface.

10. If the old windshield will be reinstalled, use a putty knife to scrape off all of the old adhesive, the rubber dam, and the dashboard seal from the windshield. Clean the inside face and the edge of the windshield with alcohol where new adhesive will be applied. Make sure the bonding surface is kept free of water, oil, and grease.

11. Attach the upper rubber dam (A), side rubber dam (B), and lower rubber dam (C) with adhesive tape where the clips (D) will be applied, then attach the clips with adhesive tape and dashboard seal (E) to the inside face of the windshield (F) as shown:

- Be sure the side rubber dam, lower rubber dam, and dashboard seal line up with the alignment marks (G).
- Be careful not to touch the windshield where adhesive will be applied.

Rubber dam adhesive tape:

Thickness 0.16 mm (0.006 in.)

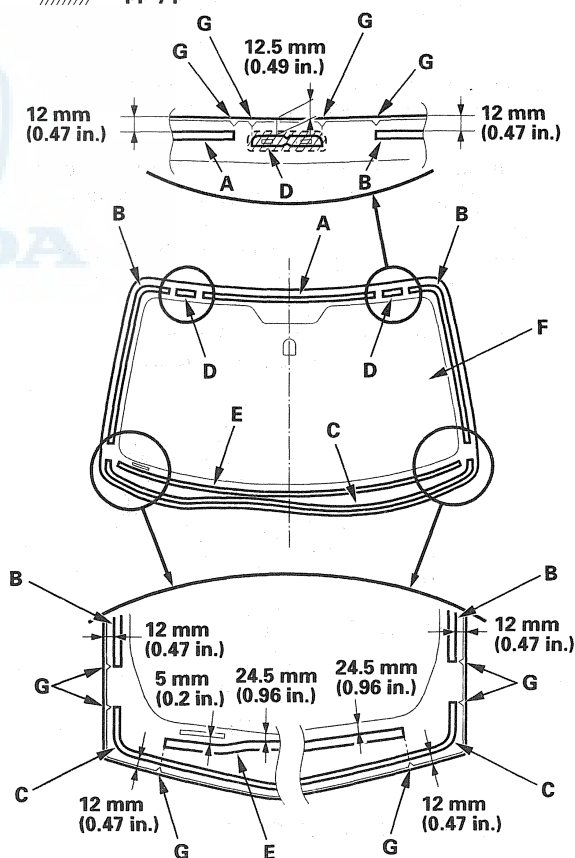
Width 4 mm (0.16 in.)

Clips adhesive tape:

Thickness 0.2 mm (0.008 in.)

Width 7.5 mm (0.30 in.)

//// : Apply primer here.

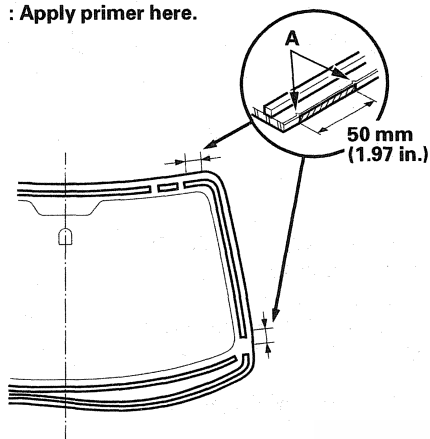


(cont'd)

Windshield Replacement (cont'd)

12. Apply primer to the edge of the windshield between the alignment marks (A). Be careful not to touch the windshield where adhesive will be applied.

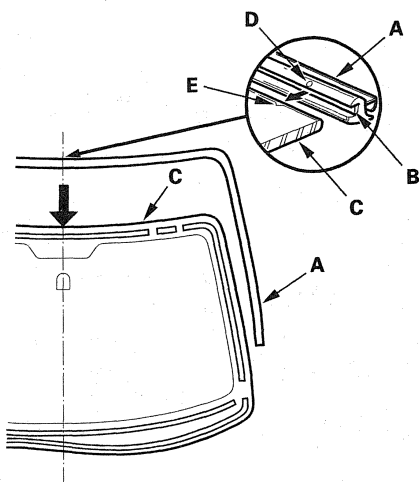
//// : Apply primer here.



13. Attach the molding (A) with adhesive tape (B) to the edge of the windshield (C):

- Be sure the alignment mark (D) of the molding lines up with the alignment mark (E) of the windshield.
- Be careful not to touch the windshield where adhesive will be applied.

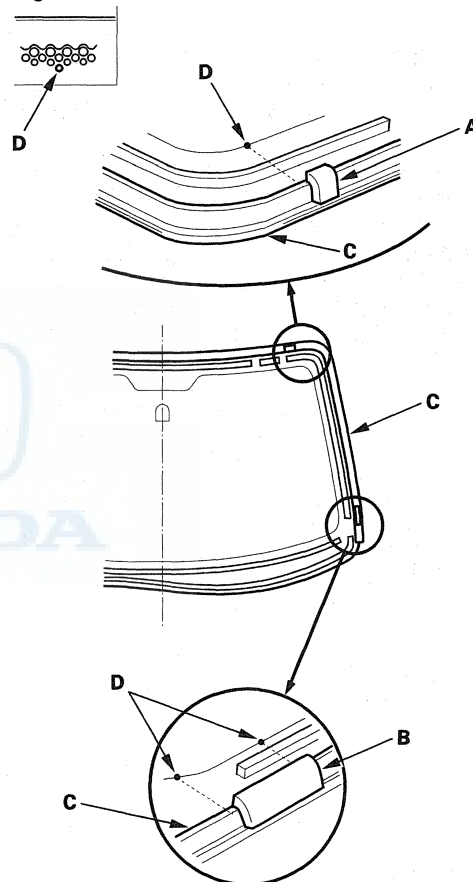
Adhesive tape: Thickness 0.8 mm (0.031 in.)
Width 4 mm (0.16 in.)



14. Attach the molding upper seal (A) and molding side seal (B) to the inside surface of the molding (C) with adhesive tape as shown:

- Be sure the molding upper seal and molding side seal line up with the alignment dots (D).
- Be careful not to touch the windshield where adhesive will be applied.

Alignment dot location

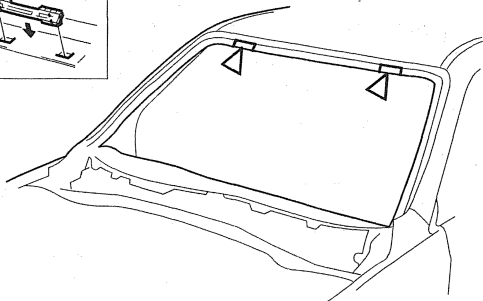
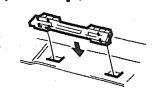




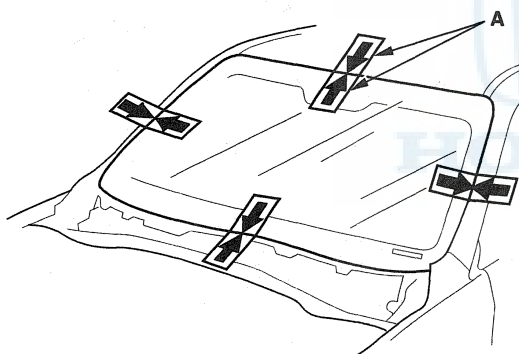
15. Install the clips to the body.

Fastener Locations

▷ : Clip, 2



16. Set the windshield in the opening, and center it. Make alignment marks (A) across the windshield and body with a grease pencil at the four points shown. Be careful not to touch the windshield where adhesive will be applied.

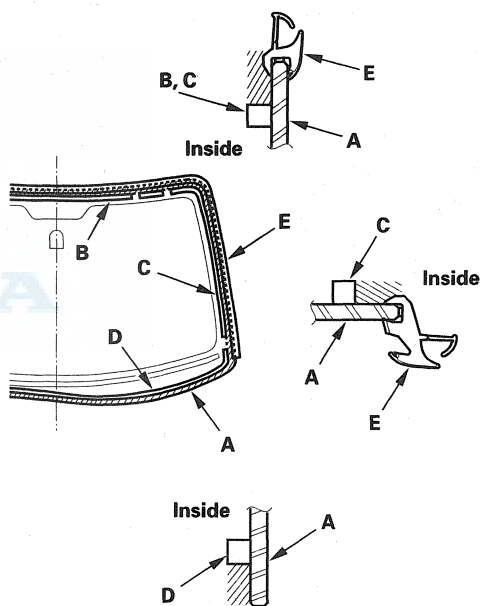


17. Remove the windshield.

18. With a sponge, apply a light coat of glass primer around the edge of the windshield (A) between the upper rubber dam (B), side rubber dam (C), lower rubber dam (D), and molding (E) as shown, then lightly wipe it off with gauze or cheesecloth:

- Apply glass primer to the molding.
- Do not apply body primer to the windshield, and do not get body and glass primer sponges mixed up.
- Never touch the primed surfaces with your hands. If you do, the adhesive may not bond to the windshield properly, causing a leak after the windshield is installed.
- Keep water, dust, and abrasive materials away from the primed surfaces.

//// : Apply glass primer here.



(cont'd)

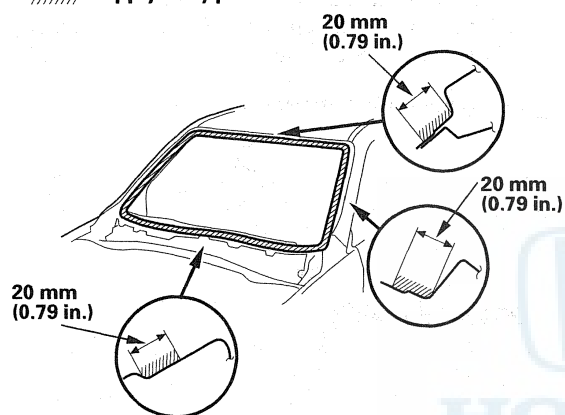
Glass

Windshield Replacement (cont'd)

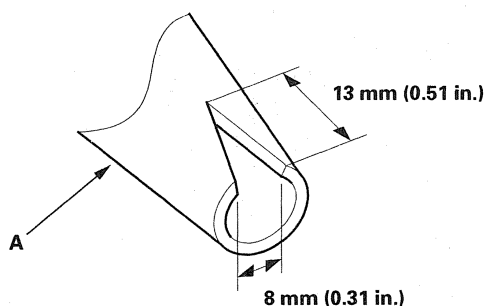
19. With a sponge, apply a light coat of body primer to the original adhesive remaining around the windshield opening flange. Let the body primer dry for at least 10 minutes:

- Do not apply body primer to any remaining original adhesive on the flange.
- Be careful not to mix up the body and glass primer sponges.
- Never touch the primed surfaces with your hands.
- Mask off the dashboard before priming the flange.

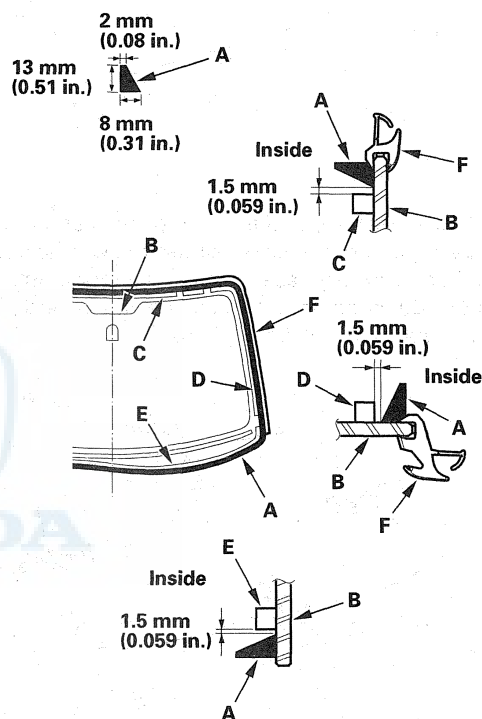
//// : Apply body primer here.



20. Before filling a cartridge, cut a "V" in the end of the nozzle (A) as shown.



21. Pack adhesive into the cartridge without air pockets to ensure continuous delivery. Put the cartridge in a caulking gun, and run a bead of adhesive (A) around the edge of the windshield (B) between the upper rubber dam (C), side rubber dam (D), lower rubber dam (E), and molding (F) as shown. Apply the adhesive within 30 minutes after applying the glass primer. Make a slightly thicker bead at each corner.





Rear Window Replacement

22. Use suction cups to hold the windshield over the opening, align it with the alignment marks made in step 16, and set it down on the adhesive. Lightly push on the windshield until its edges are fully seated on the adhesive all the way around.

NOTE: Do not open or close any of the doors for about an hour until the adhesive is dry.

23. Scrape or wipe the excess adhesive off with a putty knife or towel. To remove adhesive from a painted surface or the windshield, wipe with a soft shop towel dampened with alcohol.

24. After the adhesive has dried, spray water over the windshield and check for leaks. Mark the leaking areas, let the windshield dry, then seal with sealant:

- Let the vehicle stand for at least 4 hours after windshield installation. If the vehicle has to be used within the first 4 hours, it must be driven slowly.
- Keep the windshield dry for the first hour after installation.

25. Reinstall all remaining removed parts. Install the rearview mirror after the adhesive has dried thoroughly.

NOTE: Advise the customer not to do the following things for 2 to 3 days:

- Slam the doors with all the windows rolled up.
- Twist the body excessively (such as when going in and out of driveways at an angle or driving over rough, uneven roads).

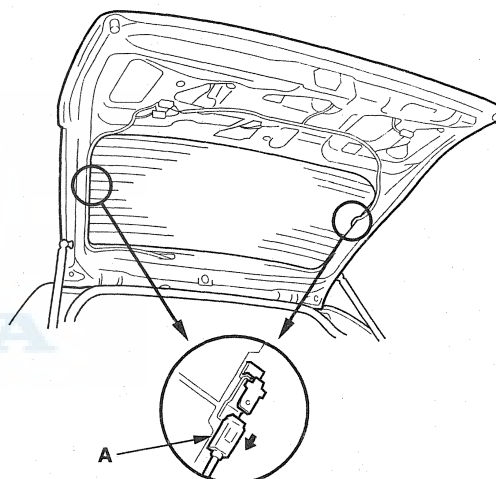
NOTE:

- Put on gloves to protect your hands.
- Wear eye protection while cutting the glass adhesive with a piano wire.
- Use seat covers to avoid damaging any surfaces.
- Do not damage the rear window defogger grid lines and terminals.

1. Remove these items:

- Tailgate trim panel (see page 20-82)
- Rear window wiper motor (see page 22-215)
- Tailgate spoiler trim (see page 20-157)

2. Disconnect the rear window defogger connectors (A).



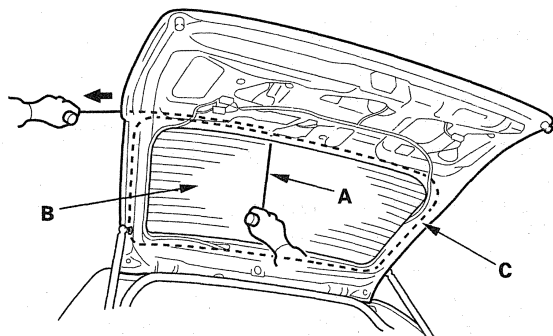
3. If the old rear window will be reinstalled, make alignment marks across the glass and body with a grease pencil.
4. Apply protective tape along the inside and outside edges of the tailgate. Using an awl, make a hole through the adhesive from inside the vehicle at the corner portion of the glass. Push the piano wire through the hole, and wrap each end around a piece of wood.

(cont'd)

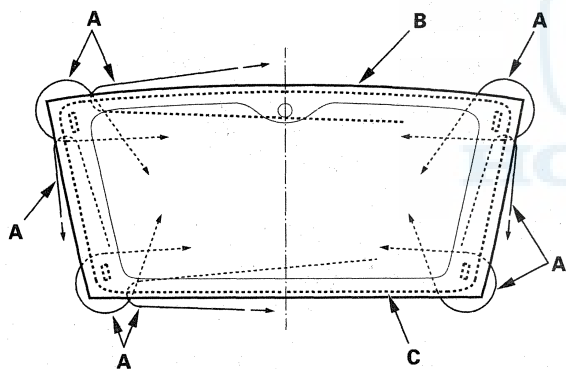
Glass

Rear Window Replacement (cont'd)

- With a helper on the outside, pull the piano wire (A) back and forth in a sawing motion. Hold the piano wire as close to the rear window (B) as possible to prevent damage to the tailgate, and carefully cut through the adhesive (C) around the entire rear window.



Cutting positions



- Carefully remove the rear window.
- With a putty knife, scrape the old adhesive smooth to a thickness of about 2 mm (0.08 in.) on the bonding surface around the entire rear window opening flange:
 - Do not scrape down to the painted surface of the body; damaged paint will interfere with proper bonding.
 - Remove the fasteners from the tailgate.
- Clean the tailgate bonding surface with a sponge dampened in alcohol. After cleaning, keep oil, grease, and water from getting on the surface.

- If the old rear window will be reinstalled, use a putty knife to scrape off all of the old adhesive and rubber dam from the rear window. Clean the inside face and the edge of the rear window with alcohol where new adhesive will be applied. Make sure the bonding surface is kept free of water, oil, and grease.

- Attach the upper corner fasteners (A), lower corner fasteners (B), rubber dam (C) and spacer (D) to the inside surface of the rear window (E) as shown:

- Be sure the fasteners and rubber dams line up with the alignment marks (F).
- Be careful not to touch the rear window where adhesive will be applied.

Fastener adhesive tape A:

Thickness 0.6 mm (0.024 in.)

Width 7.5 mm (0.30 in.)

Fastener adhesive tape B:

Thickness 0.6 mm (0.024 in.)

Width 7.5 mm (0.30 in.)

Rubber dam adhesive tape:

Thickness 0.16 mm (0.006 in.)

Width 3.5 mm (0.14 in.)

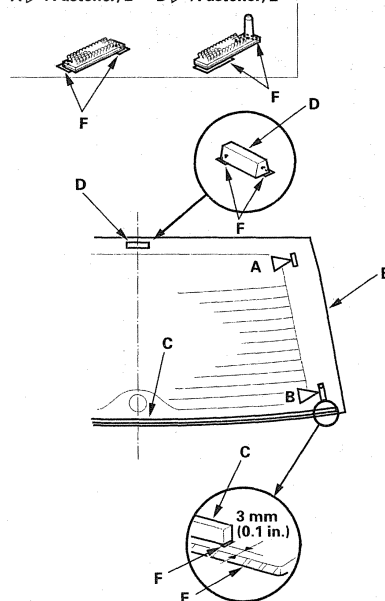
Spacer adhesive tape:

Thickness 0.16 mm (0.006 in.)

Width 6.5 mm (0.26 in.)

Fastener Locations

A ▷ : Fastener, 2 B ▷ : Fastener, 2





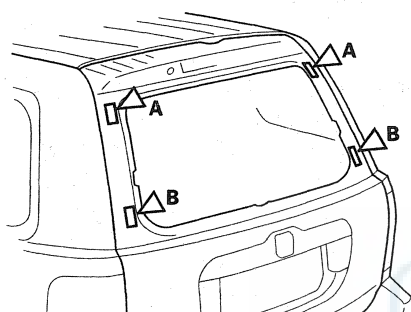
11. Attach the corner fasteners (A, B) with adhesive tape to the tailgate as shown.

Adhesive tape: Thickness 0.6 mm (0.024 in.)
Width 9.5 mm (0.37 in.)

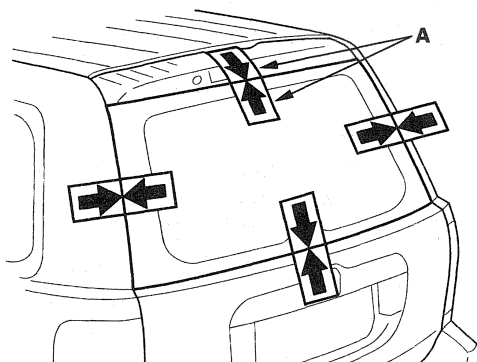
Fastener Locations

A ▷ : Fastener, 2

B ▷ : Fastener, 2



12. Set the rear window in the opening, and center it. Make alignment marks (A) across the rear window, tailgate, and body with a grease pencil at the four points shown. Be careful not to touch the rear window where adhesive will be applied.

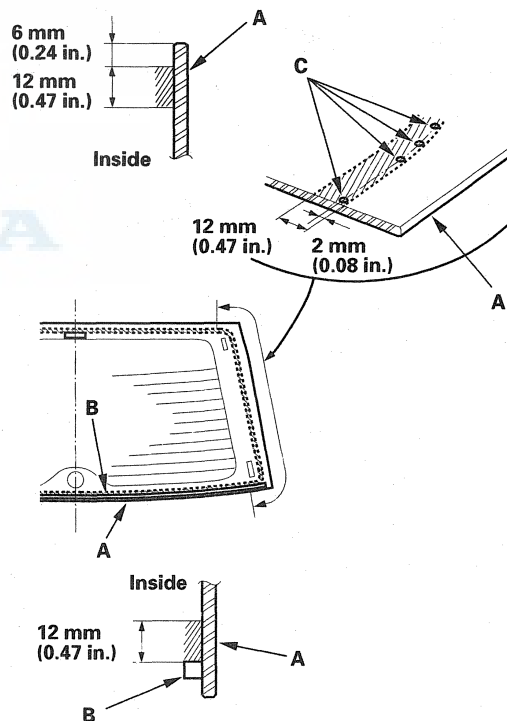


13. Remove the rear window.

14. With a sponge, apply a light coat of glass primer to the edge of the rear window (A) along the rubber dam (B) as shown, then lightly wipe it off with gauze or cheesecloth:

- With the printed dots (C) on the rear window as a guide, apply the glass primer to both side portions of the rear window.
- Do not apply body primer to the rear window, and do not get tailgate and glass primer sponges mixed up.
- Never touch the primed surfaces with your hands. If you do, the adhesive may not bond to the rear window properly, causing a leak after the rear window is installed.
- Keep water, dust, and abrasive materials away from the primed surfaces.

//// : Apply glass primer here.



(cont'd)

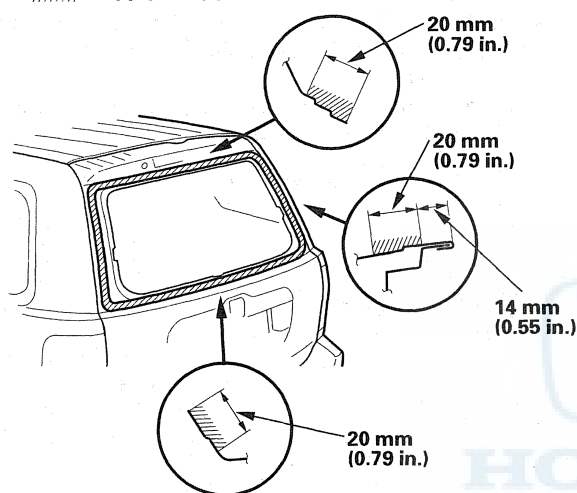
Glass

Rear Window Replacement (cont'd)

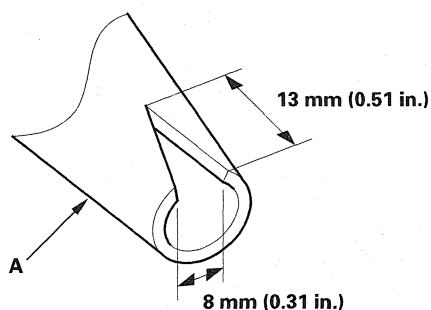
15. With a sponge, apply a light coat of body primer to the original adhesive remaining around the rear window opening flange. Let the body primer dry for at least 10 minutes:

- Do not apply body primer to any remaining original adhesive on the flange.
- Be careful not to mix up the body and glass primer sponges.
- Never touch the primed surfaces with your hands.

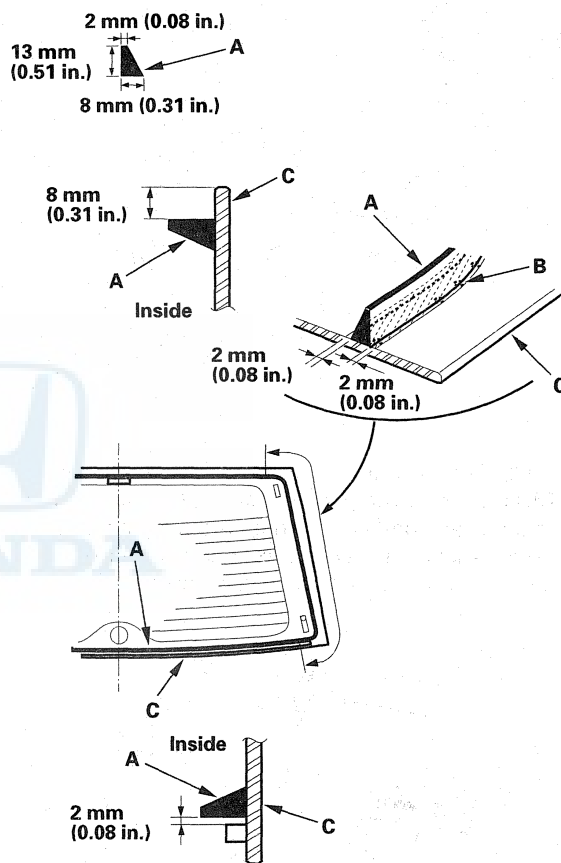
//// : Apply body primer here.



16. Before filling a cartridge, cut a "V" in the end of the nozzle (A) as shown.



17. Pack adhesive into the cartridge without air pockets to ensure continuous delivery. Put the cartridge in a caulking gun, and run a bead of adhesive (A) on the glass primer trace (B) you applied on step 14, and around the edge of the rear window (C) as shown. Apply the adhesive within 30 minutes after applying the glass primer. Make a slightly thicker bead at each corner.





Quarter Glass Replacement

18. Use suction cups to hold the rear window over the opening, align it with the alignment marks you made in step 12, and set it down on the adhesive. Lightly push on the rear window until its edges are fully seated on the adhesive all the way around.

NOTE: Do not open or close any of the doors for about an hour until the adhesive is dry.

19. Scrape or wipe the excess adhesive off with a putty knife or towel. To remove adhesive from a painted surface or the rear window, use a soft shop towel dampened with alcohol.
20. After the adhesive has dried, spray water over the rear window and check for leaks. Mark the leaking areas, let the rear window dry, then seal with sealant. Let the vehicle stand for at least 4 hours after rear window installation. If the vehicle has to be used within the first 4 hours, it must be driven slowly.
21. Reinstall all remaining removed parts.

NOTE: Advise the customer not to do the following things for 2 to 3 days:

- Slam the doors with all the windows rolled up.
- Twist the body excessively (such as when going in and out of driveways at an angle or driving over rough, uneven roads).

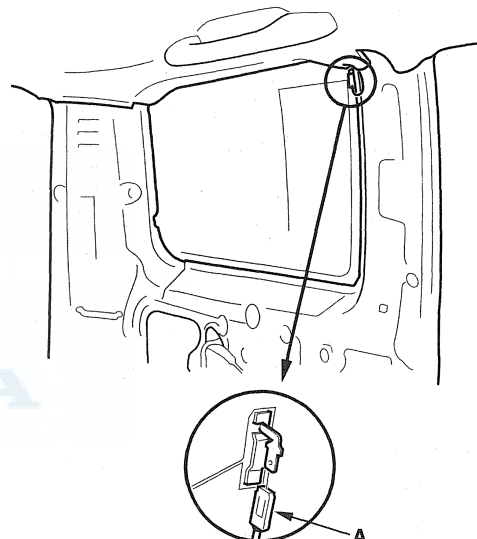
NOTE:

- Put on gloves to protect your hands.
- Wear eye protection while cutting the glass adhesive with a piano wire.
- Use seat covers to avoid damaging any surfaces.
- Do not damage the glass antenna grid lines and terminals.

1. Remove these items:

- C-pillar trim (see page 20-74)
- D-pillar trim (see page 20-77)

2. Disconnect the glass antenna connector (A).



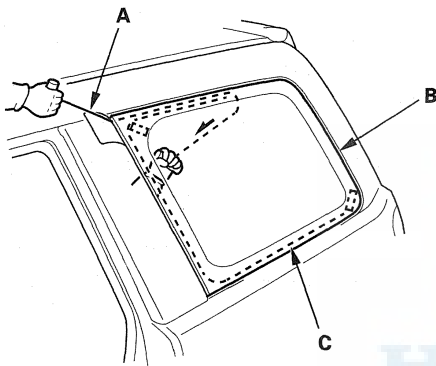
3. If the old quarter glass will be reinstalled, make alignment marks across the glass and body with a grease pencil.

(cont'd)

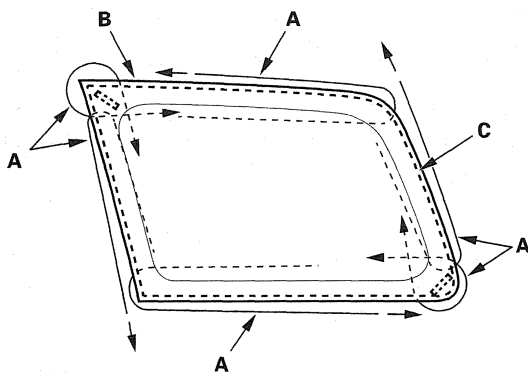
Glass

Quarter Glass Replacement (cont'd)

4. Pull down the rear side portion of the headliner as necessary (see page 20-83).
5. Apply protective tape along the inside and outside edges of the body. Using an awl, make a hole through the adhesive from inside the vehicle. Push a piece of piano wire through the hole, and wrap each end around a piece of wood.
6. With a helper on the outside, pull the piano wire (A) back and forth in a sawing motion. Hold the piano wire as close to the quarter glass (B) as possible to prevent damage to the body, and carefully cut through the adhesive (C) around the entire quarter glass.



Cutting positions



7. Carefully remove the quarter glass.

8. With a putty knife, scrape the old adhesive smooth to a thickness of about 2 mm (0.08 in.) on the bonding surface around the entire quarter glass opening flange:

- Do not scrape down to the painted surface of the body; damaged paint will interfere with proper bonding.
- Remove the fasteners from the body.

9. Clean the body bonding surface with a sponge dampened in alcohol. After cleaning, keep oil, grease, and water from getting on the surface.

10. If the old quarter glass will be reinstalled, use a putty knife to scrape off all of the old adhesive and the rubber dam from the glass. Clean the inside face and the edge of the glass with alcohol where new adhesive will be applied. Make sure the bonding surface is kept free of water, oil, and grease.

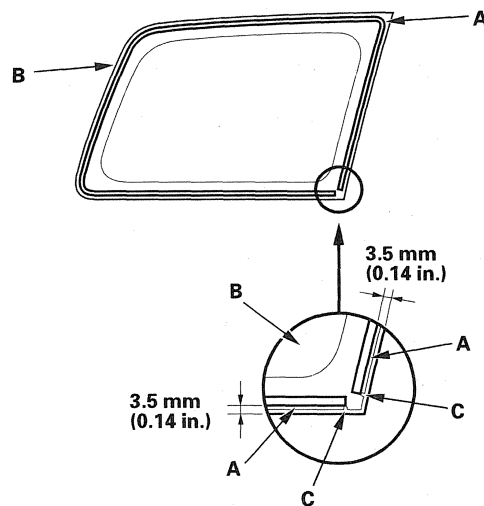
11. Attach the rubber dam (A) with adhesive tape to the inside surface of the glass (B) as shown:

- Be sure both ends of the rubber dam line up with the alignment marks (C).
- Be careful not to touch the glass where adhesive will be applied.

Rubber dam adhesive tape:

Thickness 0.16 mm (0.006 in.)

Width 3.5 mm (0.14 in.)





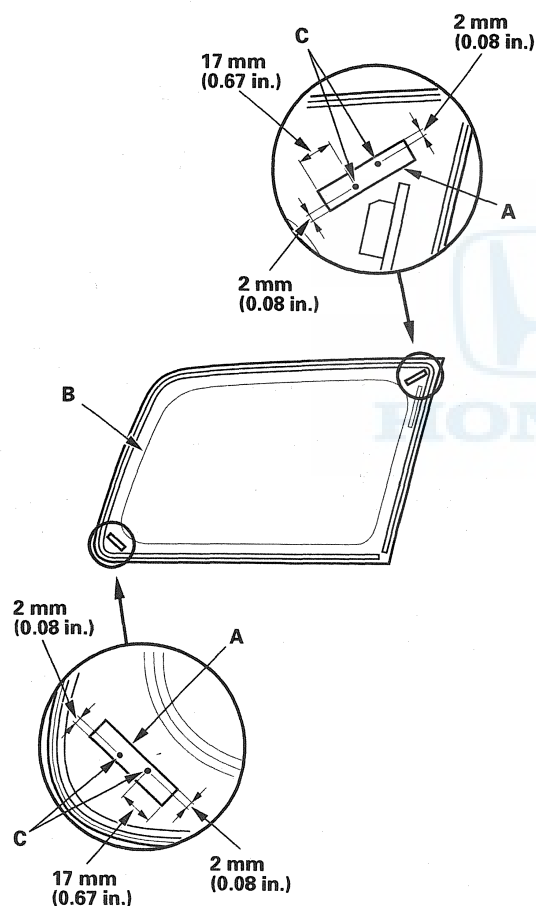
12. Attach the clips (A) with adhesive tape to the inside face of the quarter glass (B) as shown. Be careful not to touch the quarter glass where adhesive will be applied:

- Be sure the clips line up with the alignment marks (C).
- Be careful not to touch the quarter glass where adhesive will be applied.

Clips adhesive tape:

Thickness 0.4 mm (0.016 in.)

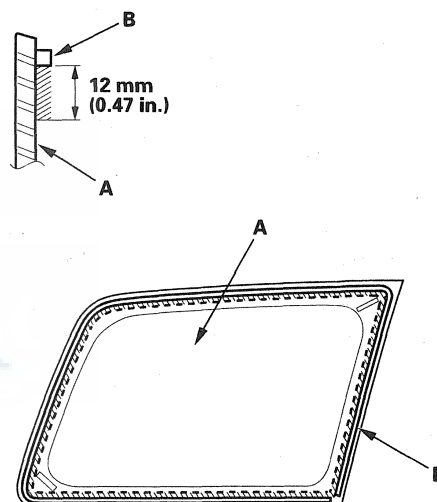
Width 7.5 mm (0.30 in.)



13. With a sponge, apply a light coat of glass primer to the edge of the glass (A) and along the rubber dam (B) as shown, then lightly wipe it off with gauze or cheesecloth:

- Do not apply body primer to the quarter glass, and do not get body and glass primer sponges mixed up.
- Never touch the primed surfaces with your hands. If you do, the adhesive may not bond to the quarter glass properly, causing a leak after the quarter glass is installed.
- Keep water, dust, and abrasive materials away from the primed surfaces.

//// : Apply glass primer here.



(cont'd)

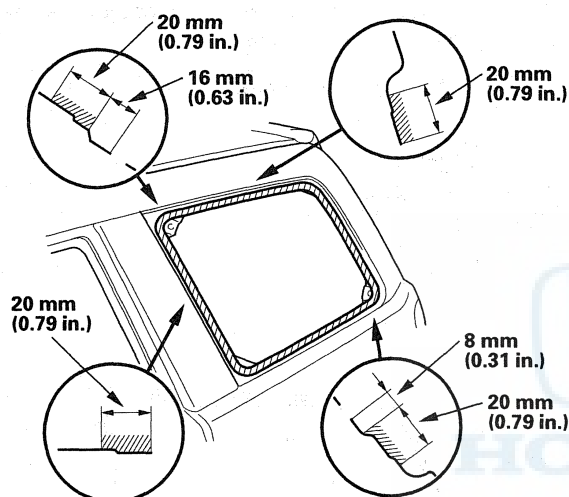
Glass

Quarter Glass Replacement (cont'd)

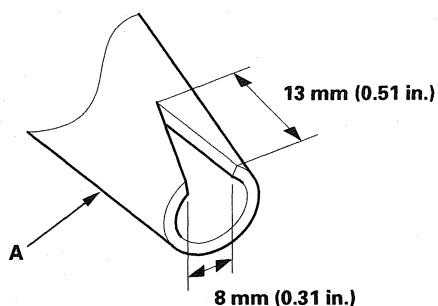
14. With a sponge, apply a light coat of body primer to the original adhesive remaining around the quarter glass opening flange. Let the body primer dry for at least 10 minutes:

- Do not apply body primer to any remaining original adhesive on the flange.
- Be careful not to mix up the body and glass primer sponges.
- Never touch the primed surfaces with your hands.

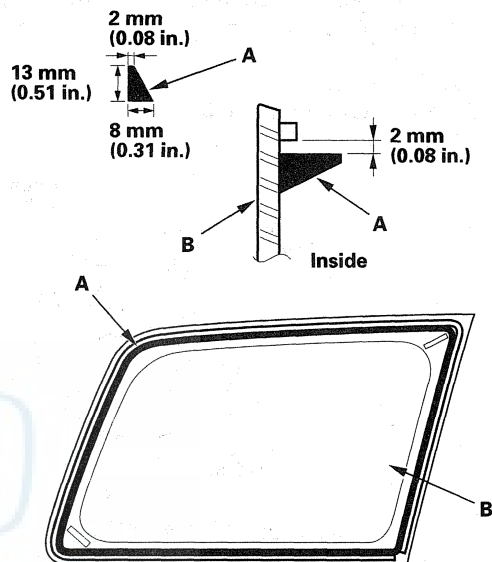
 : Apply body primer here.



15. Before filling a cartridge, cut a "V" in the end of the nozzle (A) as shown.

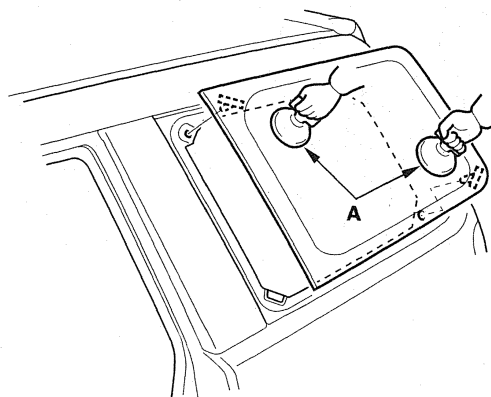


16. Pack adhesive into the cartridge without air pockets to ensure continuous delivery. Put the cartridge in a caulking gun, and run a bead of adhesive (A) around the edge of the glass (B) as shown. Apply the adhesive within 30 minutes after applying the glass primer. Make a slightly thicker bead at each corner.



17. Use suction cups (A) to hold the quarter glass over the opening, align it and set it down on the adhesive. Lightly push on the quarter glass until its edges are fully seated on the adhesive all the way around.

NOTE: Do not open or close any of the doors for about an hour until the adhesive is dry.

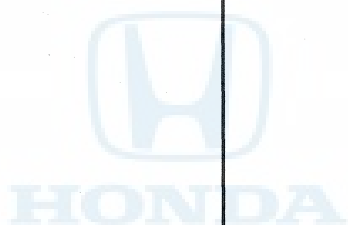




18. Scrape or wipe the excess adhesive off with a putty knife or towel. To remove adhesive from a painted surface or the quarter glass, use a soft shop towel dampened with alcohol.
19. After the adhesive has dried, spray water over the quarter glass and check for leaks. Mark the leaking areas, let the quarter glass dry, then seal with sealant. Let the vehicle stand for at least 4 hours after quarter glass installation. If the vehicle has to be used within the first 4 hours, it must be driven slowly.
20. Reinstall all remaining removed parts.

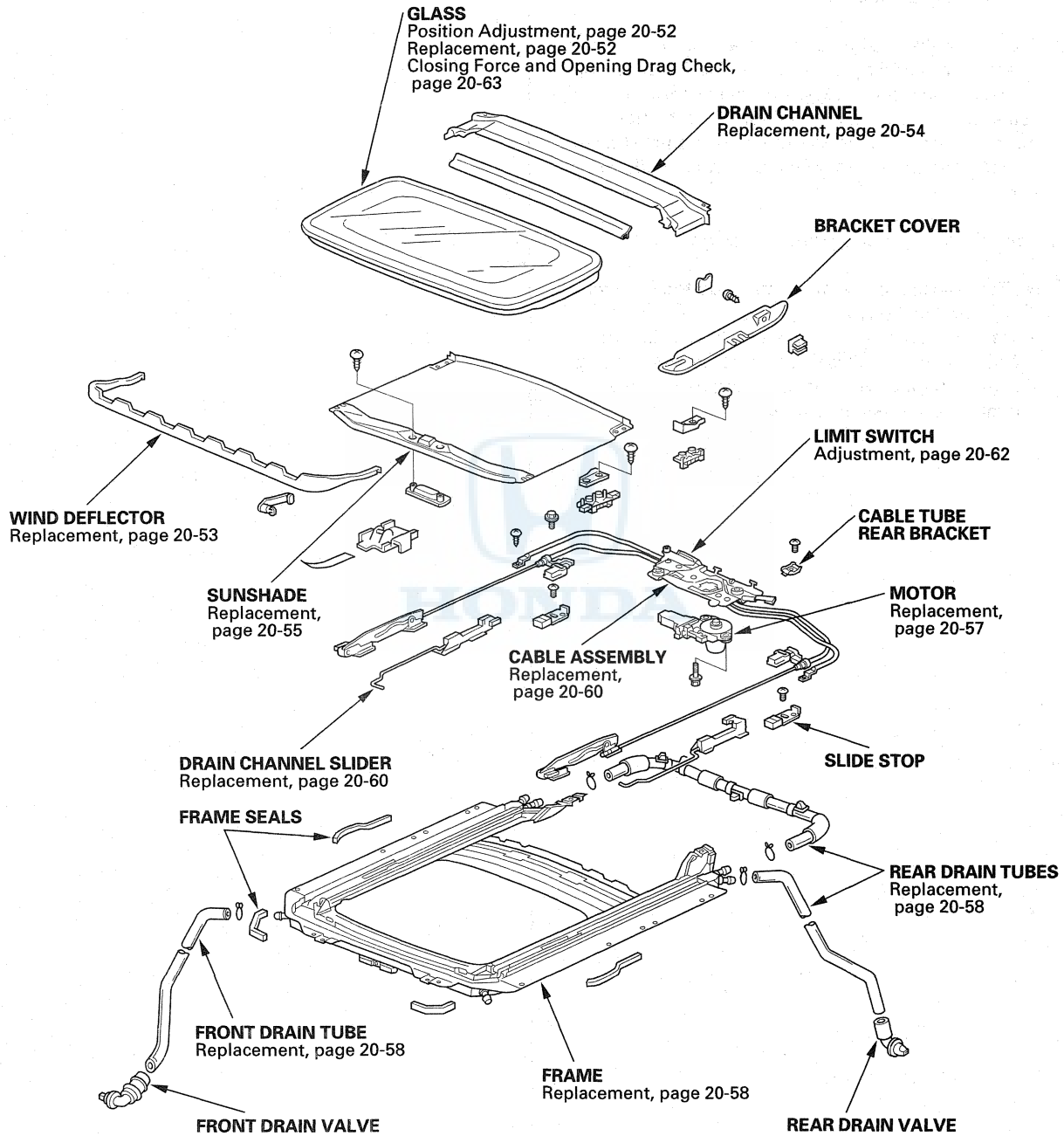
NOTE: Advise the customer not to do the following things for 2 to 3 days:

- Slam the doors with all the windows rolled up.
- Twist the body excessively (such as when going in and out of driveways at an angle or driving over rough, uneven roads).



Moonroof

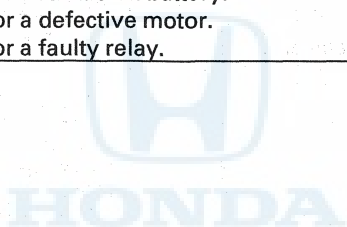
Component Location Index





Symptom Troubleshooting Index

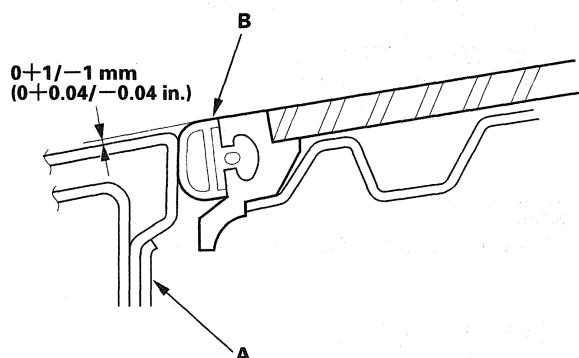
Symptom	Diagnostic procedure	Also check for
Water leaks from moonroof	<ol style="list-style-type: none">1. Check for a clogged drain tube.2. Check for a gap between the glass weatherstrip and the roof panel.3. Check for a defective or an improperly installed glass weatherstrip or drain channel.4. Check for a gap between the drain seal and the roof panel.	
Wind noise from moonroof	Check for excessive clearance between the glass weatherstrip and the roof panel.	
Motor noise from moonroof	<ol style="list-style-type: none">1. Check for a loose motor.2. Check for a worn gear or bearing.3. Check for a deformed cable assembly.	
Moonroof glass does not move, but motor turns	<ol style="list-style-type: none">1. Check for a defective gear or inner cable.2. Check for foreign matter stuck between the guide rail and the slider.3. Check for a loose inner cable.4. Make sure the cable assembly is attached properly.	
Moonroof glass does not move and motor does not turn (glass can be moved with 5 mm hexagonal wrench)	<ol style="list-style-type: none">1. Check for a blown fuse.2. Check for a faulty moonroof switch.3. Check the limit switch.4. Check for a run down battery.5. Check for a defective motor.6. Check for a faulty relay.	



Moonroof

Glass Position Adjustment

The roof panel (A) should be even with the glass weatherstrip (B), to within $0+1/-1$ mm ($0+0.04/-0.04$ in.) all the way around. If not, make the following adjustment:



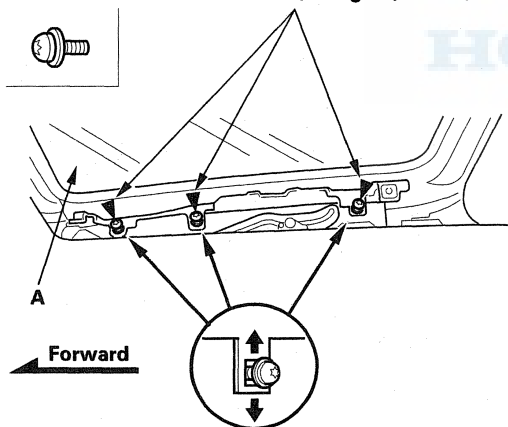
1. Remove the bracket cover from each side (see step 3 on page 20-52).
2. Using a TORX T25 bit, loosen the bolts on each side, and adjust the glass (A).

Fastener Locations

► : Bolt, 6



5 x 0.8 mm
4 N·m (0.4 kgf·m, 3 lbf·ft)



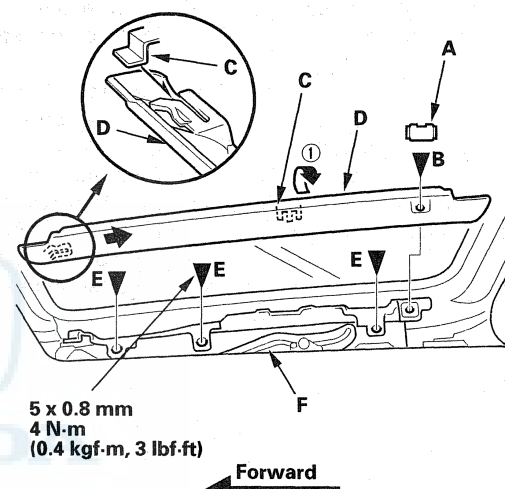
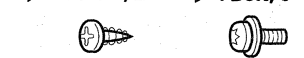
3. If necessary, repeat on the opposite side.

Glass Replacement

1. Close the glass fully.
2. Slide the sunshade all the way back.
3. Pry out the lid (A), remove the screws (B), and release the hooks (C), then remove both bracket covers (D).

Fastener Locations

B ► : Screw, 2 E ► : Bolt, 6

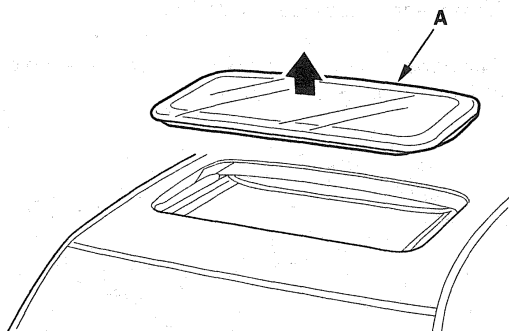


4. Using a TORX T25 bit, remove the bolts (E) from both glass brackets (F).



Wind Deflector Replacement

5. Remove the glass (A) by lifting it up. Do not damage the roof panel.



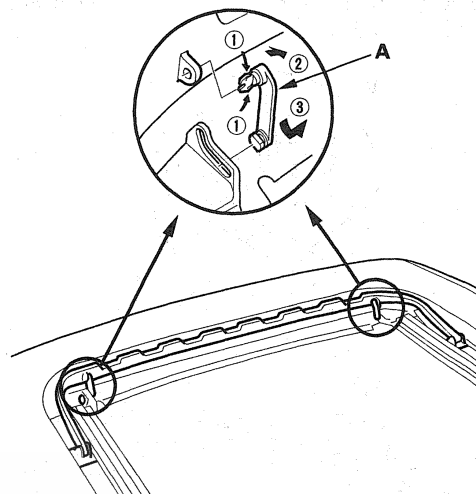
6. Install the glass in the reverse order of the removal, and adjust the glass position alignment.

7. Check for water leaks. Use free-flowing water from a hose without a nozzle. Do not use high-pressure water.

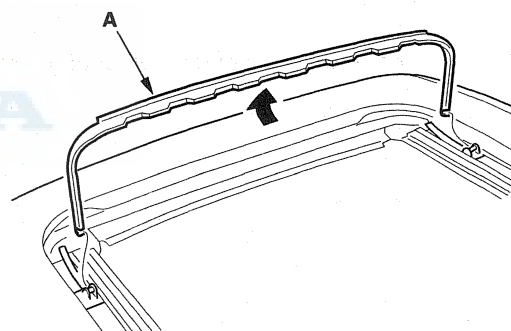
NOTE: It is normal for some water to seep past the moonroof into the moonroof frame, and exit out through the drains.

1. Open the glass fully.

2. Remove the links (A) from both sides.



3. Remove the wind deflector (A).

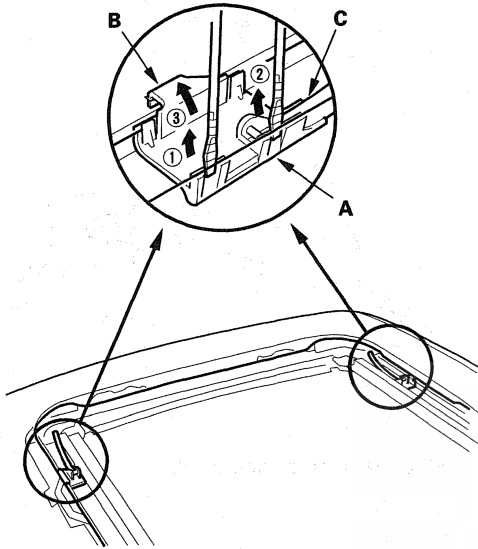


(cont'd)

Moonroof

Wind Deflector Replacement (cont'd)

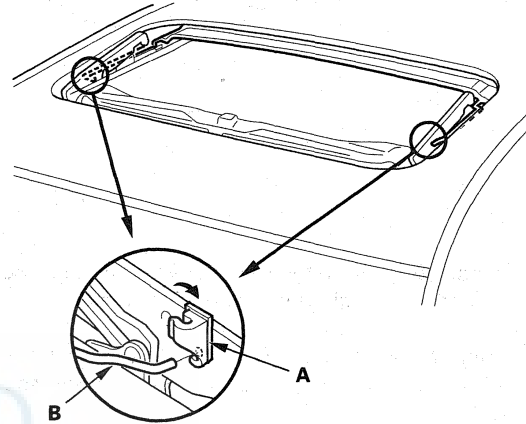
4. Pry up on the deflector bases (A) and release the hooks (B), then remove the bases with springs (C) from both sides.



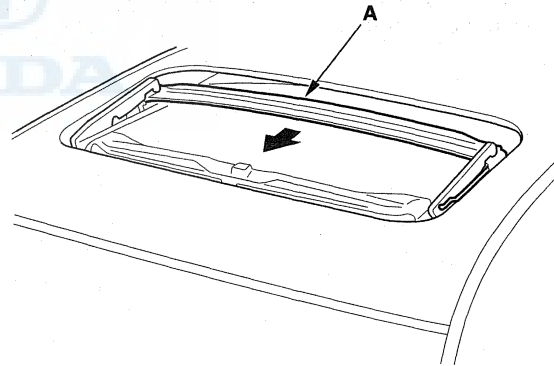
5. Install the deflector in the reverse order of removal.

Drain Channel Replacement

1. Fully close the moonroof, then place it in the full tilt-up position.
2. Remove the glass (see page 20-52).
3. Disconnect the rod clips (A), then remove the drain channel rods (B) on both sides.



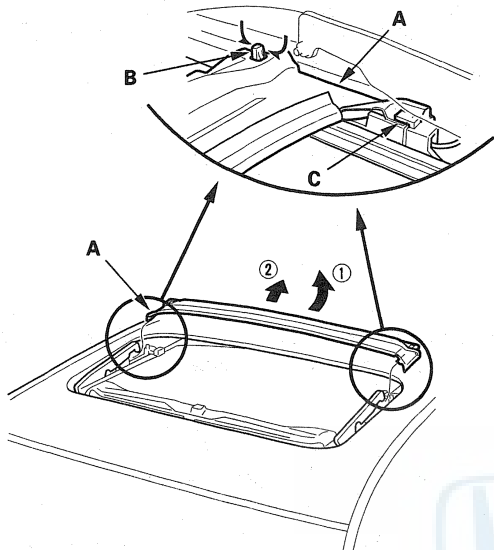
4. Slide the drain channel (A) forward.





Sunshade Replacement

5. Pull the rear edge of the drain channel (A) up while pushing both clips (B), and release the channel from both hooks (C) of the drain channel slider by pulling it rearward.

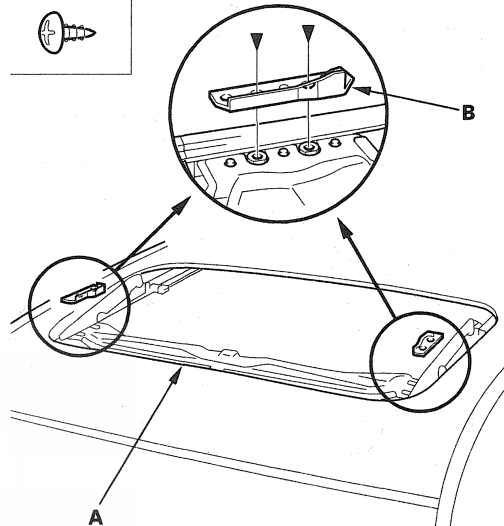


6. Remove the drain channel.
7. Install the channel in the reverse order of removal, and note these items:
 - Push the clip portions into place securely.
 - Full close the moonroof and check the glass position adjustment (see page 20-52).
8. Check for water leaks. Let the water run freely from a hose without a nozzle. Do not use a high-pressure spray.

1. Remove the drain channel (see page 20-54).
2. Slide the sunshade (A) until you can see both sunshade slider spacers (B).

Fastener Locations

► : Screw, 4



3. Remove the screws, then remove both spacers.

(cont'd)

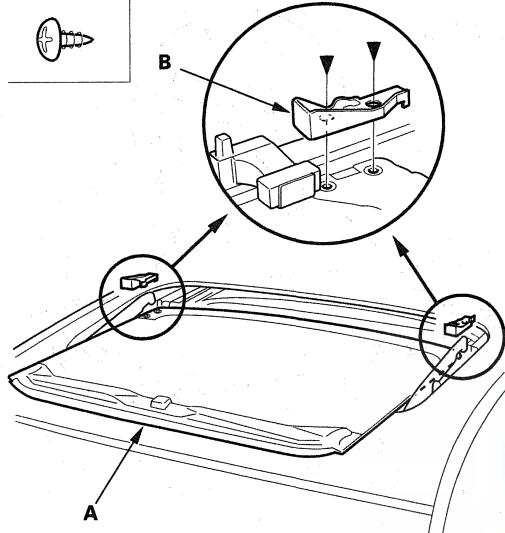
Moonroof

Sunshade Replacement (cont'd)

4. While lifting the front portion of the sunshade (A), move the sunshade forward until you can see both sunshade rear hooks (B). Do not damage the sunshade and hooks.

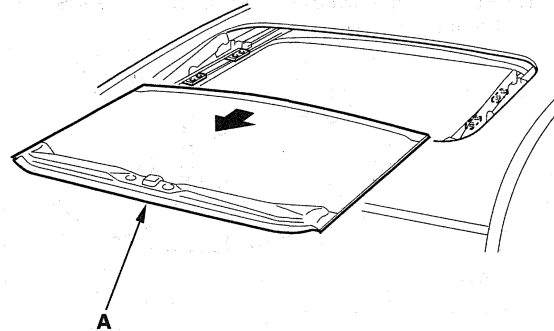
Fastener Locations

► : Screw, 4

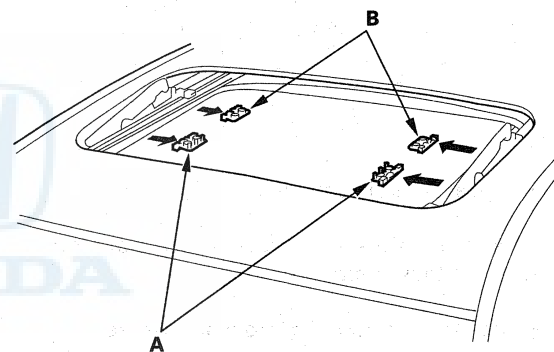


5. Remove the screws, then remove both hooks.

6. Remove the sunshade (A).



7. Remove both front sunshade base sliders (A) and both rear sunshade base sliders (B).



8. Install the sunshade in the reverse order of removal, and check the glass position adjustment (see page 20-52).

9. Check for water leaks. Let the water run freely from a hose without a nozzle. Do not use a high-pressure spray.

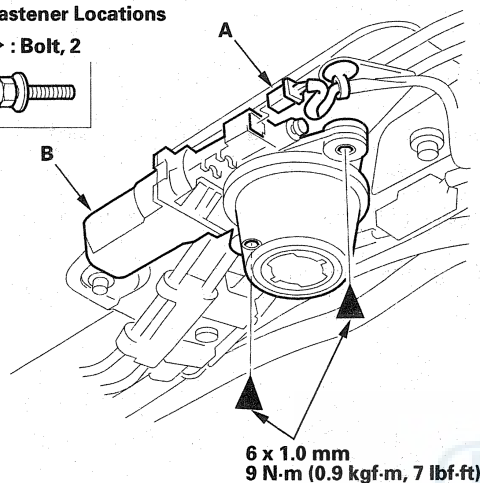
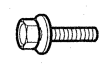


Motor Replacement

1. Remove the headliner (see page 20-83).
2. Put on gloves to protect your hands. Disconnect the connector (A), and remove the bolts, then remove the motor (B).

Fastener Locations

► : Bolt, 2



3. Install the motor in the reverse order of removal, and note these items:
 - Make sure the connector is plugged in properly.
 - Check the motor operation.

Moonroof

Frame and Drain Tube Replacement

SRS components are located in this area. Review the SRS component locations (see page 23-17) and the precautions and procedures (see page 23-19) before doing repairs or service.

1. Remove these items:

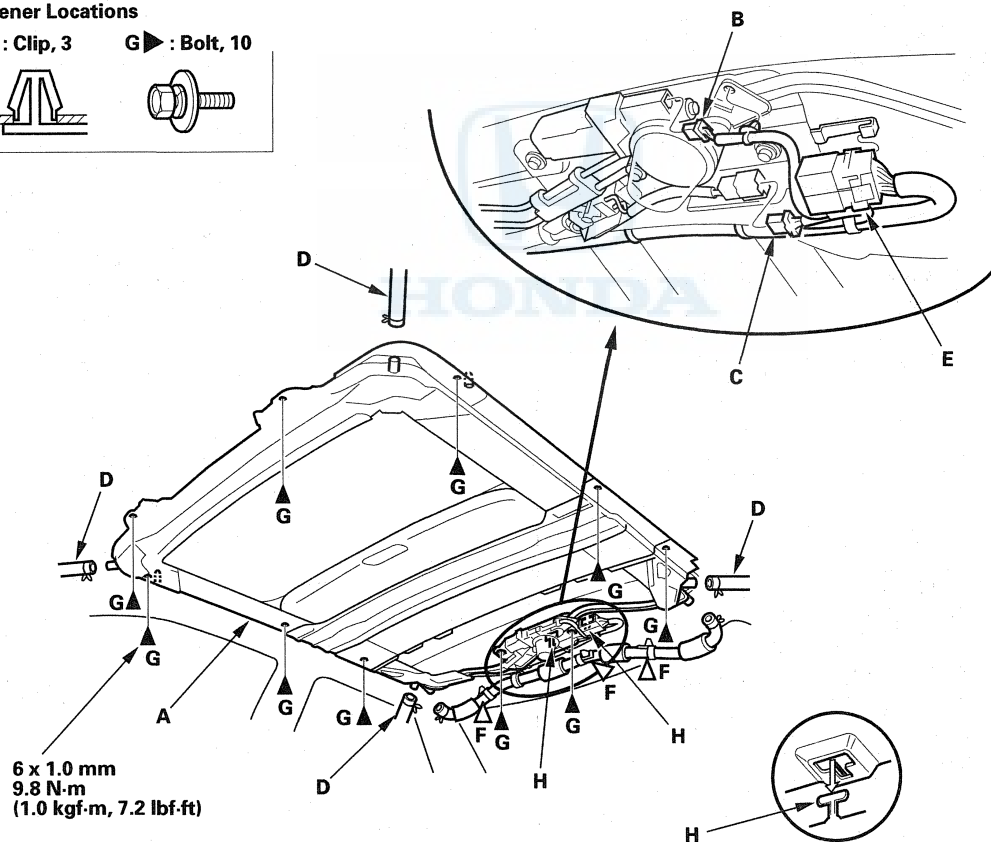
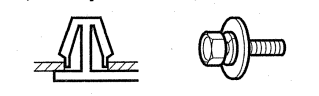
- Headliner (see page 20-83)
- Moonroof glass (see page 20-52)

2. Remove the moonroof frame (A). Put on gloves to protect your hands.

- 1 Disconnect the motor connector (B), open/close-tilt/close switch connector (C), and the drain tubes (D), and remove the moonroof relays (E).
- 2 Detach the clips (F).
- 3 With an assistant holding the frame, remove the bolts (G) starting at the rear, and release the rear hooks (H) by moving the frame forward, then remove the frame.
- 4 With the help of an assistant, carefully remove the frame through the front door opening. Take care not to damage the interior trim, body, or seat covers.

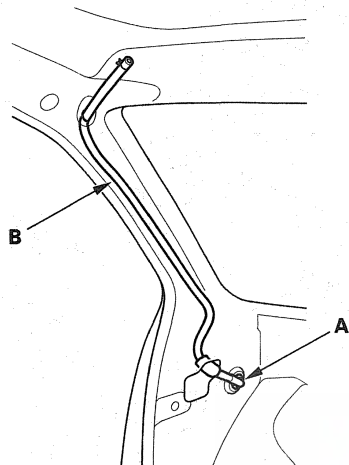
Fastener Locations

F ▷ : Clip, 3 G ▶ : Bolt, 10





3. To remove a front drain valve (A) from the body, remove the kick panel, driver's or passenger's (see page 20-65). Tie a string to the end of the front drain tube (B) then pull the drain tube down out of the A-pillar.



4. To remove a rear drain valve (A) from the body, remove these parts:

- Rear side trim panel, right side (see page 20-80)
- Rear woofer, right side (see page 22-377)

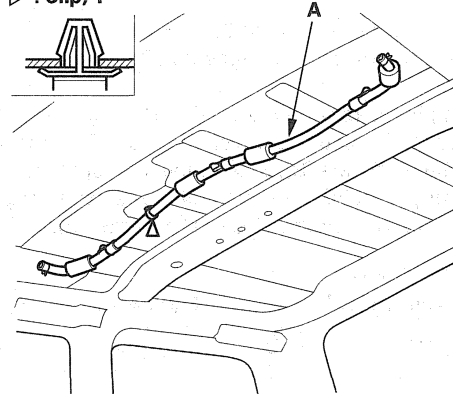
Tie a string to the top end of the rear drain tube (B), then pull back the trunk side trim panel and pull the drain tube down out of the pillar.



5. Remove the rear drain tube (A) from the body.

Fastener Location

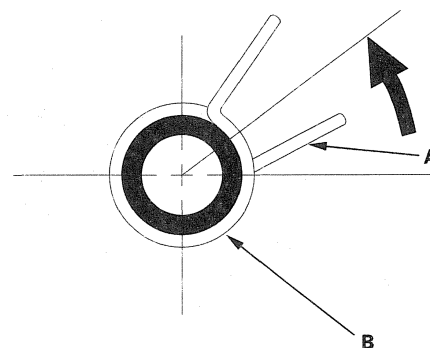
▷ : Clip, 1



6. Install the frame and drain tube in the reverse order of removal, and note these items:

- Before installing the frame, clear the drain tubes and drain valves using compressed air.
- Check the frame seal.
- Clean the surface of the frame.
- When installing the frame, first attach the rear hooks into the body holes.
- Make sure the connectors are plugged in properly.
- When connecting the drain tube, slide it over the frame nozzle at least 10 mm (0.39 in.).
- Install the tube clip (A) on the drain tube (B) as shown.

Upward



7. Check for water leaks. Let the water run freely from a hose without a nozzle. Do not use a high-pressure spray.

Moonroof

Drain Channel Slider and Cable Assembly Replacement

1. Remove the frame (see page 20-58).
2. Remove these parts from the frame:
 - Sunshade (see page 20-55)
 - Moonroof motor (see page 20-57)
3. Put on gloves to protect your hands. Remove the screws (A, B) securing the slide stops (C), and cable tube rear brackets (D), cable tube side bracket mounting bolts (E) and the cable tube mounting screws (F) from both sides of the frame (G).

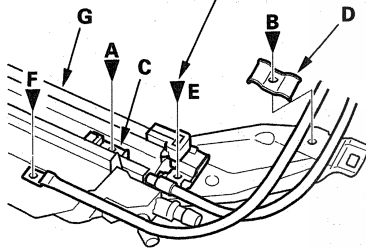
Fastener Locations

A ► : Screw, 2 B ► : Screw, 2 E ► : Bolt, 2

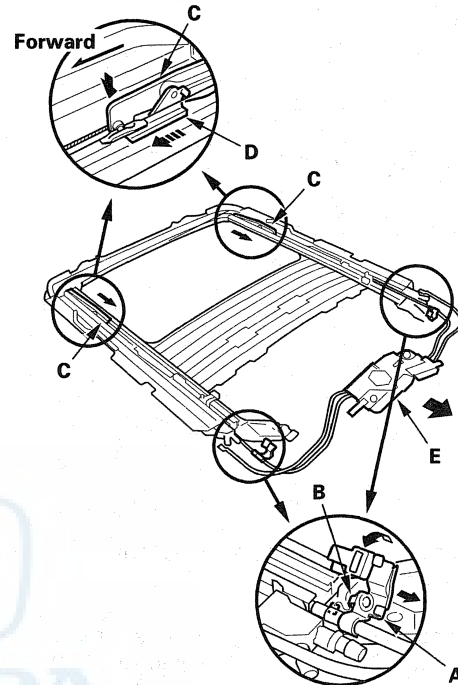


F ► : Screw, 2

6 x 1.0 mm
9.8 N·m
(1.0 kgf·m, 7.2 lbf·ft)



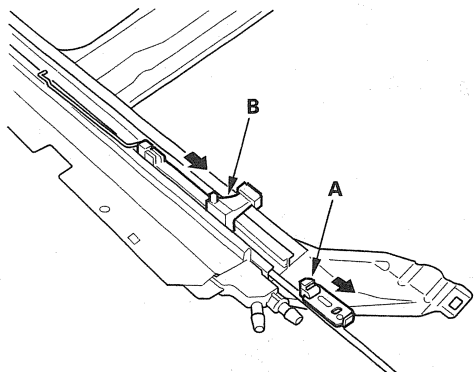
4. Turn both cable tube side brackets (A) up to release the hooks (B) from the holes in both sides of the frame.



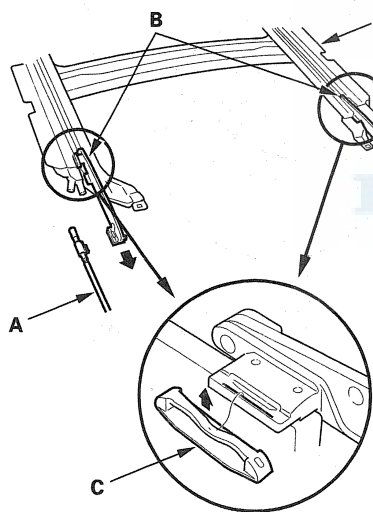
5. Pivot the glass brackets (C) down by sliding the lift up sliders (D) back, then slide both glass brackets back with the link lifters.
6. Slide the cable assembly (E) half-way.



7. Remove the slide stops (A) and the drain channel sliders (B) from both sides.

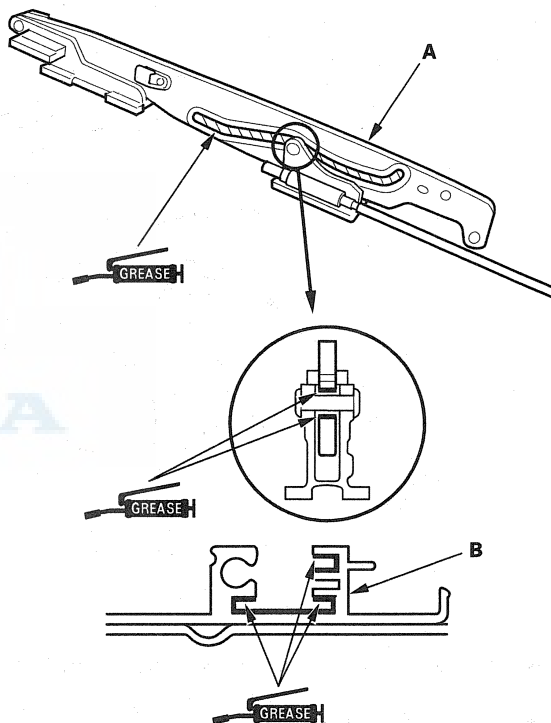


8. Slide the cable assembly (A) and both glass brackets (B) back, remove the deflector sliders (C) from both glass brackets, then remove them from the frame (D).



9. Install the slider and cable assembly in the reverse order of removal, and note these items:

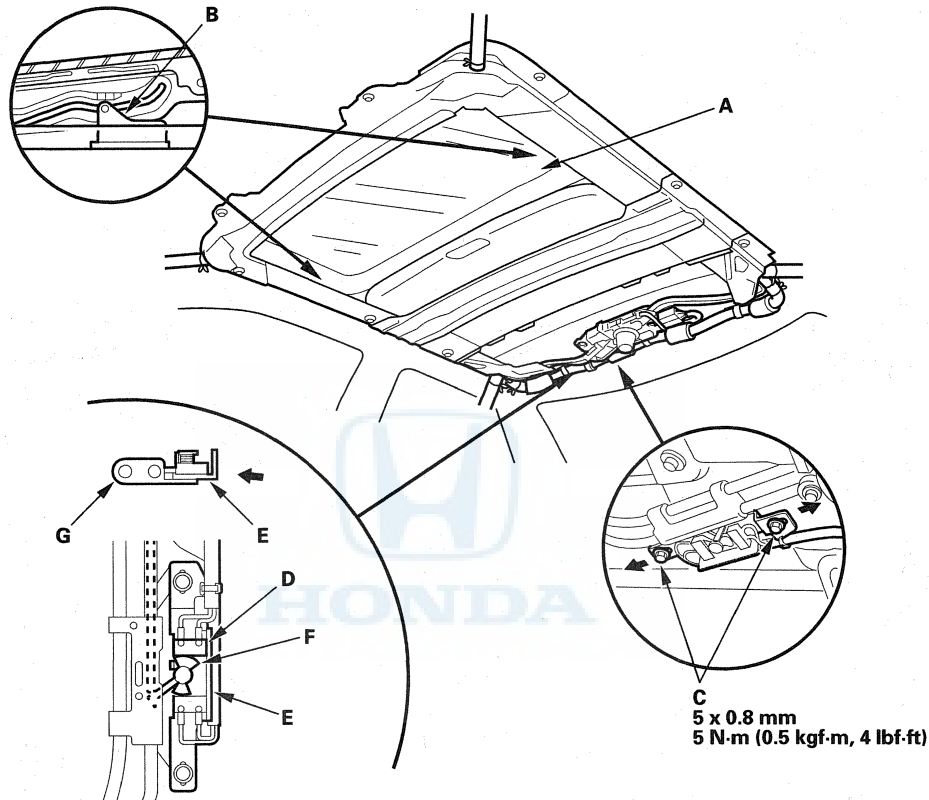
- Damaged parts should be replaced.
- Apply multipurpose grease to the glass bracket (A) and guide rail portion of the frame (B) indicated by the arrows.
- Before reinstalling the motor, make sure both link lifters are parallel, and in the fully closed position.
- Before reinstalling the motor, install the frame and glass, then check the opening drag (see page 20-63).



Moonroof

Limit Switch Adjustment

1. Remove the headliner (see page 20-83).
2. With the moonroof wrench, close the glass (A) fully:
 - Make sure both link lifters (B) are parallel, and in the position shown.
 - Check the glass fit to the roof panel and the glass position (see page 20-52).



3. With an open-end wrench, loosen the limit switch mounting bolts (C).
4. Adjust the limit switch (D):
 - Move the switch plate (E) a little at a time, then secure it at the position where you hear a faint click when the switch cams (F) pushes the limit switch (open/close).
 - Check that the switch plate contacts the switch bracket (G).
5. Check the operation of the glass (from the tilt-up position to fully closed position, from the fully open position to the fully closed position) by operating the moonroof switch: Adjust the switch plate until the glass opens and closes correctly.
6. Reinstall all remaining parts in the reverse order of removal.



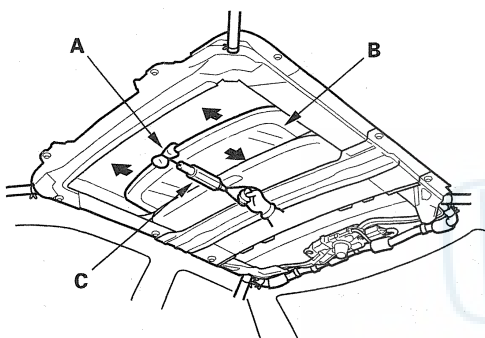
Closing Force and Opening Drag Check

1. Remove the headliner (see page 20-83).

2. Closing force check:

- With a shop towel (A) on the leading edge of the glass (B), attach a spring scale (C) as shown.
- Have an assistant hold the switch to close the glass while you measure the force required to stop it.
- Read the force as soon as the glass stops moving, then immediately release the switch and spring scale.

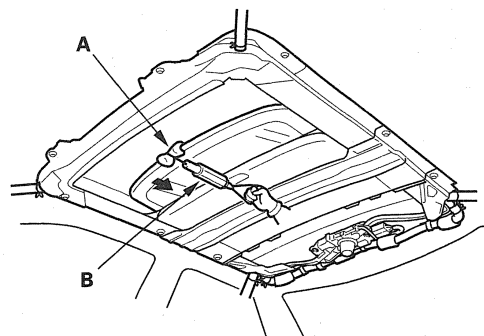
Closing force: 200–290 N (20–30 kgf, 44–66 lbf)



3. If the force is not within specification, remove the moonroof motor (see page 20-57), then check:

- The gear portion and the inner cable for breakage and damage. If the gear portion is broken, replace the motor. If the inner cable is damaged, remove the frame (see page 20-58), and replace the cable (see page 20-60).
- The moonroof motor (see page 20-57). If the motor fails to run or doesn't turn smoothly, replace it.
- The opening drag. Go to step 4.

4. Opening drag check: Protect the leading edge of the glass with a shop towel (A). Measure the effort required to open the glass using a spring scale (B) as shown.

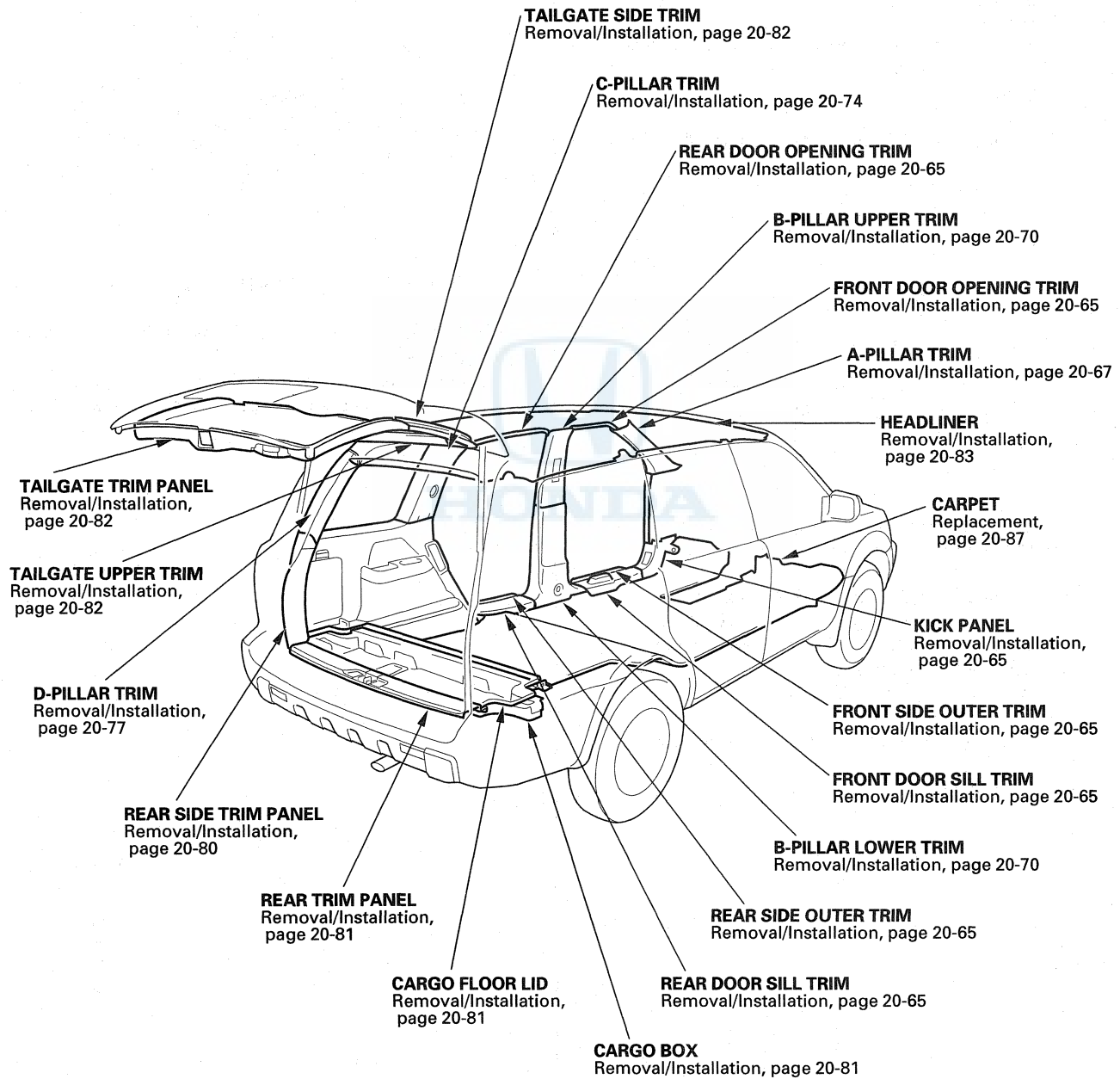


5. If the load is over 40 N (4 kgf, 9 lbf), check:

- The side clearance and glass position adjustment (see page 20-52).
- For broken or damaged sliding parts. If any sliding parts are damaged, replace them.

Interior Trim

Component Location Index





Trim Removal/Installation - Door Areas

Special Tools Required

KTC trim tool set SOJATP2014 *

* Available through the American Honda Tool and Equipment Program; call 888-424-6857

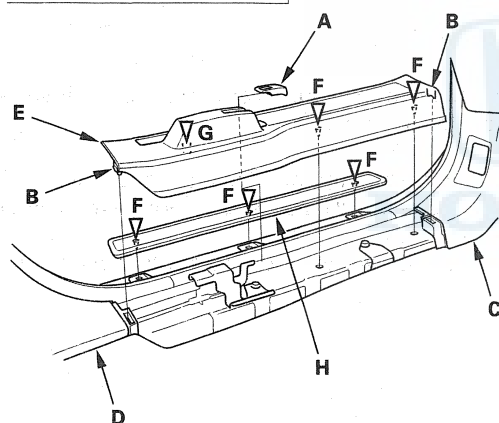
NOTE:

- Put on gloves to protect your hands.
- Take care not to bend or scratch the trim and panels.
- Use the appropriate tool from the KTC trim tool set to avoid damage when prying components.

1. Pull out the fuel fill door opener knob (A), and detach the tabs (B) from the kick panel (C) and B-pillar lower trim (D), and pull the front door sill trim (E) up by hand to detach the clips (F) and a clip (G) (driver's), then remove it.

Fastener Locations

F ▷ : Clip, 5 G ▷ : Clip, 1



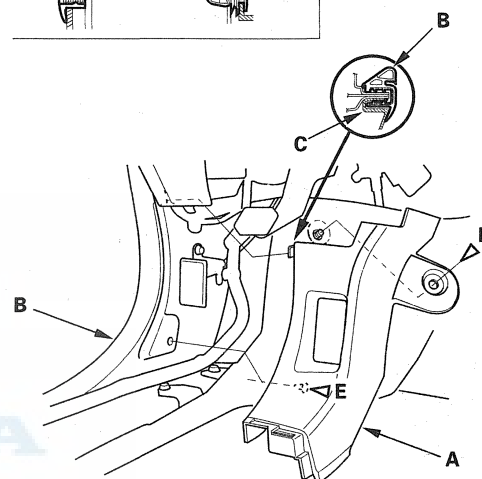
2. Pull the front side outer trim (H) by hand to detach the clips, then remove it.

3. Remove the kick panel (A).

- 1 Pull out the door opening trim (B) as needed from the kick panel hook (C) and the door opening flange.
- 2 Release the clip (D).
- 3 Pull the kick panel back by hand to detach the clip (E), then remove it.

Fastener Locations

D ▷ : Clip, 1 E ▷ : Clip, 1 (White)

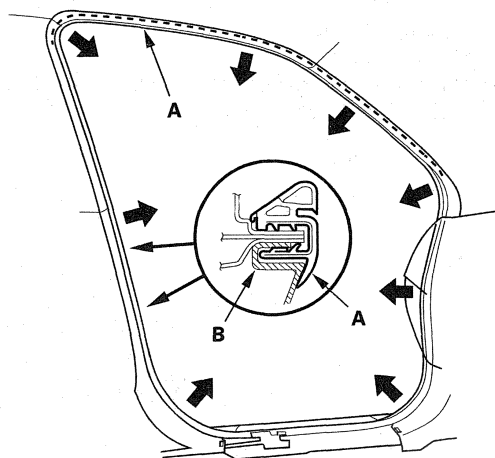


(cont'd)

Interior Trim

Trim Removal/Installation - Door Areas (cont'd)

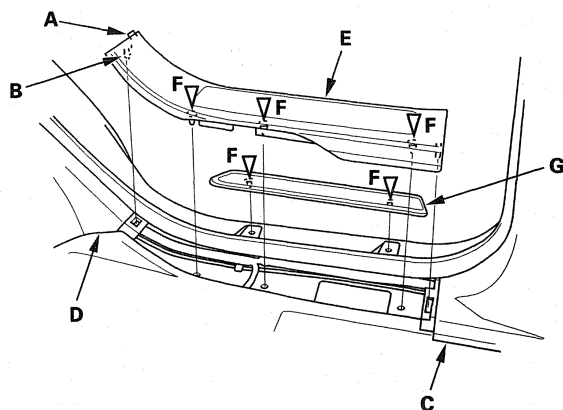
4. Pull out the front door opening trim (A) from the trim hooks (B) and around the front door opening flange, then remove the trim.



5. Detach the tab (A) and hook (B) from the B-pillar lower trim (C) and rear side trim panel (D), and pull the rear door sill trim (E) up by hand to detach the clips (F), then remove it.

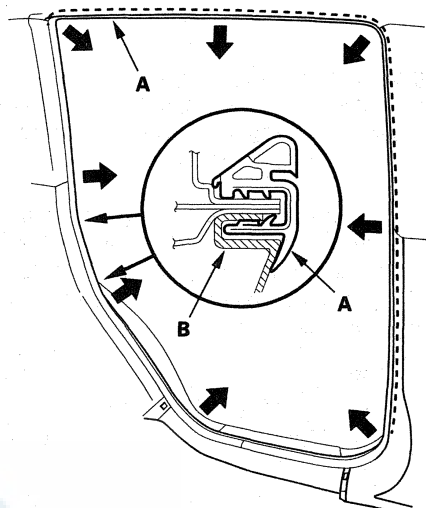
Fastener Locations

F ▷ : Clip, 5 (White)



6. Pull the rear side outer trim (G) by hand to detach the clips, then remove it.

7. Pull out the rear door opening trim (A) from the trim hooks (B) and around the rear door opening flange, then remove the trim.



8. Install the trim in the reverse order of removal, and note these items:

- Check if the clips are damaged or stress-whitened, and if necessary, replace them with new ones.
- Push the clips and hooks into place securely.



Trim Removal/Installation - Pillar Areas

Special Tools Required

KTC trim tool set SOJATP2014 *

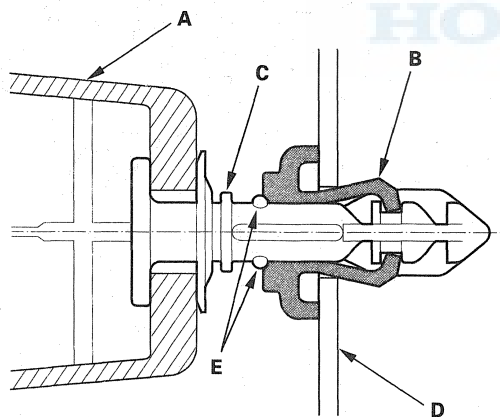
* Available through the American Honda Tool and Equipment Program; call 888-424-6857

A-Pillar Trim

SRS components are located in this area. Review the SRS component locations (see page 23-17) and the precautions and procedures (see page 23-19) before doing repairs or service.

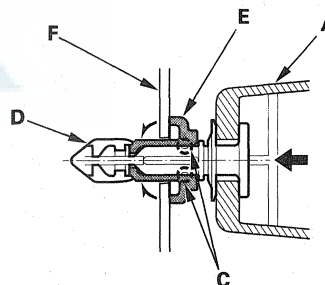
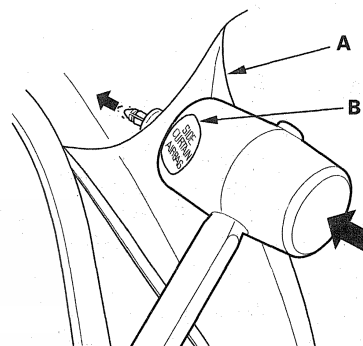
NOTE:

- Follow the A-pillar trim installation procedure carefully; improper installation could cause the side curtain airbag to deploy improperly and possibly cause injury.
- Put on gloves to protect your hands.
- Use the appropriate tool from the KTC trim tool set to avoid damage when prying components.
- Take care not to scratch the trim and panels.
- The upper clip in the A-pillar trim (A) consists of a grommet (B) and a pin (C). The grommet expanded with the pin secures it to the body panel (D). The projections (E) on the pin is broken during removal, so the clip must be replaced with a new one when the trim is reinstalled.



1. Pull the front door opening seal away from the A-pillar as needed (see step 4 on page 20-66).
2. Hit the upper clip in the A-pillar trim (A) with a rubber mallet. The clip is under the "SIDE CURTAIN AIRBAG" mark (B). Hitting the clip breaks the projections (C) on the pin (D) and pushes it into the grommet (E) and against the body (F). The grommet becomes narrow.

NOTE: The clip must be replaced with a new one when the A-pillar trim is reinstalled.

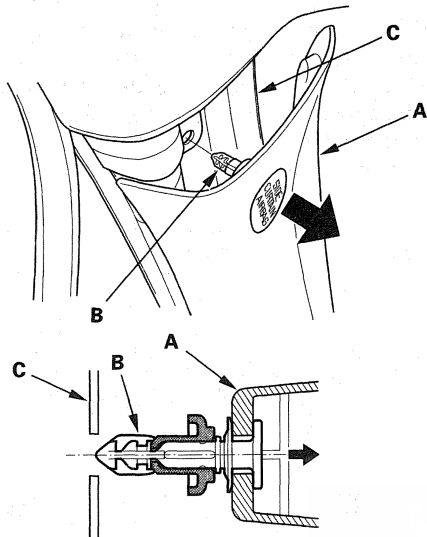


(cont'd)

Interior Trim

Trim Removal/Installation - Pillar Areas (cont'd)

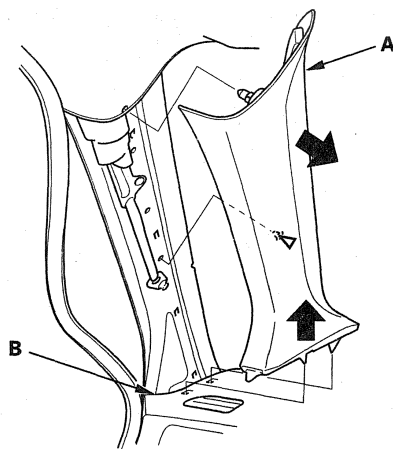
3. Pull the top of the A-pillar trim (A) back by hand to remove the upper clip (B) from the body (C).



4. Remove the A-pillar trim (A). Pull the A-pillar trim by hand to detach the clips, then pull the trim up from the dashboard (B).

Fastener Location

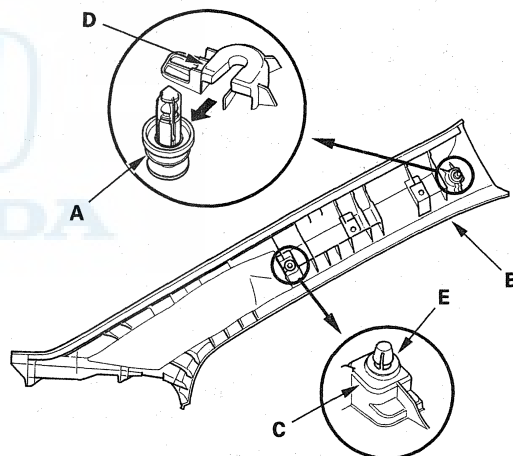
▷ : Clip, 1 (Black)



5. If the side curtain airbag has deployed, replace the A-pillar trim with a new one. If the tweeter is on the removed A-pillar trim and it is reusable.

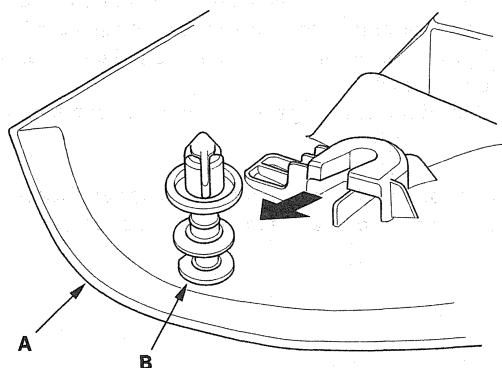
6. If the side curtain airbag has not been deployed, remove the upper clip (A) from the removed A-pillar trim (B). Then check the trim:

- To prevent the side curtain airbags from deploying, improperly and possibly causing injury, inspect the A-pillar trim and replace it if it has any of these types of damage:
 - Any cracks, deformations, or stress-whitened in the A-pillar trim
 - Any cracks or stress-whitenings in the clip seating surfaces (C, D)
- Check if clip (E) is damaged or stress-whitened, and if necessary, replace it with new one.
- Replace the upper clip with a new one because it was damaged.



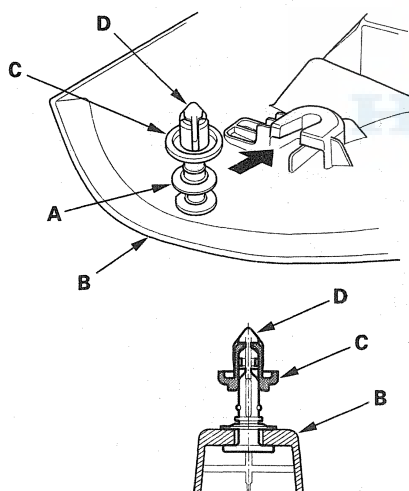


7. Before installing the A-pillar trim (A), carefully remove the upper clip (B).



8. Check the overlap between the headliner and A-pillar trim, and if necessary, adjust it (see page 23-200).

9. Carefully reinstall the upper clip (A) to the A-pillar trim (B). Be sure that the grommet (C) is nearest to the top of the pin (D) as shown.



10. Reinstall the A-pillar trim (A).

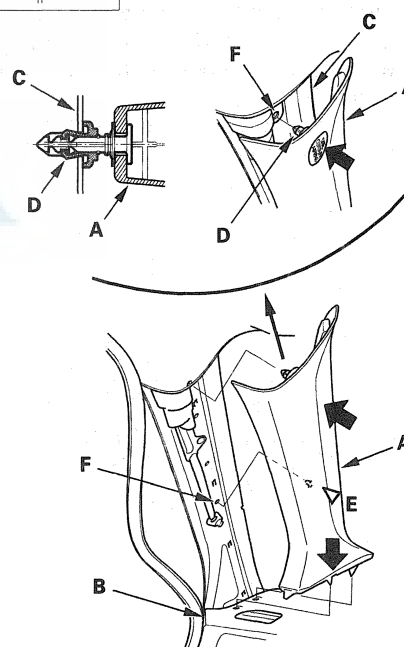
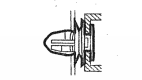
- 1 Insert the bottom of the trim into the dashboard (B).
- 2 Place the trim over the A-pillar (C), and fit its upper clip (D) and lower clip (E) into holes (F) in the A-pillar, then lightly push the trim into place.

NOTE:

- Make sure the side curtain airbag isn't tucked down under the clips and ribs.
- Push lightly on the upper clip. If you push too hard, the clip will be damaged, and it will not hold the trim properly.

Fastener Location

E ▷ : Clip, 1
(White)



11. Reinstall the front door opening seal.

Interior Trim

Trim Removal/Installation - Pillar Areas (cont'd)

Special Tools Required

KTC trim tool set SOJATP2014 *

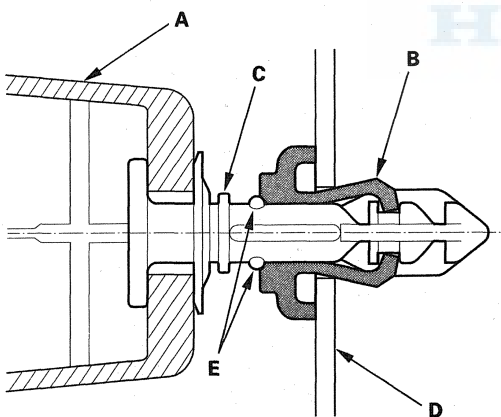
* Available through the American Honda Tool and Equipment Program; call 888-424-6857

B-Pillar Upper/Lower Trim

SRS components are located in this area. Review the SRS component locations (see page 23-17) and the precautions and procedures (see page 23-19) before doing repairs or service.

NOTE:

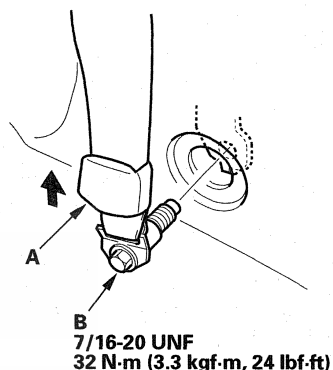
- Follow the B-pillar upper trim installation procedure carefully; improper installation could cause the side curtain airbag to deploy improperly and possibly cause injury.
- Put on gloves to protect your hands.
- Use the appropriate tool from the KTC trim tool set to avoid damage when prying components.
- Take care not to scratch the trim and panels.
- The upper clip in the B-pillar upper trim (A) consists of a grommet (B) and a pin (C). The grommet expanded with the pin secures it to the body panel (D). The projections (E) on the pin is broken during removal, so the clip must be replaced with a new one when the trim is reinstalled.



1. Remove these items:

- Front door sill trim (see step 1 on page 20-65)
- Rear door sill trim (see step 5 on page 20-66)
- Front door opening trim, as needed (see step 4 on page 20-66)
- Rear door opening trim, as needed (see step 7 on page 20-66)

2. Driver's: Pull the front seat belt lower anchor cover (A) up, and remove the lower anchor bolt (B).

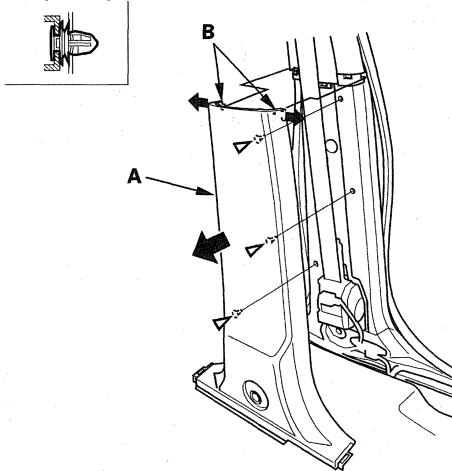


3. Remove the B-pillar lower trim (A).

- 1 While pulling both upper edges of the B-pillar lower trim outward, pull the top of the trim back to release the hooks (B).
- 2 Detach the clips.

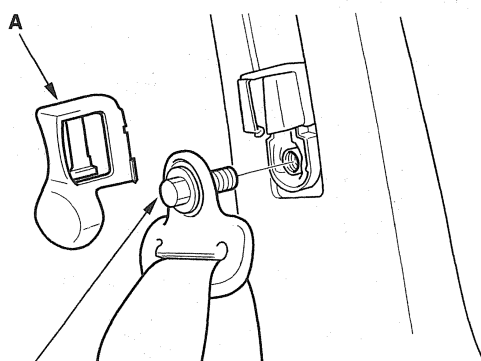
Fastener Locations

▷ : Clip, 3 (White)





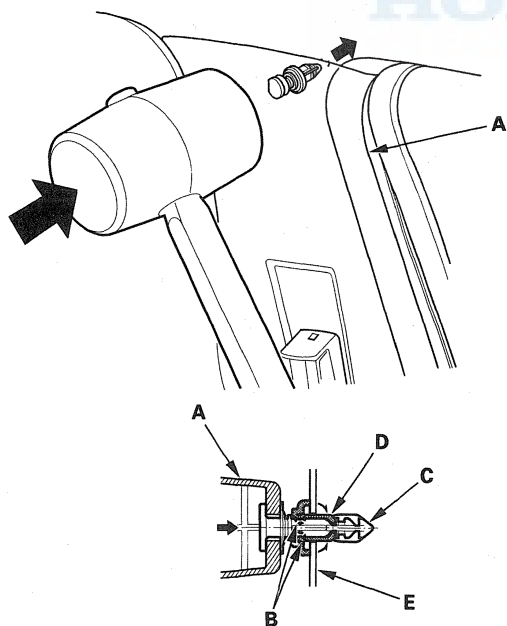
4. Remove the upper anchor cover (A), and remove the upper anchor bolt (B).



B
7/16-20 UNF
32 N·m (3.3 kgf·m, 24 lbf·ft)

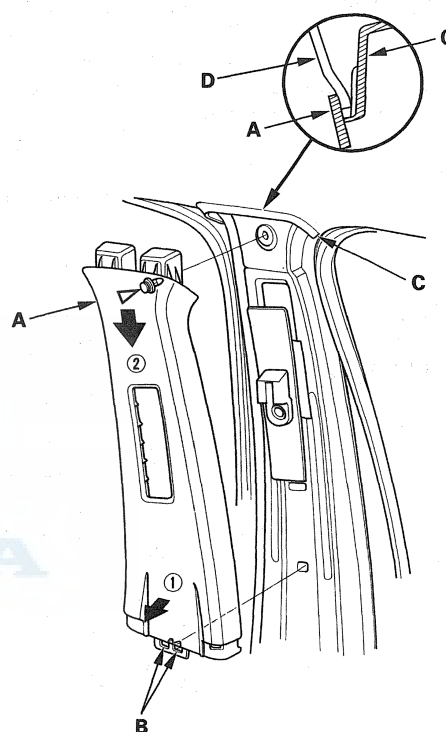
5. Hit the upper clip in the B-pillar upper trim (A) with a rubber mallet. Hitting the clip breaks the projections (B) on the pin (C) and pushes it into the grommet (D) and against the body (E). The grommet becomes narrow.

NOTE: The clip must be replaced with a new one when the A-pillar trim is reinstalled.



6. Remove the B-pillar upper trim (A).

- 1 Pull the bottom of the trim back while releasing the lower hooks (B).
- 2 Detach the clip.
- 3 Lower the trim to release the upper two hooks (C) from the body, and disengage the top of the trim from the edge of the headliner (D).



(cont'd)

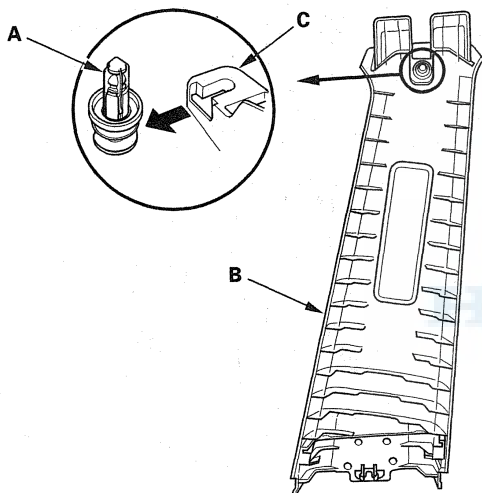
Interior Trim

Trim Removal/Installation - Pillar Areas (cont'd)

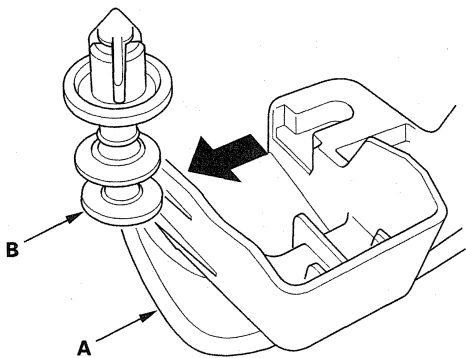
7. If the side curtain airbag has deployed, replace the B-pillar upper trim with a new one.

8. If the side curtain airbag has not been deployed, remove the upper clip (A) from the removed B-pillar upper trim (B). Then check the trim:

- To prevent the side curtain airbags from deploying, improperly and possibly causing injury, inspect the B-pillar upper trim and replace it if has any of these types of damage:
 - Any cracks, deformations, or stress-whitened areas in the B-pillar upper trim
 - Any cracks or stress-whitenings in the clip seating surfaces (C)
- Replace the upper clip with a new one because it was damaged.

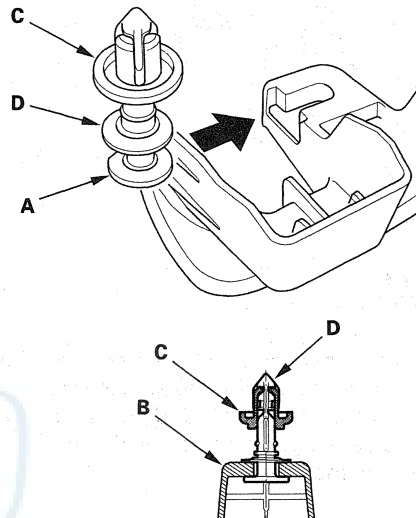


9. Before installing the B-pillar upper trim (A), carefully remove the clip (B).



10. Check the overlap between the headliner and B-pillar upper trim, and if necessary, adjust it (see page 23-200).

11. Carefully reinstall the upper clip (A) to the B-pillar upper trim (B). Be sure that the grommet (C) is nearest to the top of the pin (D) as shown.



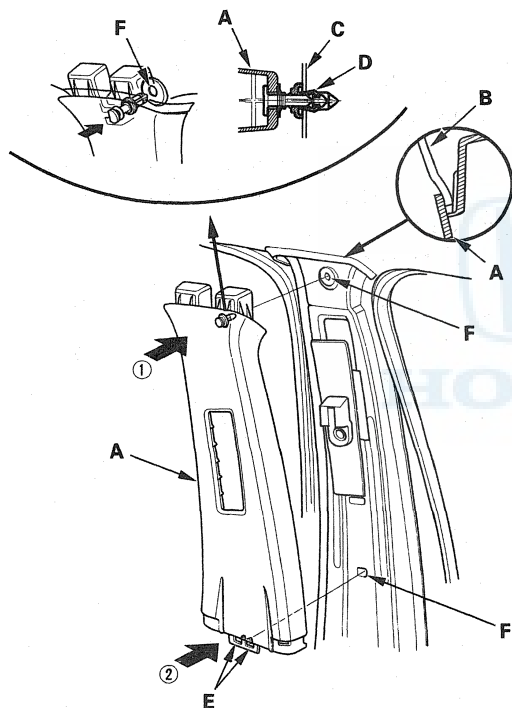


12. Reinstall the B-pillar upper trim (A).

- 1 Insert the upper of the trim into the headliner (B).
- 2 Place the trim over the B-pillar (C), and fit its clip (D) and hooks (E) into holes (F) in the B-pillar, then lightly push the trim into place.

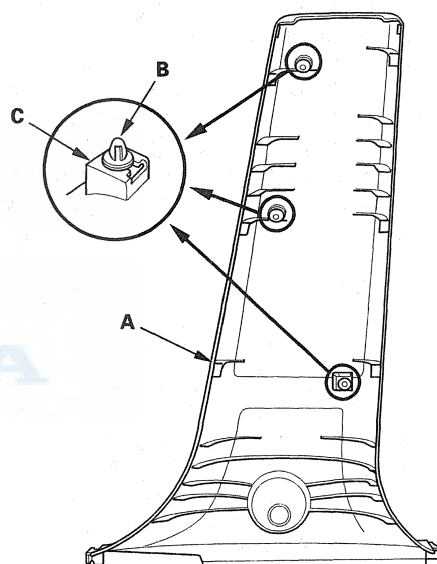
NOTE:

- Make sure the side curtain airbag isn't tucked down under the clips and ribs.
- Push lightly on the upper clip. If you push too hard, the clip will be damaged, and it will not hold the trim properly.



13. Install the B-pillar lower trim (A) in the reverse order of removal, and note these items:

- Check if the clips (B) are damaged or stress-whitened, and if necessary, replace them with new ones.
- To prevent the side curtain airbags from deploying improperly and possibly causing injury, inspect removed pieces and replace them if they are damaged:
 - Any cracks, deformations, or stress-whitened areas in the B-pillar lower trim
 - Any cracks, or stress-whitenings in the clip seating surfaces (C)
- Push the clips into place securely.



14. Install the trim in the reverse order of removal, and note these items:

- Apply liquid thread lock to the front seat belt upper anchor bolt before installation.
- Before installing the anchor bolt, make sure there are no twists or kinks in the seat belt.

Interior Trim

Trim Removal/Installation - Pillar Areas (cont'd)

Special Tools Required

KTC trim tool set SOJATP2014 *

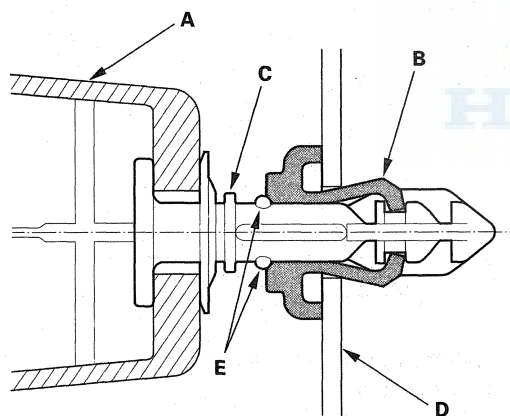
* Available through the American Honda Tool and Equipment Program; call 888-424-6857

C-Pillar Trim

SRS components are located in this area. Review the SRS component locations (see page 23-17) and the precautions and procedures (see page 23-19) before doing repairs or service.

NOTE:

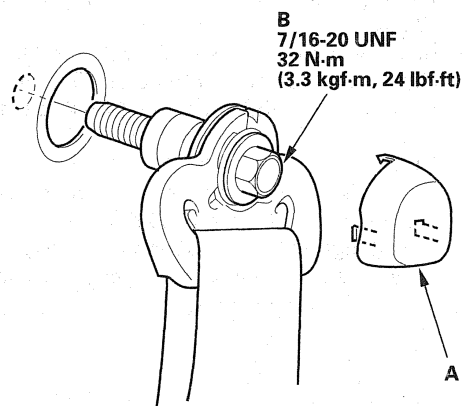
- Put on gloves to protect your hands.
- Take care not to bend or scratch the trim and panels.
- Use the appropriate tool from the KTC trim tool set to avoid damage when prying components.
- Take care not to scratch the trim and panels.
- The upper clip in the C-pillar trim (A) consists of a grommet (B) and a pin (C). The grommet expanded with the pin secures it to the body panel (D). The projections (E) on the pin is broken during removal, so the clip must be replaced with a new one when the trim is reinstalled.



1. Remove these items:

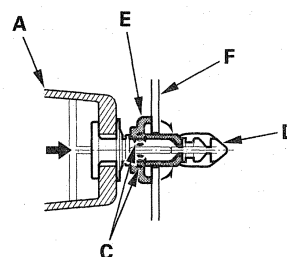
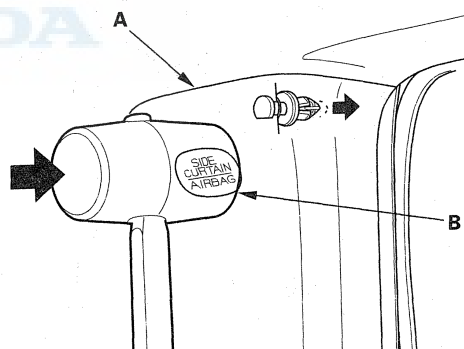
- Rear door opening trim, as needed (see step 4 on page 20-66)
- Rear side trim panel, upper portion as needed (see step 7 on page 20-66)

2. Remove the upper anchor cap (A), and remove the upper anchor bolt (B).



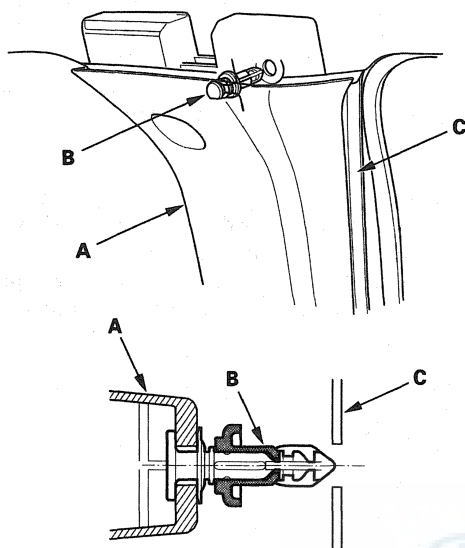
3. Hit the upper clip in the C-pillar trim (A) with a rubber mallet. The clip is under the "SIDE CURTAIN AIRBAG" mark (B). Hitting the clip breaks the projections (C) on the pin (D) and pushes it into the grommet (E) and against the body (F). The grommet becomes narrow.

NOTE: The clip must be replaced with a new one when the C-pillar trim is reinstalled.





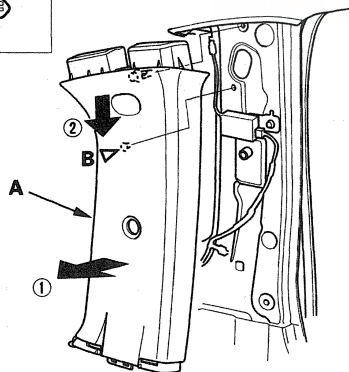
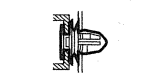
4. Pull the top of the C-pillar trim (A) back by hand to remove the upper clip (B) from the body (C).



5. Remove the C-pillar trim (A). Pull the C-pillar trim by hand to detach the clip (B).

Fastener Location

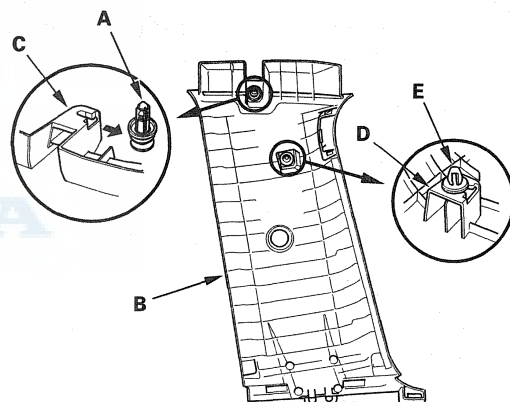
B ▷ : Clip, 1 (White)



6. If the side curtain airbag has deployed, replace the C-pillar trim with a new one.

7. If the side curtain airbag has not been deployed, remove the upper clip (A) from the removed C-pillar trim (B). Then check the trim:

- To prevent the side curtain airbags from deploying, improperly and possibly causing injury, inspect the C-pillar trim and replace it if it has any of these types of damage:
 - Any cracks, deformations, or stress-whitened areas in the C-pillar trim
 - Any cracks or stress-whitenings in the clip seating surfaces (C, D)
- Check if the clip (E) is damaged or stress-whitened, and if necessary, replace it with new one.
- Replace the upper clip with a new one because it was damaged.

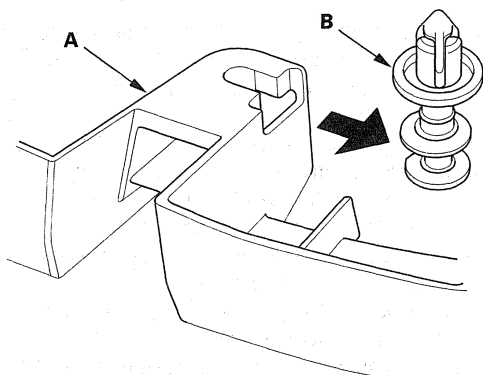


(cont'd)

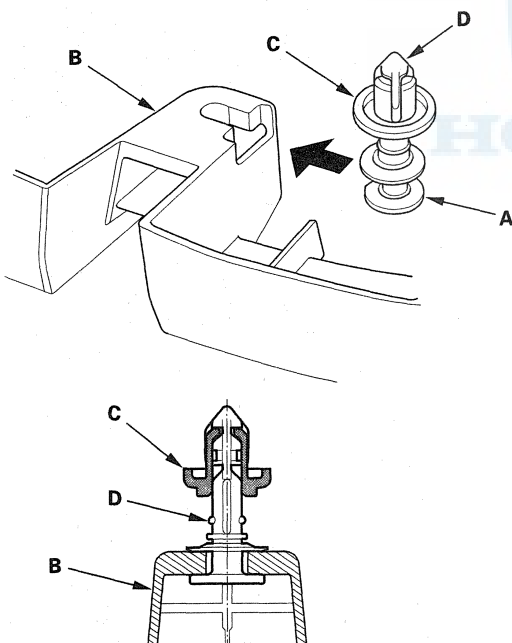
Interior Trim

Trim Removal/Installation - Pillar Areas (cont'd)

8. Before installing the C-pillar trim (A), carefully remove the upper clip (B).



9. Check the overlap between the headliner and C-pillar trim, and if necessary, adjust it (see page 23-200). Carefully reinstall the upper clip (A) to the C-pillar trim (B). Be sure that the grommet (C) is nearest to the top of the pin (D) as shown.



10. Reinstall the C-pillar trim (A).

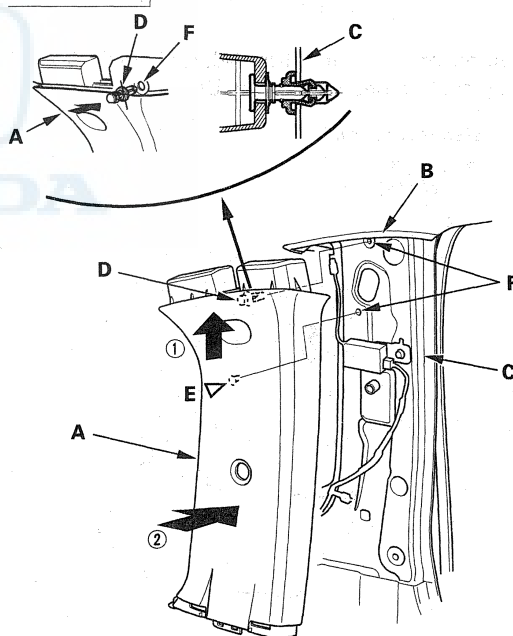
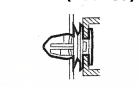
- 1 Insert the upper of the trim into the headliner (B).
- 2 Place the trim over the C-pillar (C), and fit its upper clip (D) and lower clip (E) into holes (F) in the C-pillar, then lightly push the trim into place.

NOTE:

- Make sure the side curtain airbag isn't tucked down under the clips and ribs.
- Push lightly on the upper clip. If you push too hard, the clip will be damaged, and it will not hold the trim properly.

Fastener Location

E ▷ : Clip, 1 (White)



11. Reinstall the rear door opening seal.



Special Tools Required

KTC trim tool set SOJATP2014 *

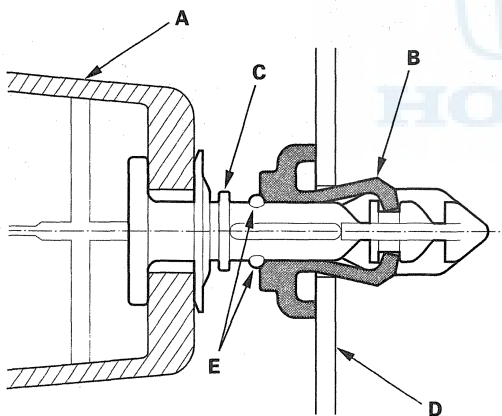
* Available through the American Honda Tool and Equipment Program; call 888-424-6857

D-Pillar Trim

SRS components are located in this area. Review the SRS component locations (see page 23-17) and the precautions and procedures (see page 23-19) before doing repairs or service.

NOTE:

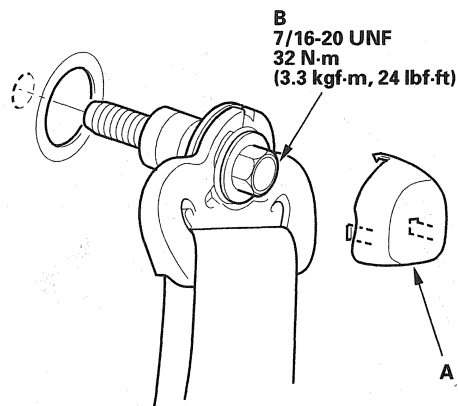
- Put on gloves to protect your hands.
- Take care not to bend or scratch the trim and panels.
- Use the appropriate tool from the KTC trim tool set to avoid damage when prying components.
- Take care not to scratch the trim and panels.
- The upper clip in the D-pillar trim (A) consists of a grommet (B) and a pin (C). The grommet expanded with the pin secures it to the body panel (D). The projections (E) on the pin is broken during removal, so the clip must be replaced with a new one when the trim is reinstalled.



1. Remove these items:

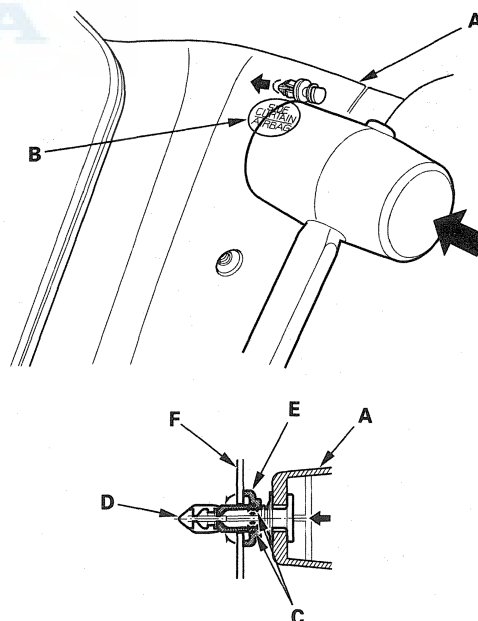
- Rear door opening trim, as needed (see step 7 on page 20-66)
- Rear side trim panel, upper portion as needed (see page 20-80)

2. Remove the upper anchor cap (A), and remove the upper anchor bolt (B).



3. Hit the upper clip in the D-pillar trim (A) with a rubber mallet. The clip is under the "SIDE CURTAIN AIRBAG" mark (B). Hitting the clip breaks the projections (C) on the pin (D) and pushes it into the grommet (E) and against the body (F). The grommet becomes narrow.

NOTE: The clip must be replaced with a new one when the D-pillar trim is reinstalled.

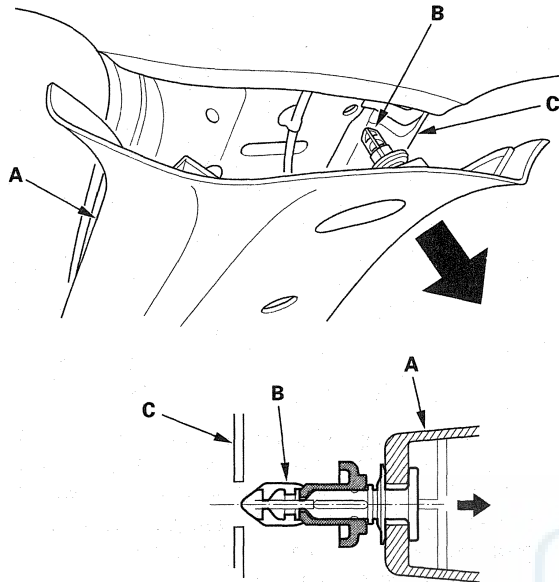


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Interior Trim

Trim Removal/Installation - Pillar Areas (cont'd)

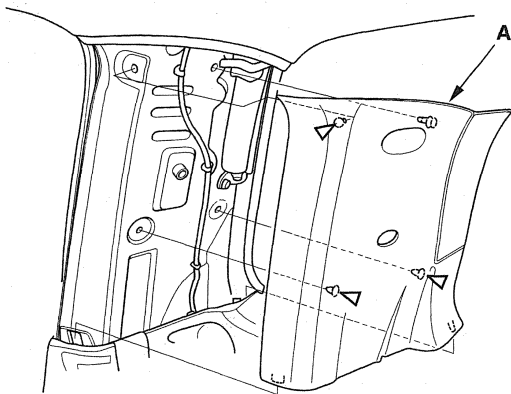
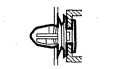
4. Pull the top of the D-pillar trim (A) back by hand to remove the upper clip (B) from the body (C).



5. Remove the D-pillar trim (A). Pull the D-pillar trim by hand to detach the clips.

Fastener Locations

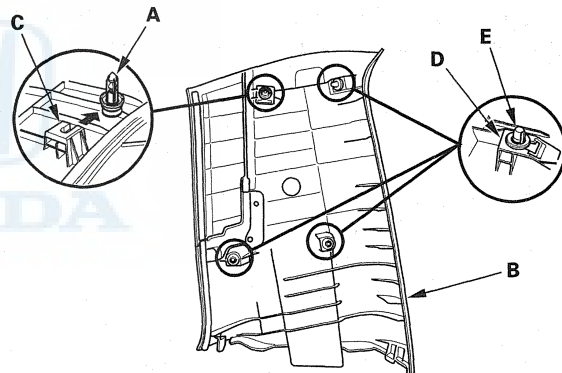
▷ : Clip, 3 (White)



6. If the side curtain airbag has deployed, replace the D-pillar trim with a new one.

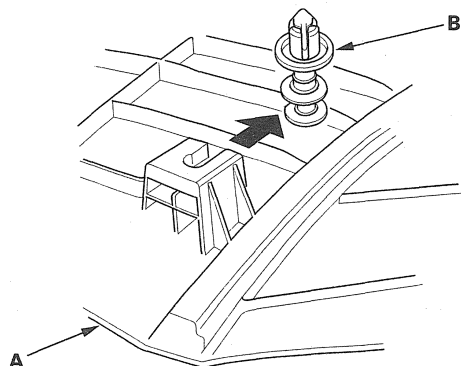
7. If the side curtain airbag has not been deployed, remove the upper clip (A) from the removed D-pillar trim (B). Then check the trim:

- To prevent the side curtain airbags from deploying, improperly and possibly causing injury, inspect the D-pillar trim and replace it if it has any of these types of damage:
 - Any cracks, deformations, or stress-whitened areas in the D-pillar trim
 - Any cracks or stress-whitenings in the clip seating surfaces (C, D)
- Check if the clips (E) are damaged or stress-whitened, and if necessary, replace them with new ones.
- Replace the upper clip with a new one because it was damaged.

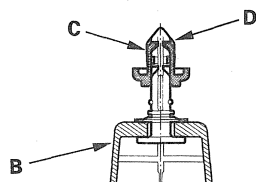
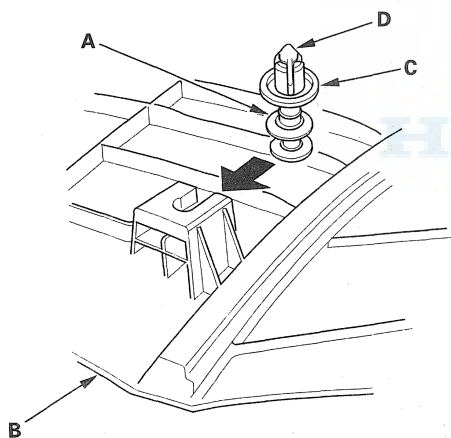




8. Before installing the D-pillar trim (A), carefully remove the upper clip (B).



9. Check the overlap between the headliner and D-pillar trim, and if necessary, adjust it (see page 23-200).
Carefully reinstall the upper clip (A) to the D-pillar trim (B). Be sure that the grommet (C) is nearest to the top of the pin (D) as shown.

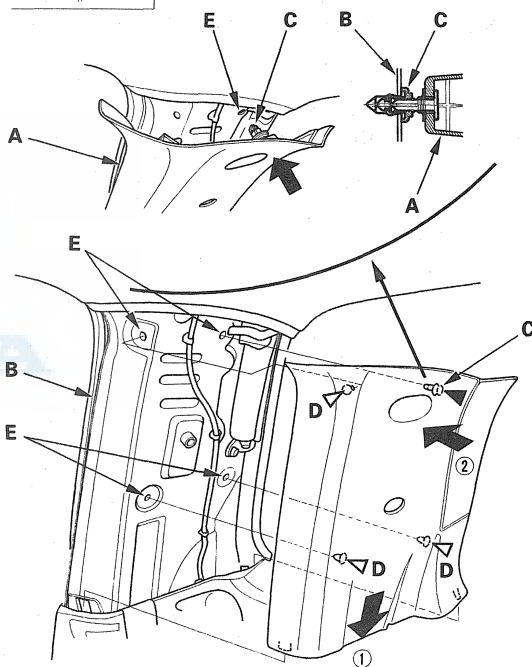


10. Reinstall the D-pillar trim (A). Place the trim over the D-pillar (B), and fit its upper clip (C) and lower clips (D) into holes (E) in the D-pillar, then lightly push the trim into place.

- Make sure the side curtain airbag isn't tucked down under the clips and ribs.
- Push lightly on the upper clip. If you push too hard, the clip will be damaged, and it will not hold the trim properly.

Fastener Locations

D ▷ : Clip, 3 (White)



11. Reinstall the rear door opening seal.

Interior Trim

Trim Removal/Installation - Rear Side Area

Special Tools Required

KTC trim tool set SOJATP2014 *

* Available through the American Honda Tool and Equipment Program; call 888-424-6857

NOTE:

- Put on gloves to protect your hands.
- Use the appropriate tool from the KTC trim tool set to avoid damage when prying components.
- Take care not to bend or scratch the trim and panels.

1. Remove these items, then remove the trim in the sequence shown:

- Rear door sill trim (see page 20-65)
- D-pillar trim (see page 20-77)
- Rear trim panel (see page 20-81)
- Third row seat (see page 20-128)

2. Install the trim in the reverse order of removal, and note these items:

- Check if the clips are damaged or stress-whitened, and if necessary, replace them with new ones.
- Push the clips and hooks into place securely.
- Make sure there are no pinches in the belt.

Fastener Locations

A ▷ : Clip, 6

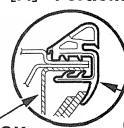
B ▷ : Clip, 2

C ▶ : Screw,
Left, 4
Right, 5

D ► : Screw, 3



[A] Portions



HOOK

OPENING TRIM

✓ **Right side only**

RIGHT REAR SIDE TRIM PANEL

LID

LID

REAR DOOR OPENING TRIM

 $\gamma[A]$

ACCESS LID

BRAKE LIGHT FAILURE SENSOR CONNECTOR

TIE DOWN HOOK

JACK

JACK COVER

The back of right rear side trim panel

**POWER OUTLET
CONNECTOR
(Left side only)**

TAILGATE WEATHERSTRIP **LEFT REAR SIDE TRIM PANEL**

LEFT REAR SIDE TRIM PANEL

HOOKS

TIE DOW HOOKS



Trim Removal/Installation - Cargo Area

Special Tools Required

KTC trim tool set SOJATP2014 *

* Available through the American Honda Tool and Equipment Program; call 888-424-6857

NOTE:

- Put on gloves to protect your hands.
- Use the appropriate tool from the KTC trim tool set to avoid damage when prying components.
- Take care not to bend or scratch the trim and panels.

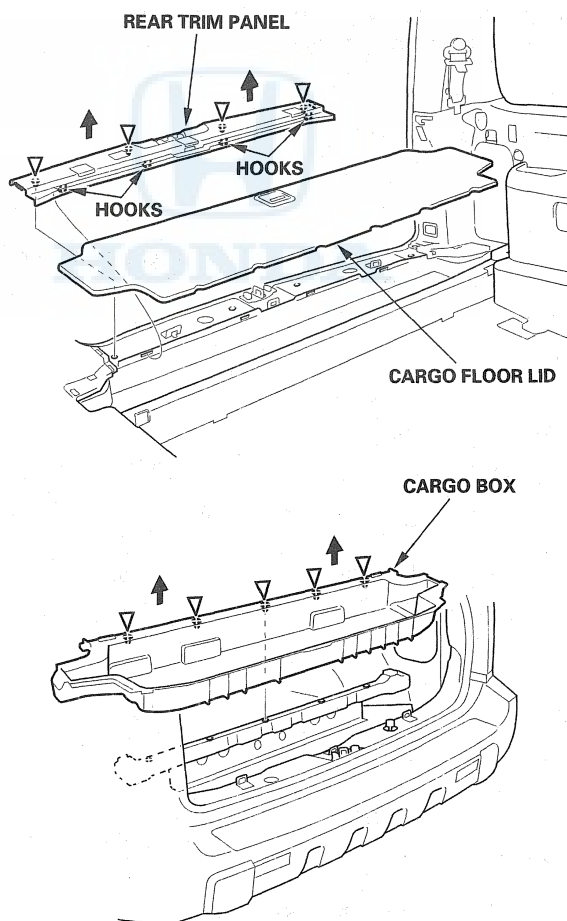
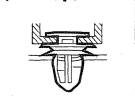
1. Remove the trim as shown. To remove the cargo box, remove both rear side trim panels (see page 20-80).

2. Install the trim in the reverse order of removal, and note these items:

- Check if the clips are damaged or stress-whitened, and if necessary, replace them with new ones.
- Push the clips into place securely.

Fastener Locations

▷ : Clip, 9



Interior Trim

Trim Removal/Installation - Tailgate Area

Special Tools Required

KTC trim tool set SOJATP2014 *

* Available through the American Honda Tool and Equipment Program; call 888-424-6857

NOTE:

- Put on gloves to protect your hands.
- Use the appropriate tool from the KTC trim tool set to avoid damage when prying components.
- Take care not to bend or scratch the trim and panels.

1. Remove the trim in the sequence shown. To remove the tailgate trim panel, remove the cargo area light.

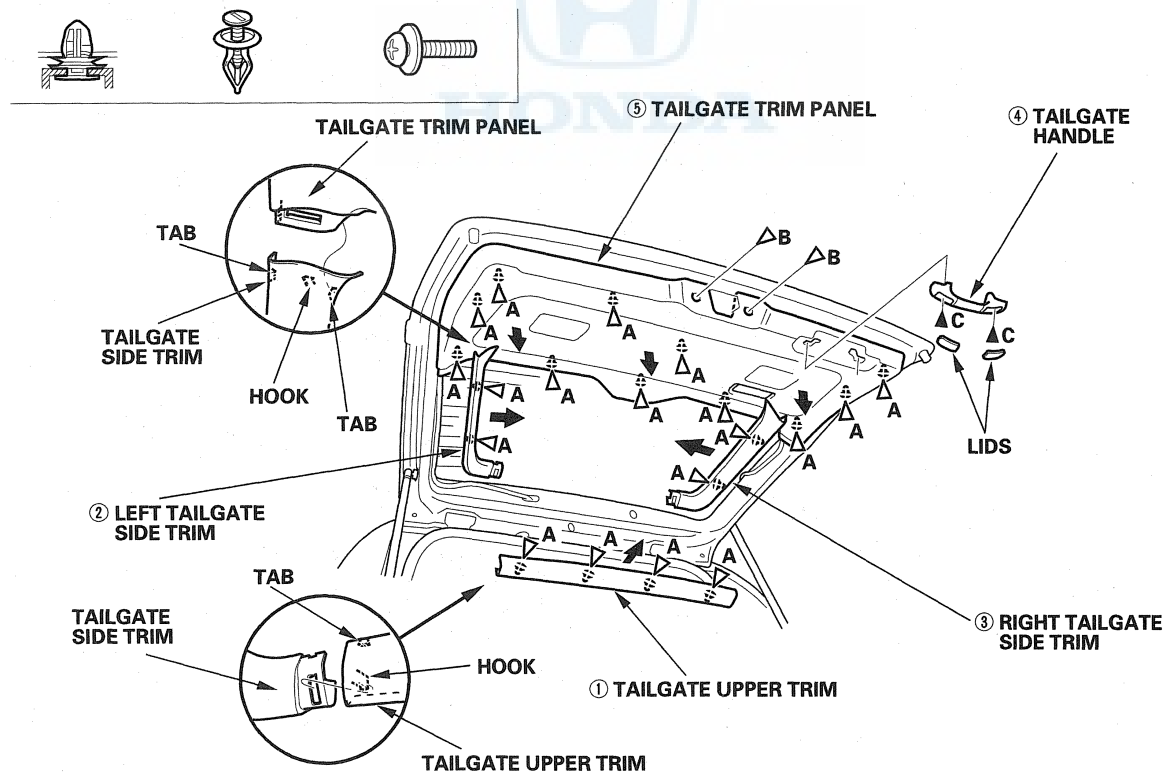
- Tailgate upper trim
- Left tailgate side trim
- Right tailgate side trim
- Tailgate handle
- Tailgate trim panel

2. Install the trim in the reverse order of removal, and note these items:

- Check if the clips are damaged or stress-whitened, and if necessary, replace them with new ones.
- Push the clips, hooks, and tabs into place securely.

Fastener Locations

A ▷ : Clip, 19 B ▷ : Clip, 2 C ▷ : Screw, 2





Headliner Removal/Installation

Special Tools Required

KTC trim tool set SOJATP2014 *

* Available through the American Honda Tool and Equipment Program; call 888-424-6857

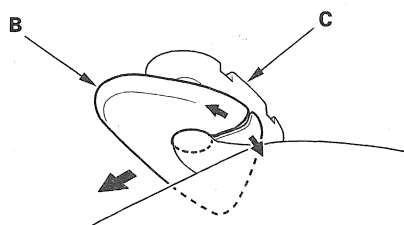
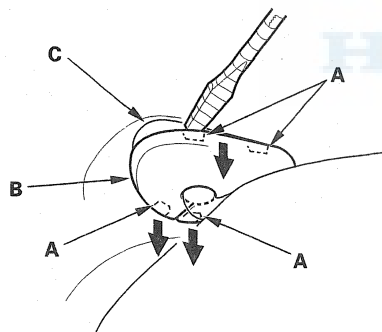
NOTE:

- Use the appropriate tool from the KTC trim tool set to avoid damage when prying components.
- Take care not to bend and scratch the headliner.
- Be careful not to damage the dashboard and other interior trim pieces.

1. Remove these items:

- A-pillar trim, both sides (see page 20-67)
- B-pillar lower trim, upper portion of both sides (see page 20-70)
- B-pillar upper trim, both sides (see page 20-70)
- D-pillar trim, both sides (see page 20-77)
- Rear side trim panel, upper portion of both sides (see page 20-80)
- C-pillar trim, both sides (see page 20-74)

2. Release the tabs (A) on both sides with a flat-tip screwdriver, then remove the sunvisor cap (B) from the bracket (C). Turn the cap, and remove it.

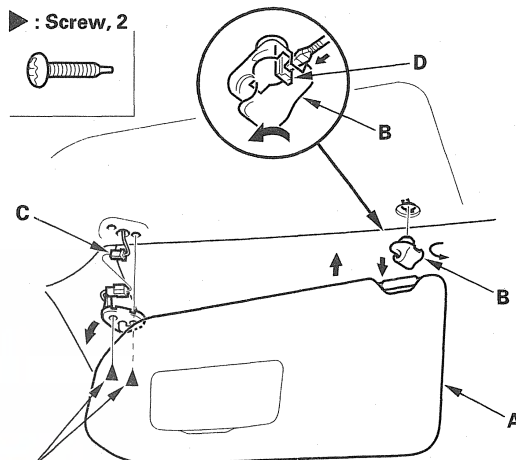


3. Remove the sunvisor (A) and holder (B) from both sides.

- 1 Remove the self-tapping ET screws.
- 2 Remove the sunvisor from the body and holder.
- 3 Disconnect the vanity mirror light connector (C).
- 4 Using a flat-tip screwdriver, push the hook (D), and turn the holder 90°, then pull it out.

Fastener Locations

► : Screw, 2



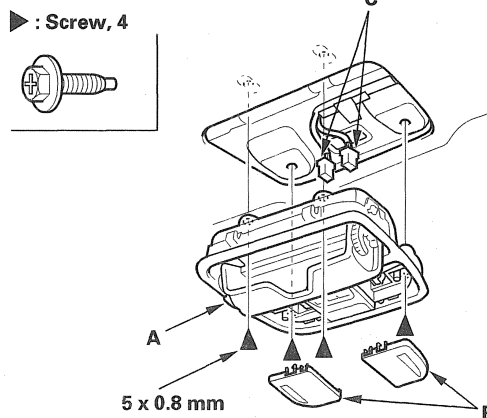
5 x 0.8 mm
3.4 N·m (0.35 kgf·m, 2.5 lbf·ft)

4. Remove the roof console (A).

- 1 Remove the lens (B).
- 2 Remove the screws.
- 3 Pull out the roof console, and disconnect the front individual map light connectors (C).

Fastener Locations

► : Screw, 4



(cont'd)

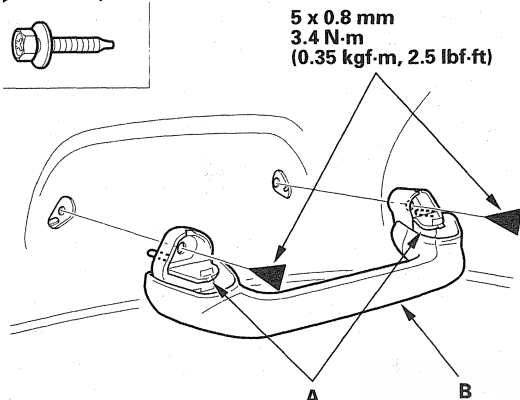
Interior Trim

Headliner Removal/Installation (cont'd)

5. Lower the grab handle, then pry out the lid (A). Remove the self-tapping ET screws, then remove the grab handle (B). Remove the remaining grab handles.

Fastener Locations

► : Screw, 12

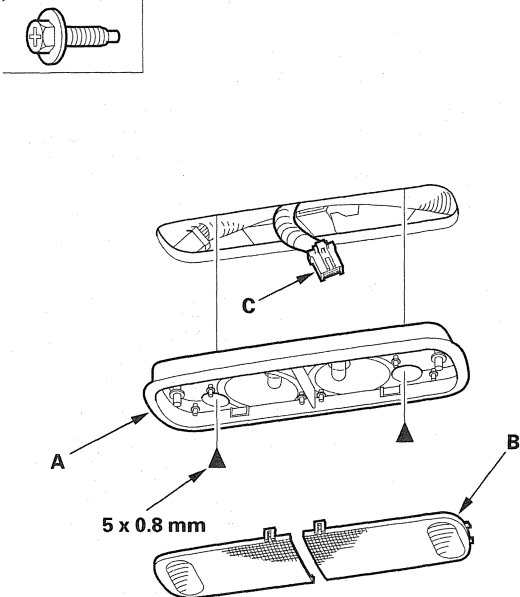


6. Remove the interior lights (A).

- 1 Remove the lens (B).
- 2 Remove the screws.
- 3 Pull out the roof console, and disconnect the interior light connectors (C).

Fastener Locations

► : Screw, 4



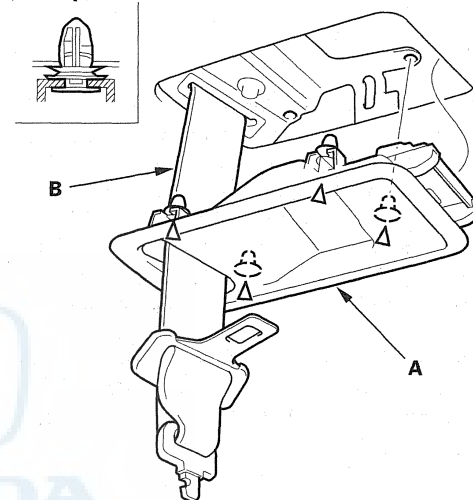
7. With rear entertainment system: Remove the display cover (see page 22-423).

8. Pull the center second row seat belt cover (A) down to detach the clips, then remove it. Remove the seat belt (B) through the hole in the cover.

With Moonroof

Fastener Locations

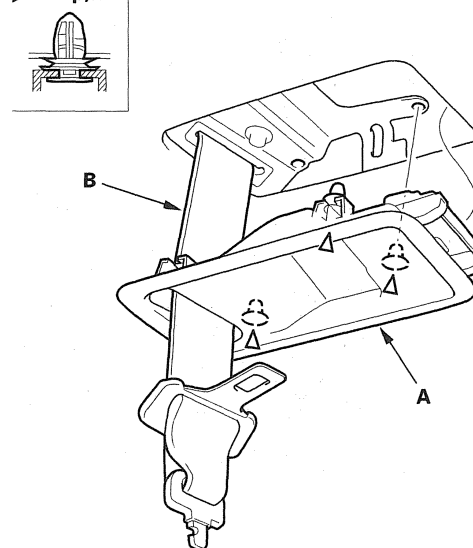
► : Clip, 4



Without Moonroof

Fastener Locations

► : Clip, 3

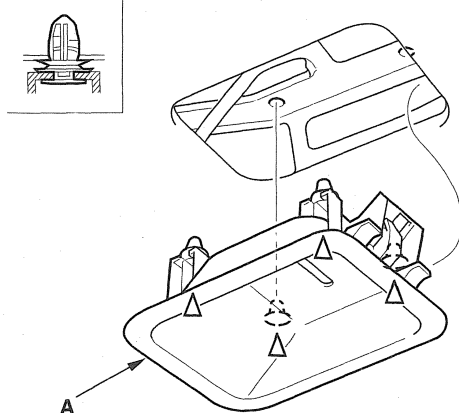




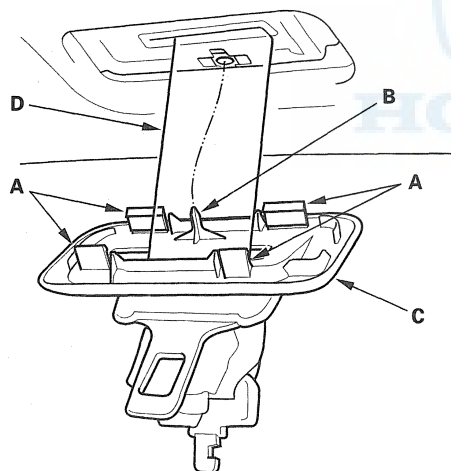
9. Pull the center third row seat belt cover (A) down to detach the clips, then remove it.

Fastener Locations

▷ : Clip, 4



10. Detach the hooks (A) and pin (B), then remove the seat belt guide (C), and remove the center third row seat belt (D) through the hole in the guide.



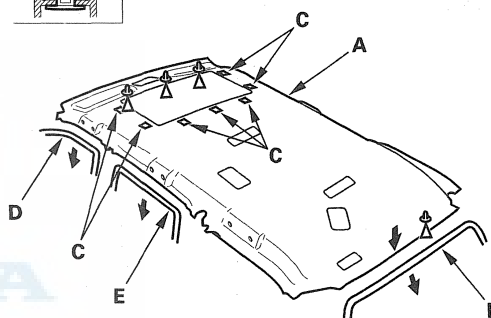
11. With the help of an assistant, remove the headliner (A).

- 1 Remove the roof portion of the tailgate weatherstrip (B).
- 2 Pull the rear edge of the headliner down to detach the clips, and release the Velcro fasteners (C).
- 3 Remove the remaining front door opening trim (D) and rear door opening trim (E) from each opening.
- 4 Lower the headliner.

With Moonroof

Fastener Locations

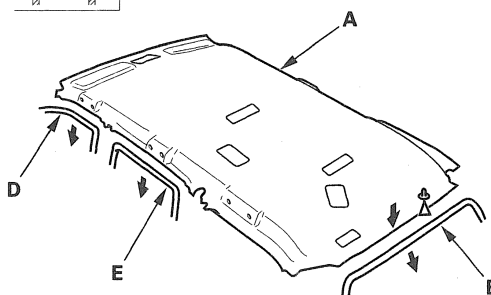
▷ : Clip, 4



Without Moonroof

Fastener Location

▷ : Clip, 1



12. Remove the headliner through the tailgate opening. Take care not to damage the headliner.

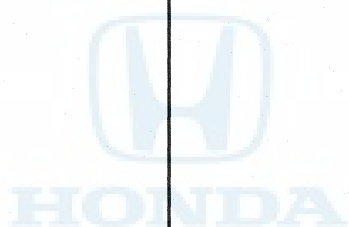
(cont'd)

Interior Trim

Headliner Removal/Installation (cont'd)

13. Install the headliner in the reverse order of removal, and note these items:

- Check if the clips are damaged or stress-whitened, and if necessary, replace them with new ones.
- When reinstalling the headliner through the tailgate opening, be careful not to fold or bend it. Also, be careful not to scratch the body.
- Hold the headliner in place with the grab handles installed loosely, then install the center second row seat belt cover. This will center the headliner front to rear.
- Push the clips and tabs into place securely.
- If the threads on a visor mounting ET screw are worn out, use an oversized ET screw (P/N 90137-S30-003) made specifically for this application.
- Check that both sides of the headliner are securely attached to the trim.





Carpet Replacement

SRS components are located in this area. Review the SRS component locations (see page 23-17) and the precautions and procedures (see page 23-19) before doing repairs or service.

NOTE:

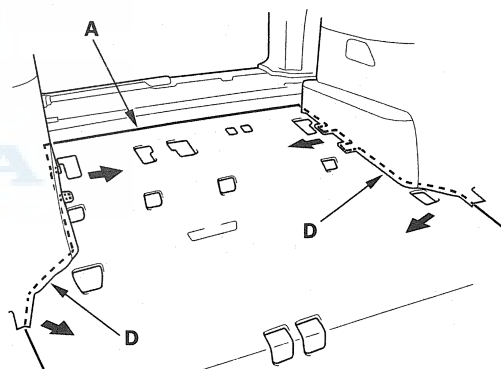
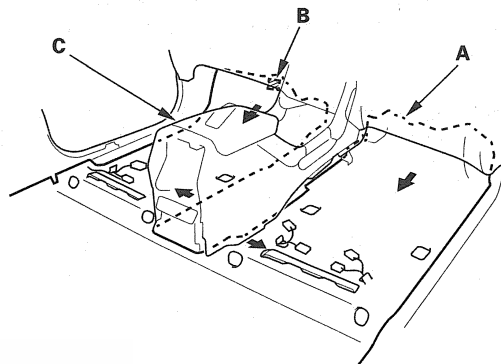
- Put on gloves to protect your hands.
- Take care not to damage, wrinkle or twist the carpet.
- Be careful not to damage the dashboard or other interior trim pieces.

1. Remove these items:

- Front seats, both sides (see page 20-104)
- Second row seats, both sides (see page 20-115)
- Third row seats, both sides (see page 20-128)
- Kick panels, both sides (see page 20-65)
- B-pillar lower trim, both sides (see page 20-70)
- Console side trim, both sides (see step 4 on page 20-89)
- Console rear trim (see step 5 on page 20-89)

2. Remove the carpet (A).

- 1 Release the Velcro fastener (B), then pull back the carpet from under the dashboard and center console (C).
- 2 Pull out the carpet from under both rear side trim panels (D).



3. Install the carpet in the reverse order of removal, and note these items:

- Take care not to damage, wrinkle or twist the carpet.
- Make sure the seat harnesses are routed correctly.
- Slip the carpet under both rear side trim panels and center console properly.

Consoles

Center Console Removal/Installation

Special Tools Required

KTC trim tool set SOJATP2014 *

* Available through the American Honda Tool and Equipment Program; call 888-424-6857

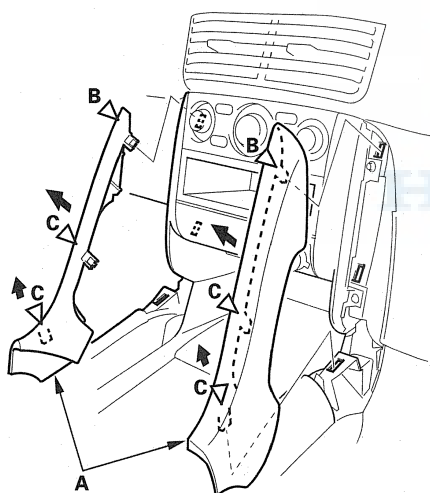
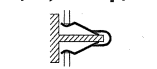
NOTE:

- Use the appropriate tool from the KTC trim tool set to avoid damage when prying components.
- Take care not to scratch the front seat, dashboard, and related parts.

1. Starting at the top, gently pull the center front covers (A) out to detach the clips (B), then pull the cover out to detach the remaining clips (C), and remove the covers from both sides.

Fastener Locations

B, C ▷ : Clip, 6

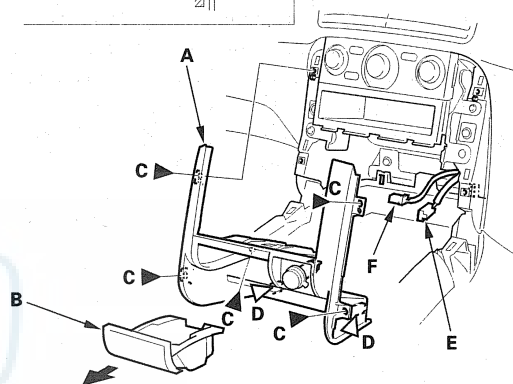
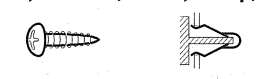


2. Remove the center lower cover (A).

- 1 Remove the coin pocket (B).
- 2 Remove the screws (C).
- 3 Pull the cover out to detach the clips (D).
- 4 Disconnect the console accessory power socket connector (E) and console light connector (F).

Fastener Locations

C ▷ : Screw, 5 D ▷ : Clip, 2

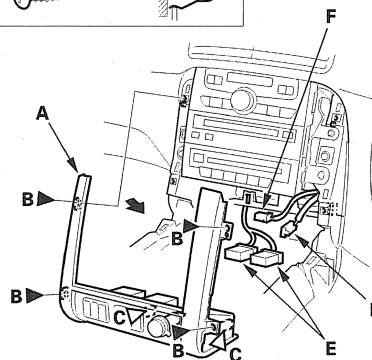


3. For some models: Remove the center lower cover (A) with the seat heater switches.

- 1 Remove the screws (B).
- 2 Pull the cover out to detach the clips (C).
- 3 Disconnect the console accessory power socket connector (D), seat heater switch connectors (E), and console light connector (F).

Fastener Locations

B ▷ : Screw, 4 C ▷ : Clip, 2

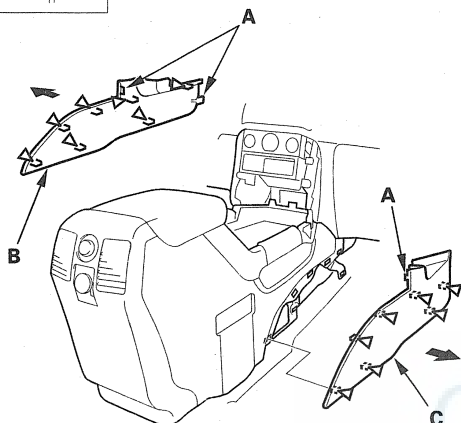
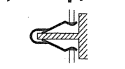




4. Detach the clips and release the hooks (A), then remove the driver's console side trim (B) and passenger's console side trim (C).

Fastener Locations

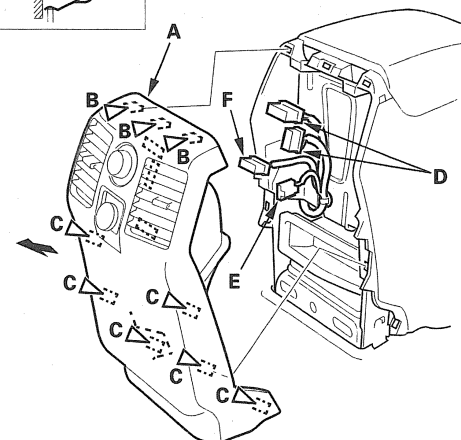
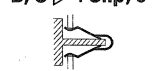
▷ : Clip, 14



5. Starting at the top, gently pull out the console rear trim (A) to detach the clips (B), then pull out the trim to detach the remaining clips (C), and disconnect the rear heater-A/C passenger's control panel-unit connectors (D) and console accessory power socket connector (E). If equipped with rear entertainment system, disconnect the rear entertainment system jack connector (F).

Fastener Locations

B, C ▷ : Clip, 9



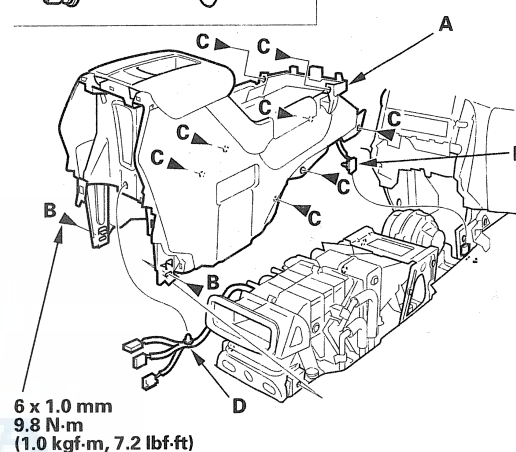
6. Remove the center console (A).

- 1 From both sides, remove the bolts (B) and screws (C).
- 2 Detach the harness clip (D).
- 3 Disconnect the console accessory power socket connector (E), and detach it.
- 4 Lift the console up, then remove it.

Fastener Locations

B ▷ : Bolt, 2

C ▷ : Screw, 8



7. Install the center console in the reverse order of removal, and note these items:

- Check if the clips are damaged or stress-whitened, and if necessary, replace them with new ones.
- Make sure all the connectors are plugged in properly.
- Push the clips into place securely.

Dashboard

Instrument Panel Removal/Installation

Special Tools Required

KTC trim tool set SOJATP2014 *

* Available through the American Honda Tool and Equipment Program; call 888-424-6857

NOTE:

- Use the appropriate tool from the KTC trim tool set to avoid damage when prying components.
- Take care not to scratch the dashboard and related parts.

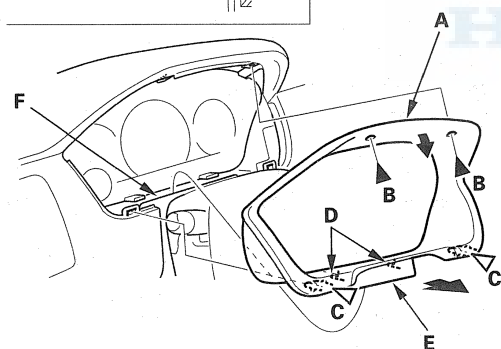
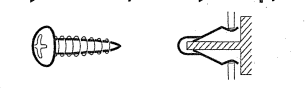
1. Tilt the steering column down.

2. Remove the instrument panel (A).

- 1 Remove the screws (B).
- 2 Gently pull out the panel to release the clips (C) and hooks (D).
- 3 Release the bottom portion (E) of the panel from the steering column upper cover (F).

Fastener Locations

B ► : Screw, 2 C ► : Clip, 2



3. Install the panel in the reverse order of removal, and note these items:

- Check if the clips are damaged or stress-whitened, and if necessary, replace them with new ones.
- Push the clips into place securely.

Driver's Dashboard Lower Cover Removal/Installation

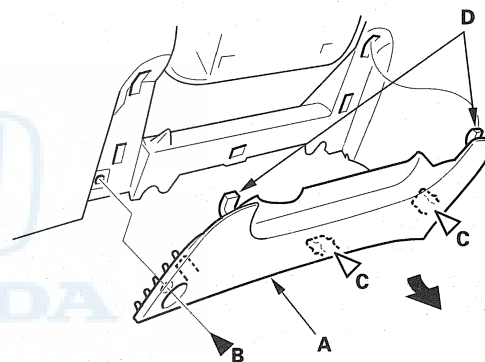
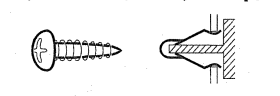
NOTE: Take care not to scratch the dashboard and related parts.

1. Remove the dashboard lower cover (A).

- 1 Remove the screw (B).
- 2 Pull out on the bottom of the cover to release the clips (C).
- 3 Pull it down to release the hooks (D).

Fastener Locations

B ► : Screw, 1 C ► : Clip, 2



2. Install the cover in the reverse order of removal, and note these items:

- Check if the clips are damaged or stress-whitened, and if necessary, replace them with new ones.
- Push the clips into place securely.



Driver's Panel Removal/Installation

Special Tools Required

KTC trim tool set SOJATP2014 *

* Available through the American Honda Tool and Equipment Program; call 888-424-6857

NOTE:

- Use the appropriate tool from the KTC trim tool set to avoid damage when prying components.
- Take care not to scratch the dashboard and related parts.

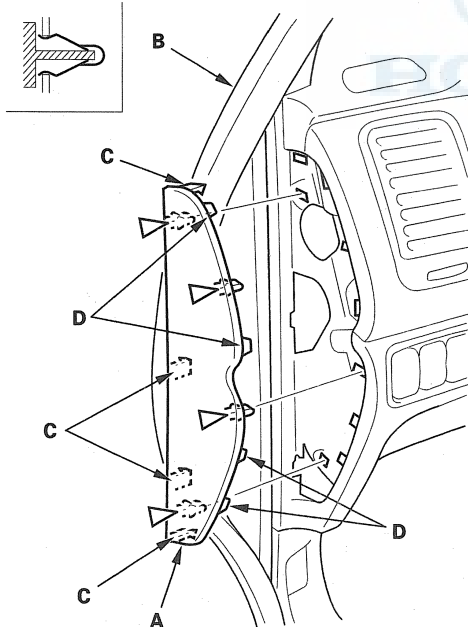
1. Remove the instrument panel (see page 20-90).

2. On the driver's side of the dashboard, remove the dashboard side lid (A).

- 1 Remove the front door opening trim (B), as necessary.
- 2 Gently pull out along the rear edge to release the clips and hooks (C).
- 3 Gently pull out on the lid to release the top and bottom clips and the hooks (D), then remove the lid.

Fastener Locations

▷ : Clip, 4

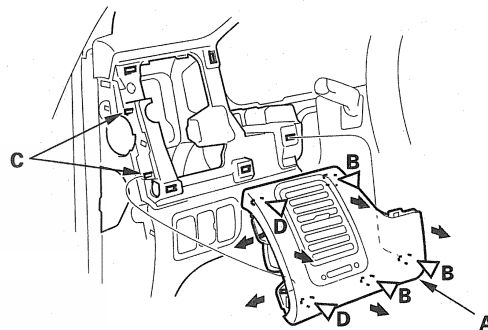
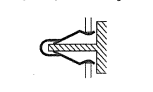


3. Remove the driver's panel (A).

- 1 Gently pull out the inside edge of the panel to detach the clips (B).
- 2 On the outside edge of the dashboard, release the hooks (C) from the dashboard.
- 3 Gently pull out the outside edge of the panel to detach the clips (D).

Fastener Locations

B, D ▷ : Clip, 5



4. Install the panel in the reverse order of removal, and note these items:

- Check if the clips are damaged or stress-whitened, and if necessary, replace them with new ones.
- Push the clips and hooks into place securely.

Dashboard

Driver's Switch Panel Removal/Installation

Special Tools Required

KTC trim tool set SOJATP2014 *

* Available through the American Honda Tool and Equipment Program; call 888-424-6857

NOTE:

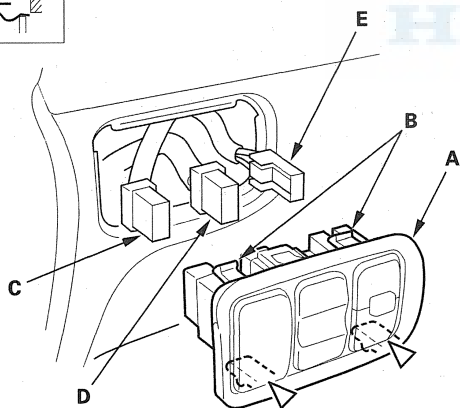
- Use the appropriate tool from the KTC trim tool set to avoid damage when prying components.
- Take care not to scratch the dashboard and related parts.

1. Remove the driver's switch panel (A).

- 1 Using a flat-tip screwdriver, pry out the bottom portion of the panel to detach the clips.
- 2 Pull out the panel to release the upper hooks (B), then remove the panel.
- 3 Disconnect the cruise control main switch connector (C), and interior lights switch connector (D) and moonroof switch connector (E).

Fastener Locations

▷ : Clip, 2



2. Install the panel in the reverse order of removal, and note these items:

- Make sure each connector is plugged in properly.
- Check if the clips are damaged or stress-whitened, and if necessary, replace them with new ones.
- Push the clips and hooks into place securely.

Left Middle Panel Removal/Installation

Special Tools Required

KTC trim tool set SOJATP2014 *

* Available through the American Honda Tool and Equipment Program; call 888-424-6857

NOTE:

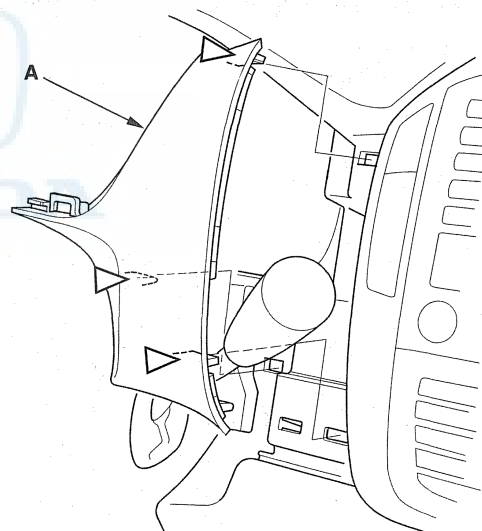
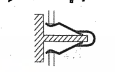
- Use the appropriate tool from the KTC trim tool set to avoid damage when prying components.
- Take care not to scratch the dashboard and related parts.

1. Remove the instrument panel (see page 20-90).

2. Remove the left middle panel (A).

Fastener Locations

▷ : Clip, 3



3. Install the panel in the reverse order of removal, and note these items:

- Make sure each connector is plugged in properly.
- Check if the clips are damaged or stress-whitened, and if necessary, replace them with new ones.
- Push the clips and hooks into place securely.



Center Panel Removal/Installation

Special Tools Required

KTC trim tool set SOJATP2014 *

* Available through the American Honda Tool and Equipment Program; call 888-424-6857

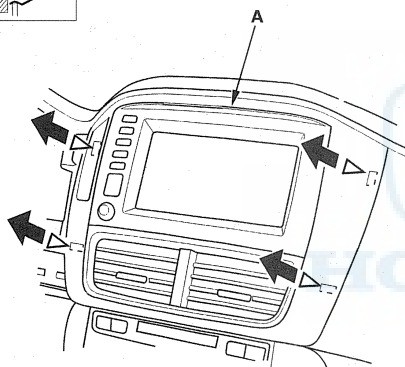
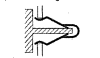
NOTE:

- Use the appropriate tool from the KTC trim tool set to avoid damage when prying components.
- Take care not to scratch the dashboard and related parts.

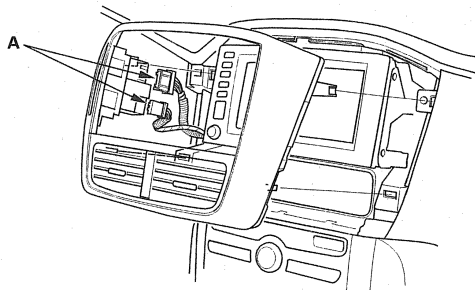
1. Remove the left middle panel (see page 20-92).
2. On the driver's side, gently pull out on the panel (A) to detach the side clips, then remove the panel.

Fastener Locations

▷ : Clip, 4



3. Disconnect the multi switch two connectors (A).



4. Install the panel in the reverse order of removal, and note these items:

- Make sure each connector is plugged in properly.
- Check if the clips are damaged or stress-whitened, and if necessary, replace them with new ones.
- Push the clips into place securely.

Right Middle Panel Removal/Installation

Special Tools Required

KTC trim tool set SOJATP2014 *

* Available through the American Honda Tool and Equipment Program; call 888-424-6857

NOTE:

- Use the appropriate tool from the KTC trim tool set to avoid damage when prying components.
- Take care not to scratch the dashboard and related parts.

1. Remove these items:

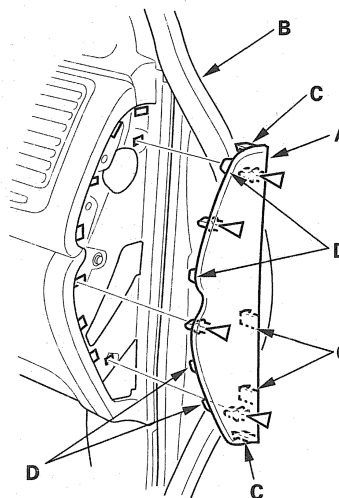
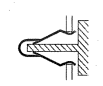
- Instrument panel (see page 20-90)
- Center panel (see page 20-93)

2. On the passenger's side of the dashboard, remove the dashboard side lid (A).

- 1 Remove the front door opening trim (B), as necessary.
- 2 Gently pull out along the rear edge to release the clips and hooks (C).
- 3 Gently pull out on the lid to release the top and bottom clips and the hooks (D), then remove the lid.

Fastener Locations

▷ : Clip, 4



(cont'd)

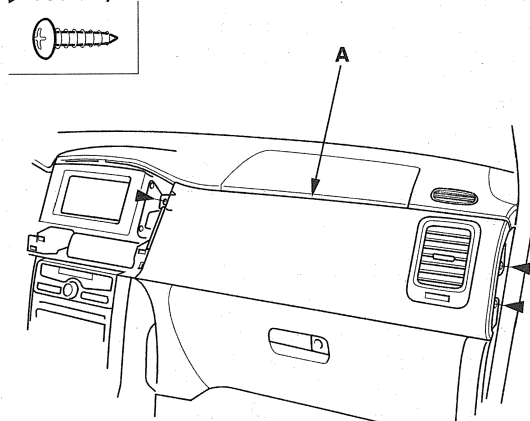
Dashboard

Right Middle Panel Removal/Installation (cont'd)

3. Remove the screws securing the middle panel (A).

Fastener Locations

► : Screw, 3

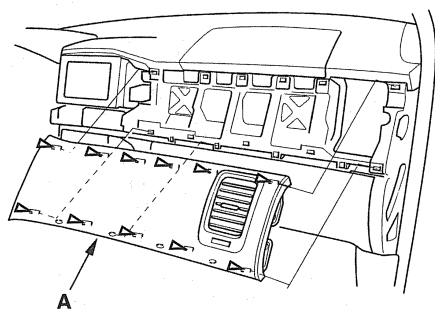
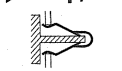


4. Remove the middle panel (A).

- 1 On the outside edge of the dashboard.
- 2 On the passenger's side, gently pull out along the top and bottom edges of the panel to detach the clips.
- 3 On the driver's side, gently pull out on the panel to release the clips.

Fastener Locations

▷ : Clip, 11



5. Install the panel in the reverse order of removal, and note these items:

- Check if the clips are damaged or stress-whitened, and if necessary, replace them with new ones.
- Push the clips and hooks into place securely.

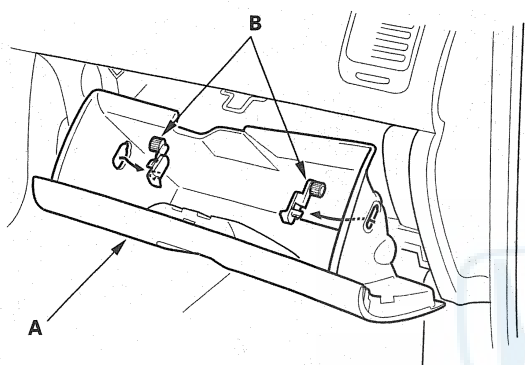


Glove Box Removal/Installation

SRS components are located in this area. Review the SRS component locations (see page 23-17) and the precautions and procedures (see page 23-19) before doing repairs or service.

NOTE: Take care not to scratch the dashboard and related parts.

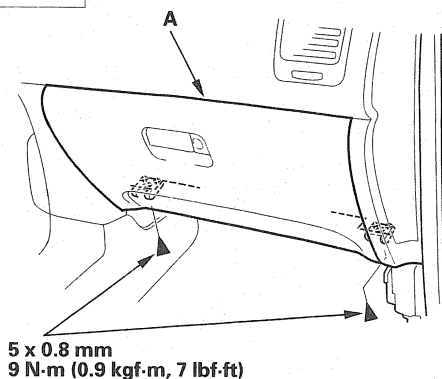
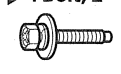
1. Remove the right kick panel (see page 20-65).
2. While holding the glove box (A), remove the glove box stop (B) on each side.



3. Remove the bolts, then remove the glove box (A).

Fastener Locations

► : Bolt, 2



4. Install the glove box in the reverse order of removal.

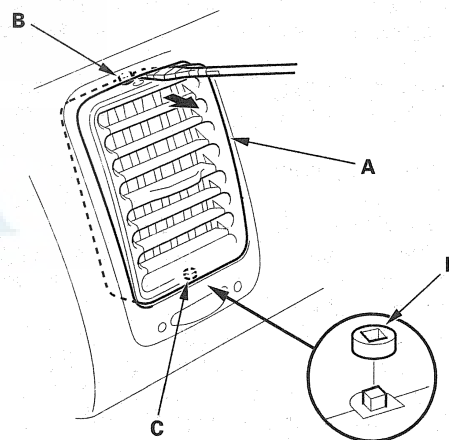
Dashboard Side Vent Removal/Installation

NOTE:

- Take care not to scratch the driver's panel or middle panel.
- The driver's side vent is shown, the passenger's side vent is similar.

1. Remove the dashboard side vent (A).

- 1 Wrap a flat-tip screwdriver with protective tape, and apply protective tape around the related parts to prevent damage.
- 2 Carefully insert a flat-tip screwdriver next to the upper pivot portion (B).
- 3 Gently pry out on the side vent to release the upper pivot portion.
- 4 Release the bottom pivot portion (C).
- 5 If necessary, remove the bottom pivot bushing (D).



2. Reinstall the side vent onto the bottom pivot portion first, then reinstall it onto the upper pivot portion. Make sure that both pivot portions are installed securely.

Dashboard

Dashboard Removal/Installation

Special Tools Required

KTC trim tool set SOJATP2014 *

* Available through the American Honda Tool and Equipment Program; call 888-424-6857

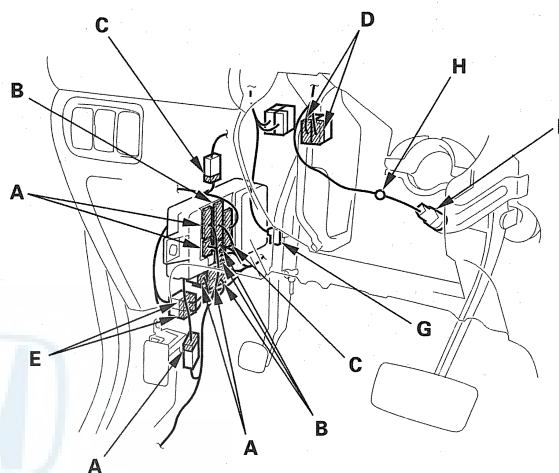
SRS components are located in this area. Review the SRS component locations (see page 23-17) and the precautions and procedures (see page 23-19) before doing repairs or service.

NOTE:

- Use the appropriate tool from the KTC trim tool set to avoid damage when prying components.
 - Have an assistant help you when removing and installing the dashboard.
 - Take care not to scratch the dashboard, body, and other related parts.
 - Put on gloves to protect your hands.
1. Make sure you have the anti-theft codes for the audio system and the navigation system (if equipped), then write down the audio presets.
 2. Disconnect the negative cable from the battery, and wait at least 3 minutes before beginning work.
 3. Remove these items:
 - Center console (see page 20-88)
 - Driver's dashboard lower cover (see page 20-90)
 - Dashboard side vent, passenger's side (see step 1 on page 20-95)
 - Glove box (see page 20-95)
 - Kick panels, both sides (see page 20-65)
 - A-pillar trim, both sides (see page 20-67)
 - Steering column (see page 17-25)
 - A-pillar corner trim, driver's side (see page 20-67)
 - Dashboard lid (see page 20-91)
 4. With navigation system, remove these items:
 - Front seat, passenger's side (see page 20-104)
 - Carpet, passenger's side as necessary (see page 20-87)

Driver's side

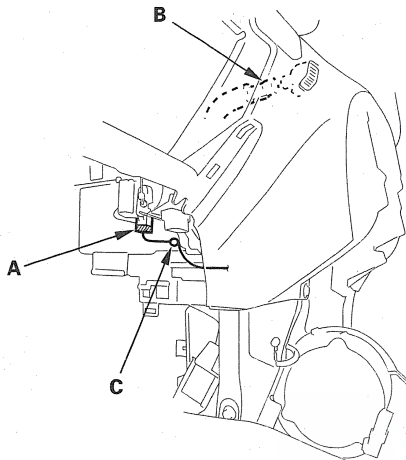
5. From under the dash, disconnect the side wire harness connectors (A), engine compartment wire harness connectors (B), door wire harness connectors (C), dashboard wire harness connectors (D), B-DIR CONNECT (E), brake pedal position switch connector (F), and parking brake switch connector (G). Detach the wire harness clip (H).



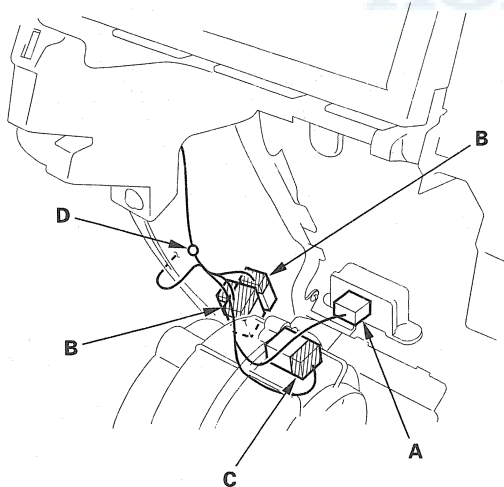


Middle portion

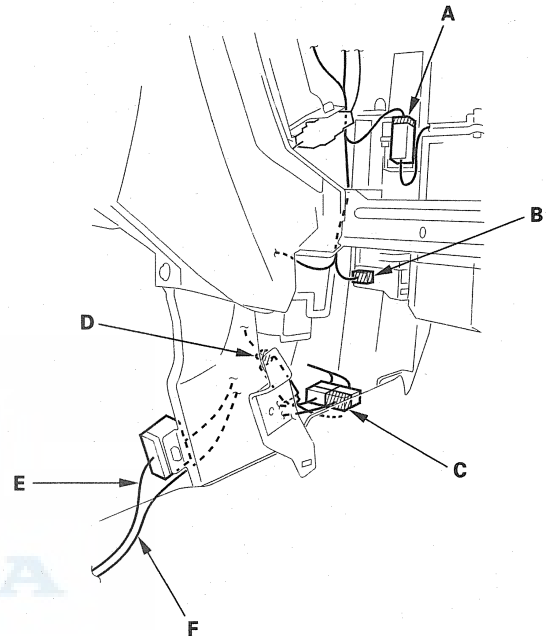
6. On the driver's side, disconnect the mode motor connector (A), and the in-car temperature sensor hose (B). Detach the wire harness clip (C).



7. On the inside of the dashboard center frame, disconnect the yaw rate-lateral acceleration sensor connector (A) and rear A/C subwire harness connectors (B), SRS floor wire harness connector (C), and detach the wire harness clip (D).



8. On the passenger's side, disconnect the evaporator temperature sensor connector (A), air mix control motor connector (B), SRS main subwire harness connector (C), and antenna lead and wire harness clip (D). With navigation system, release the navigation subwire harness (E) and GPS antenna harness (F) from the floor.



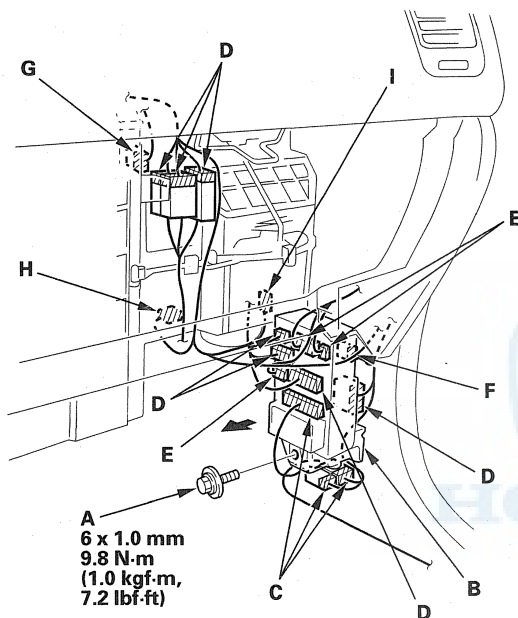
(cont'd)

Dashboard

Dashboard Removal/Installation (cont'd)

Passenger's side

9. Remove the bolt (A), and pull out the passenger's under-dash fuse/relay box (B). Disconnect the side wire harness connectors (C), engine compartment wire harness connectors (D), door wire harness connectors (E), interior wire harness connector (F), recirculation control motor connector (G), power transistor connector (H), and blower motor connector (I).



10. Detach all of the harness and connector clips.

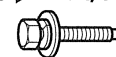
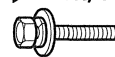
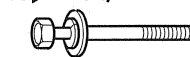
11. Remove the bolts (A, B, C, D, E, F), and lift up on the dashboard (G) to release it from the guide pins (H, I) on the body.

Fastener Locations

A ▶ Bolt, 2

B ▶ Bolt, 1

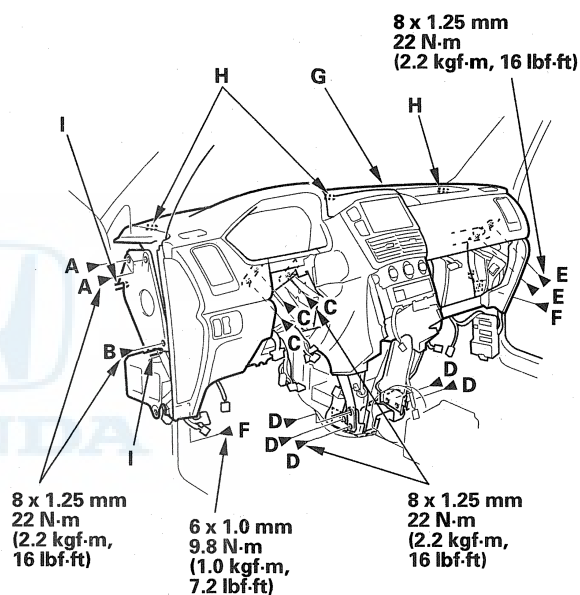
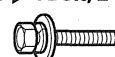
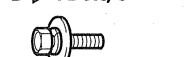
C ▶ Bolt, 3



D ▶ Bolt, 5

E ▶ Bolt, 2

F ▶ Bolt, 2



12. Carefully remove the dashboard through the front door opening.



13. Install the dashboard in the reverse order of removal, and note these items:

- Make sure the dashboard fits onto the guide pins correctly.
- Apply liquid thread lock to the center frame mounting bolts before reinstallation.
- Make sure the center frames are installed on the center bracket properly.
- Before tightening the bolts, make sure each wire harness is not pinched.
- Make sure the connectors are plugged in properly, and the antenna lead is connected properly.
- Reconnect the negative cable to the battery.
- Enter the anti-theft codes for the audio system and the navigation system (if equipped), then enter the audio presets.
- Reset the clock.
- Do the power window control unit reset procedure (see page 22-255).

Steering Hanger Beam Replacement

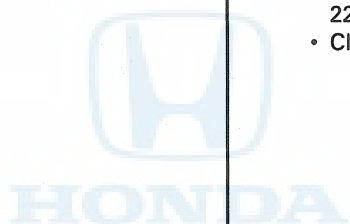
NOTE:

- Have an assistant help you when removing and installing the steering hanger beam.
- Take care not to scratch the dashboard.
- Put on gloves to protect your hands.

1. Remove the dashboard (see page 20-96).

2. Remove these items from the dashboard:

- Instrument panel (see page 20-90)
- Gauge assembly (see page 22-102)
- Driver's switch panel (see page 20-92)
- Driver's panel (see page 20-91)
- Center panel (see page 20-93)
- Left Middle panel (see page 20-92)
- Right Middle panel (see page 20-93)
- Audio unit (see page 22-373)
- Display unit, with navigation system (see page 22-509)
- Climate control unit (see page 21-123)

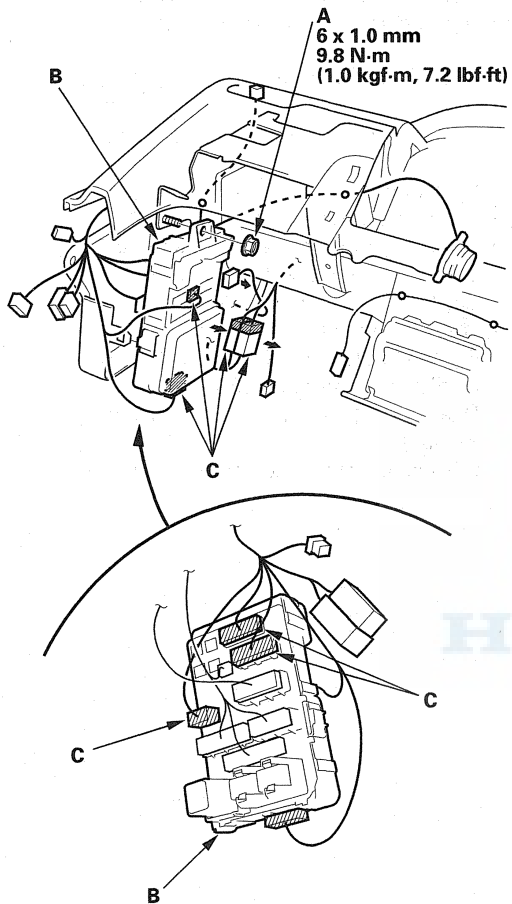


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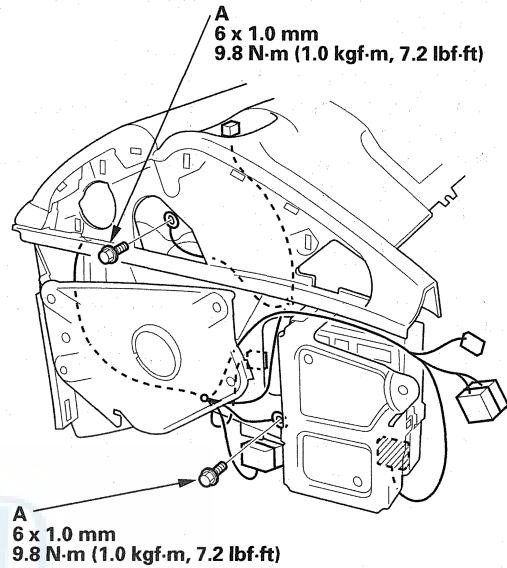
Dashboard

Steering Hanger Beam Replacement (cont'd)

3. On the driver's side of the dashboard, remove the nut (A), and pull out the driver's under-dash fuse/relay box (B). Disconnect the dashboard wire harness connectors (C), and detach all of the dashboard wire harness clips and connectors.

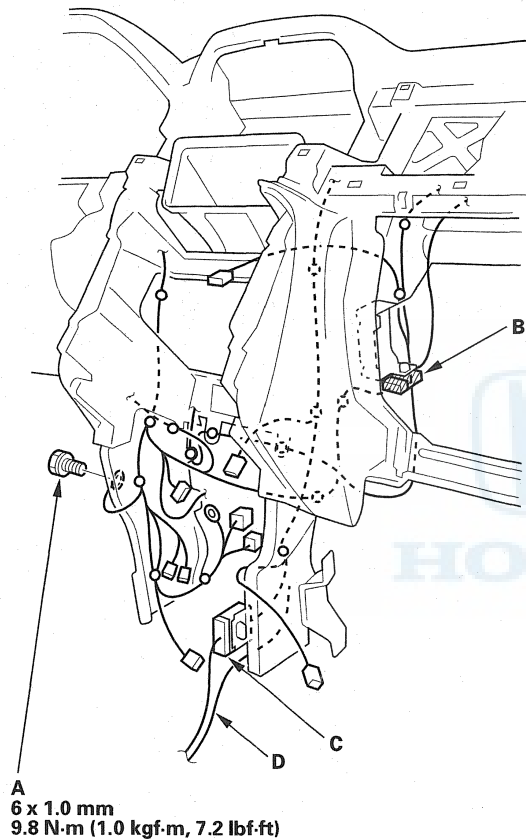


4. On the driver's outside edge of the dashboard, remove the ground bolts (A), and detach all of the harness clips.

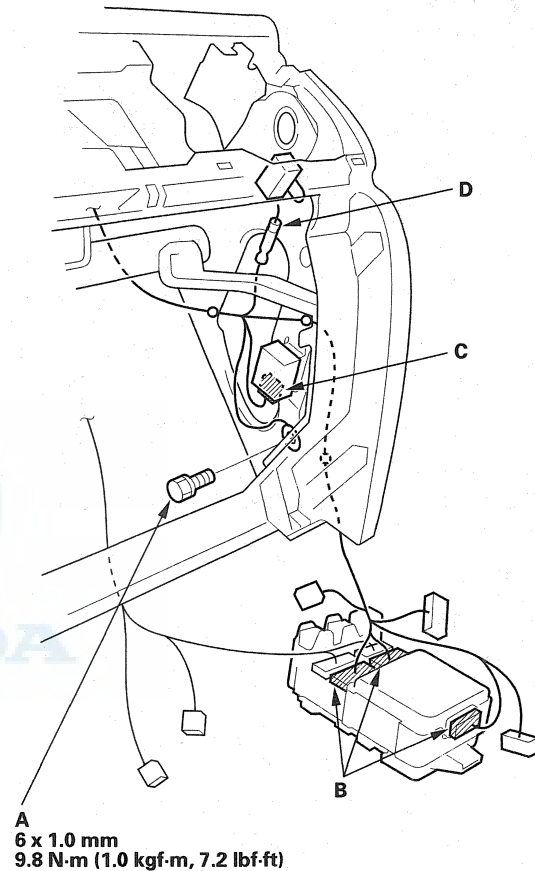




5. In the middle portion of the dashboard, remove the ground bolt (A), and disconnect the front passenger's airbag connector (B). Detach all of the dashboard wire harness clips, and with navigation system, detach the navigation subwire harness connector (C), and release the GPS antenna harness (D) by detaching the clips from the steering hanger beam.



6. On the passenger's side, remove the ground bolt (A), and disconnect the dashboard wire harness connectors (B), keyless entry control unit connector (C), and condenser connector (D). Detach all of the dashboard wire harness clips.



(cont'd)

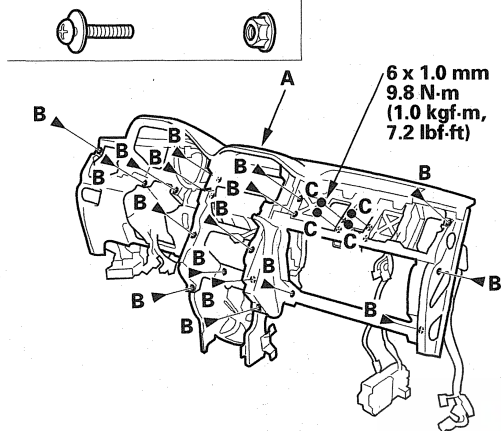
Dashboard

Steering Hanger Beam Replacement (cont'd)

7. On the front of the dashboard (A), remove the screws (B) and front passenger's airbag mounting nuts (C).

Fastener Locations

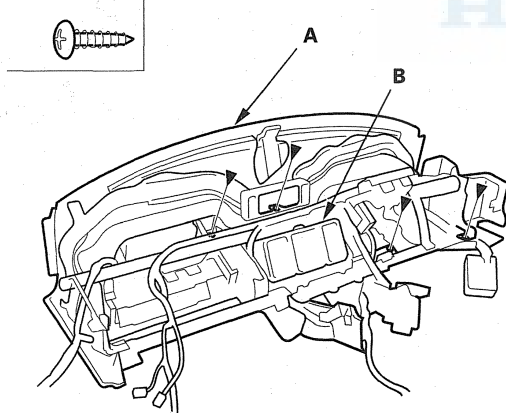
B ► : Screw, 17 C ● : Nut, 4



8. On the back of the dashboard (A), remove the screws.

Fastener Locations

► : Screw, 4



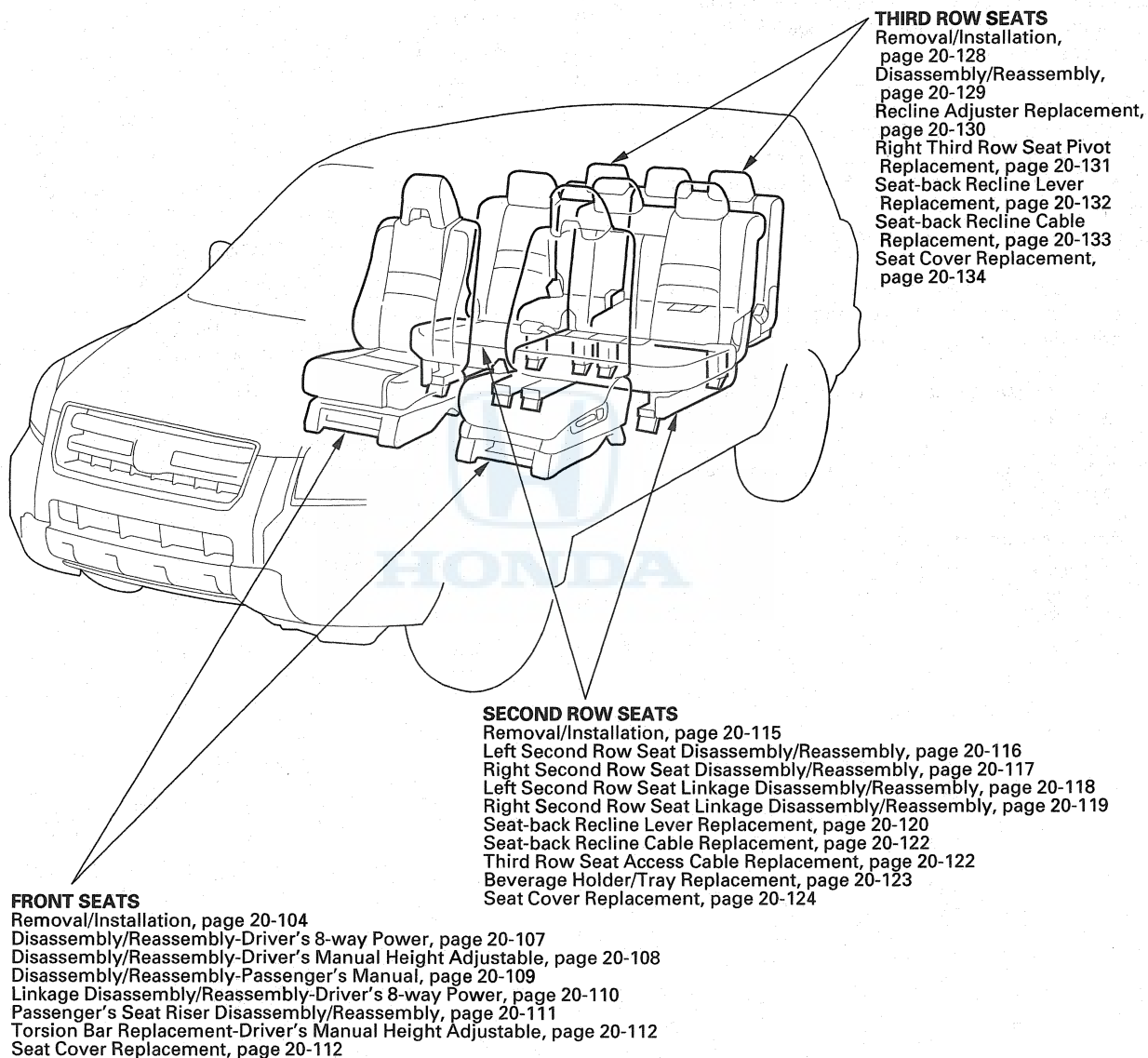
9. With the help of an assistant, separate the dashboard and steering hanger beam (B).

10. Install the beam in the reverse order of removal, and note these items:

- Make sure the dashboard wire harness and steering hanger beam wire harness are not pinched.
- Make sure the connectors are plugged in properly.



Component Location Index



Seats

Front Seat Removal/Installation

Special Tools Required

KTC trim tool set SOJATP2014 *

* Available through the American Honda Tool and Equipment Program; call 888-424-6857

SRS components are located in this area. Review the SRS component locations (see page 23-17) and the precautions and procedures (see page 23-19) before doing repairs or service.

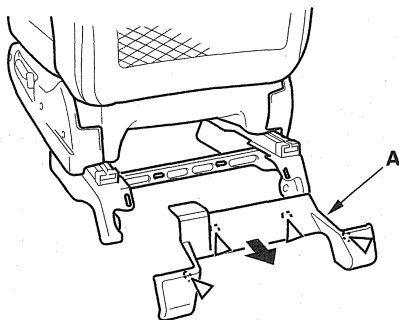
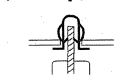
NOTE:

- Use the appropriate tool from the KTC trim tool set to avoid damage when prying components.
- Take care not to scratch the body or tear the seat covers.
- Put on gloves to protect your hands.

1. Make sure you have the anti-theft codes for the audio system and the navigation system (if equipped), then write down the audio presets.
2. Slide the seat all the way forward to access the rear riser cover.
3. Detach the clips, then remove the rear riser cover (A).

Fastener Locations

▷ : Clip, 4

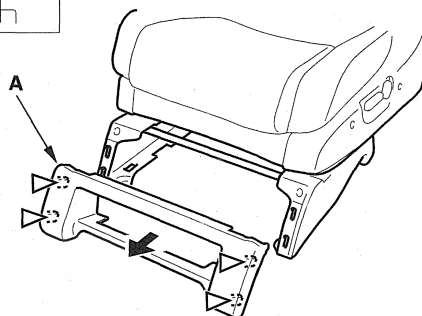
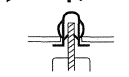


4. Slide the seat to the rear, about halfway to access the front riser cover. If equipped with an driver's 8-way power seat, fully raise the seat.

5. Detach the clips, then remove the front riser cover (A).

Fastener Locations

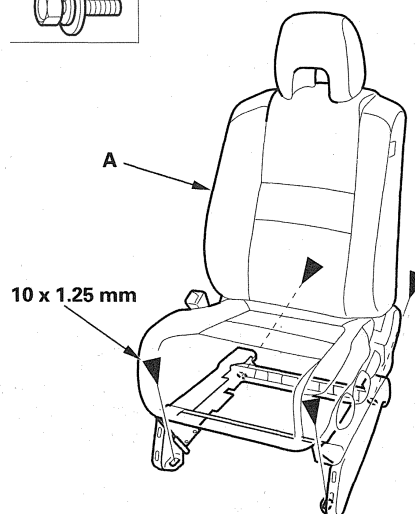
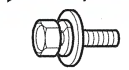
▷ : Clip, 4



6. Disconnect the negative cable from the battery, and wait at least 3 minutes before continuing.
7. Remove the bolts securing the front seat (A).

Fastener Locations

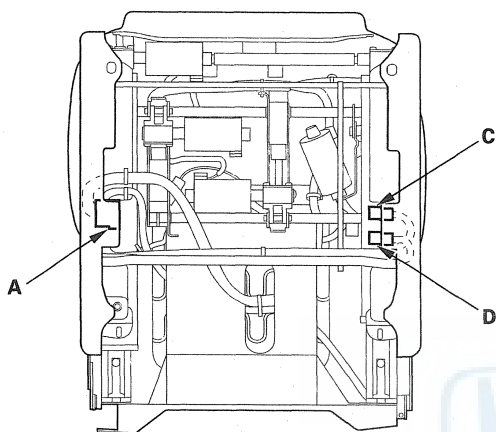
▷ : Bolt, 4



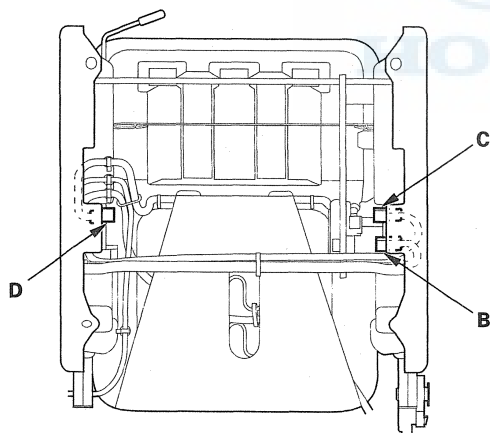


8. Tilt the front of the seat up, then disconnect the seat harness connector (A) (driver's 8-way power seat) or seat belt switch connector (B) (driver's manual height adjustable seat), side airbag harness connector (C), and seat position sensor connector (D).

Driver's 8-way power seat

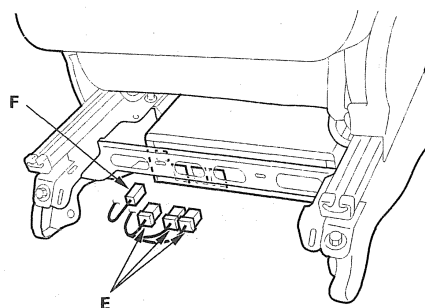
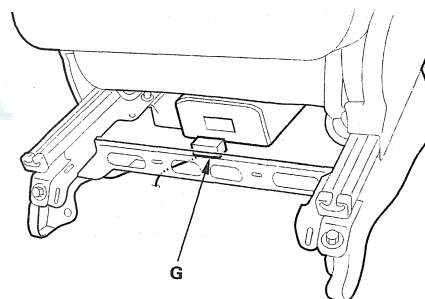
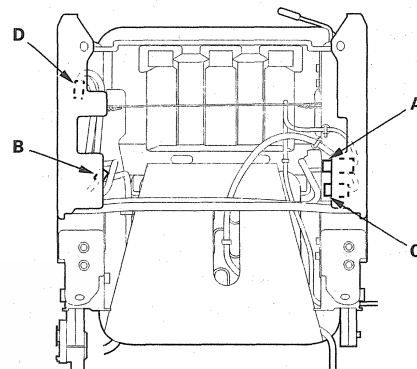


Driver's manual height adjustable seat



9. Tilt the front of the seat up, then disconnect the seat harness connector (A), side airbag harness connector (B), and ODS unit harness connector (C), and front passenger's weight sensor connector (D). If equipped with navigation system, disconnect the navigation unit connectors (E) and GPS antenna harness connector (F). If equipped with AC power outlet, remove the AC inverter unit connector (G).

Passenger's manual seat



10. Remove the head restraint.
11. With the help of an assistant, carefully remove the front seat through the door opening.

(cont'd)

Seats

Front Seat Removal/Installation (cont'd)

12. Install the seat in the reverse order of removal, and note these items:

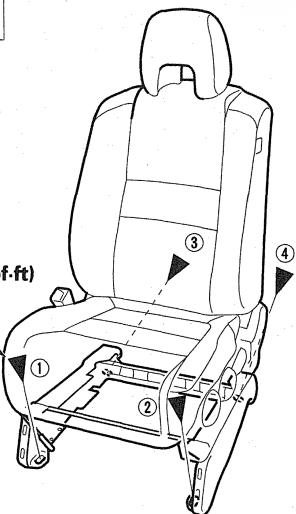
- Check if the clips are damaged or stress-whitened, and if necessary, replace them with new ones.
- Push the clips into place securely.
- Make sure each connector is plugged in properly.
- Make sure each wire harness is routed correctly, and not pinched.
- Apply liquid thread lock to the seat mounting bolts before reinstallation.
- Tighten the seat mounting bolts to the specified torque in the sequence shown. Slide the seat all the way back and tighten ① and ②, then slide it forward and tighten ③ and ④. The driver's seat is shown; the passenger's seat is similar.
- Tighten the bolts by hand first, then tighten them to specification with a torque wrench.
- Reconnect the negative cable to the battery.
- Enter the anti-theft codes for the audio system and the navigation system (if equipped), then enter the audio presets.
- Reset the clock.
- Do the power window control unit reset procedure (see page 22-255).

Fastener Locations

► : Bolt, 4



10 x 1.25 mm
47 N·m
(4.8 kgf·m, 35 lbf·ft)





Front Seat Disassembly/Reassembly - Driver's 8-Way Power

Special Tools Required

KTC trim tool set SOJATP2014 *

* Available through the American Honda Tool and Equipment Program; call 888-424-6857

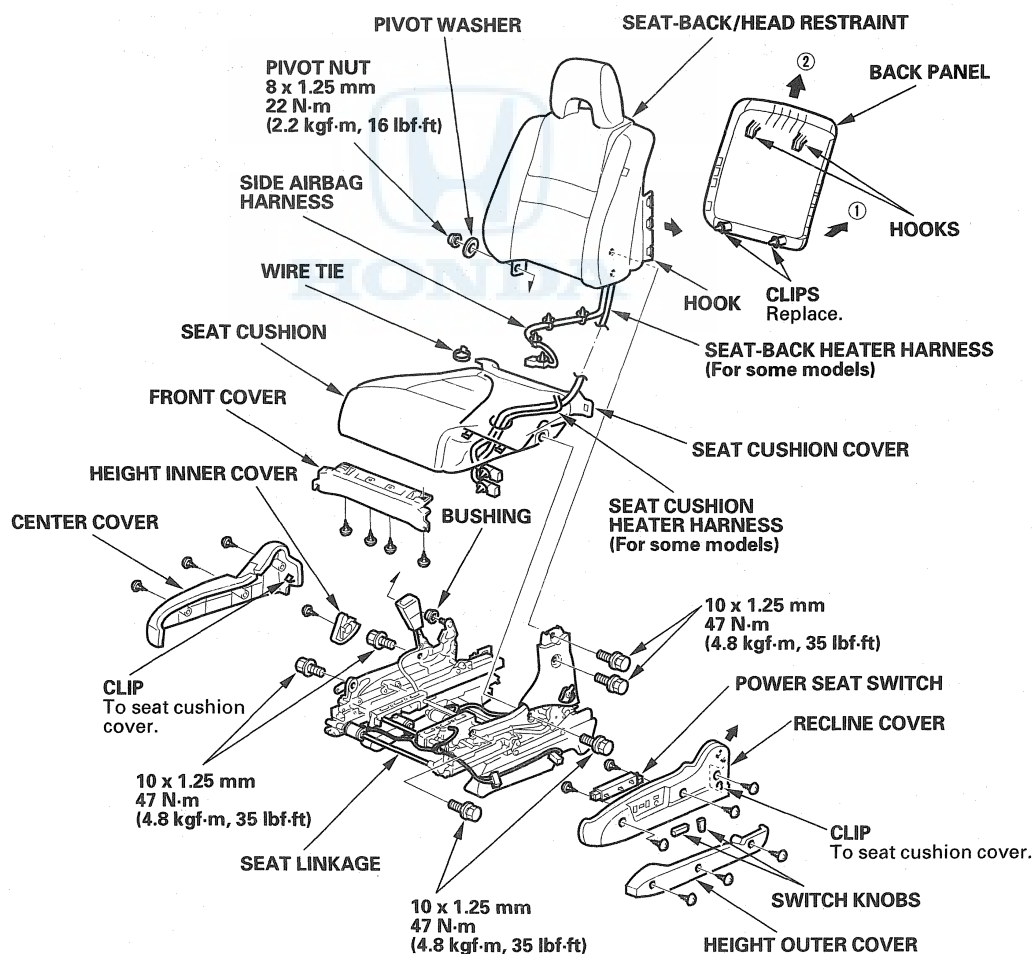
SRS components are located in this area. Review the SRS component locations (see page 23-17) and the precautions and procedures (see page 23-19) before doing repairs or service.

The operation of the driver's seat position sensor must be checked (see page 23-36) after any of these procedures:

- Driver's seat position sensor replacement
- Cover plate (front side of driver's seat slide rail) replacement

NOTE:

- Use the appropriate tool from the KTC trim tool set to avoid damage when prying components.
- Route the seat wire harness correctly.
- Make sure the bushing and pivot washer are installed correctly.
- Apply multipurpose grease to the moving portion of the seat track.
- To prevent wrinkles in the seat-back cover, stretch the material evenly over the pad.



Seats

Front Seat Disassembly/Reassembly - Driver's Manual Height Adjustable

Special Tools Required

KTC trim tool set SOJATP2014 *

* Available through the American Honda Tool and Equipment Program; call 888-424-6857

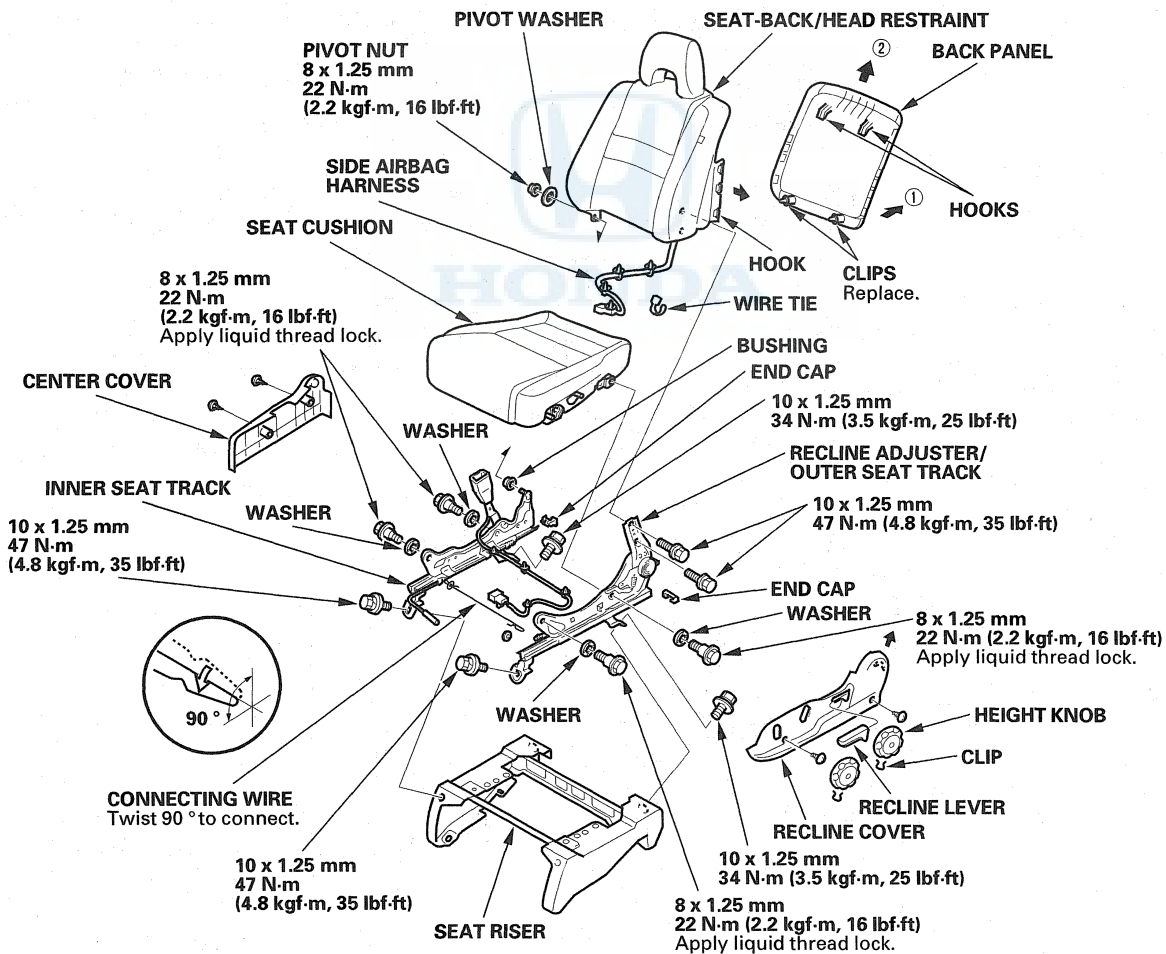
SRS components are located in this area. Review the SRS component locations (see page 23-17) and the precautions and procedures (see page 23-19) before doing repairs or service.

The operation of the driver's seat position sensor must be checked (see page 23-36) after any of these procedures:

- Driver's seat position sensor replacement
- Cover plate (front side of driver's seat slide rail) replacement

NOTE:

- Use the appropriate tool from the KTC trim tool set to avoid damage when prying components.
- Route the seat wire harness correctly.
- Make sure the bushing and pivot washer are installed correctly.
- Apply multipurpose grease to the moving portion of the seat track.
- To prevent wrinkles in the seat-back cover, stretch the material evenly over the pad.



Front Seat Disassembly/Reassembly - Passenger's Manual

Special Tools Required

KTC trim tool set SOJATP2014 *

* Available through the American Honda Tool and Equipment Program; call 888-424-6857

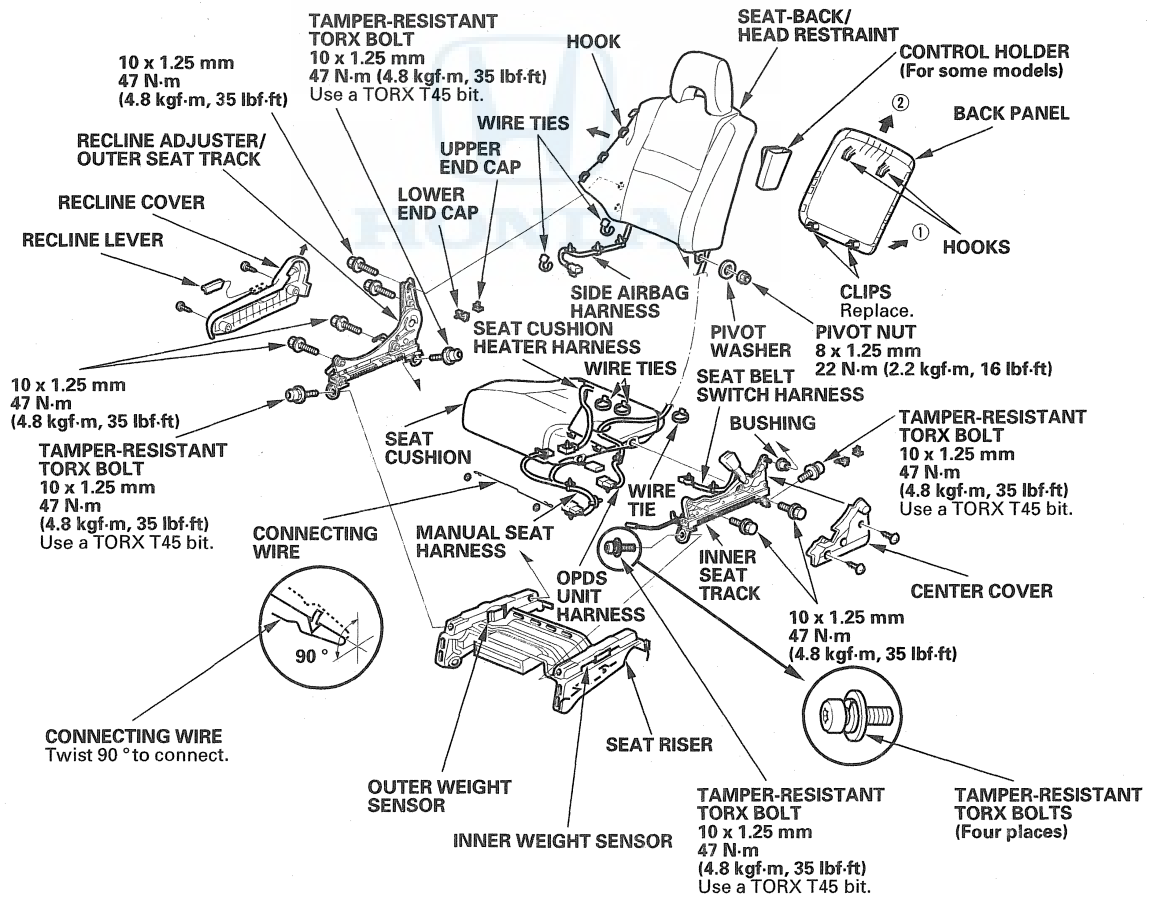
SRS components are located in this area. Review the SRS component locations (see page 23-17) and the precautions and procedures (see page 23-19) before doing repairs or service.

The ODS unit must be calibrated (see page 23-34) after any of these procedures:

- Front passenger's seat replacement (including any seat components)
- Replacement of the seat weight sensors
- Replacement of the ODS unit

NOTE:

- Use the appropriate tool from the KTC trim tool set to avoid damage when prying components.
- Route the seat wire harness correctly.
- Make sure the bushing and pivot washer are installed correctly.
- Apply multipurpose grease to the moving portion of the seat track.
- To prevent wrinkles in the seat-back cover, stretch the material evenly over the pad.
- If the seat-back pad or the ODS unit is replaced with new one, reinitialize the ODS unit (see page 23-33).



Seats

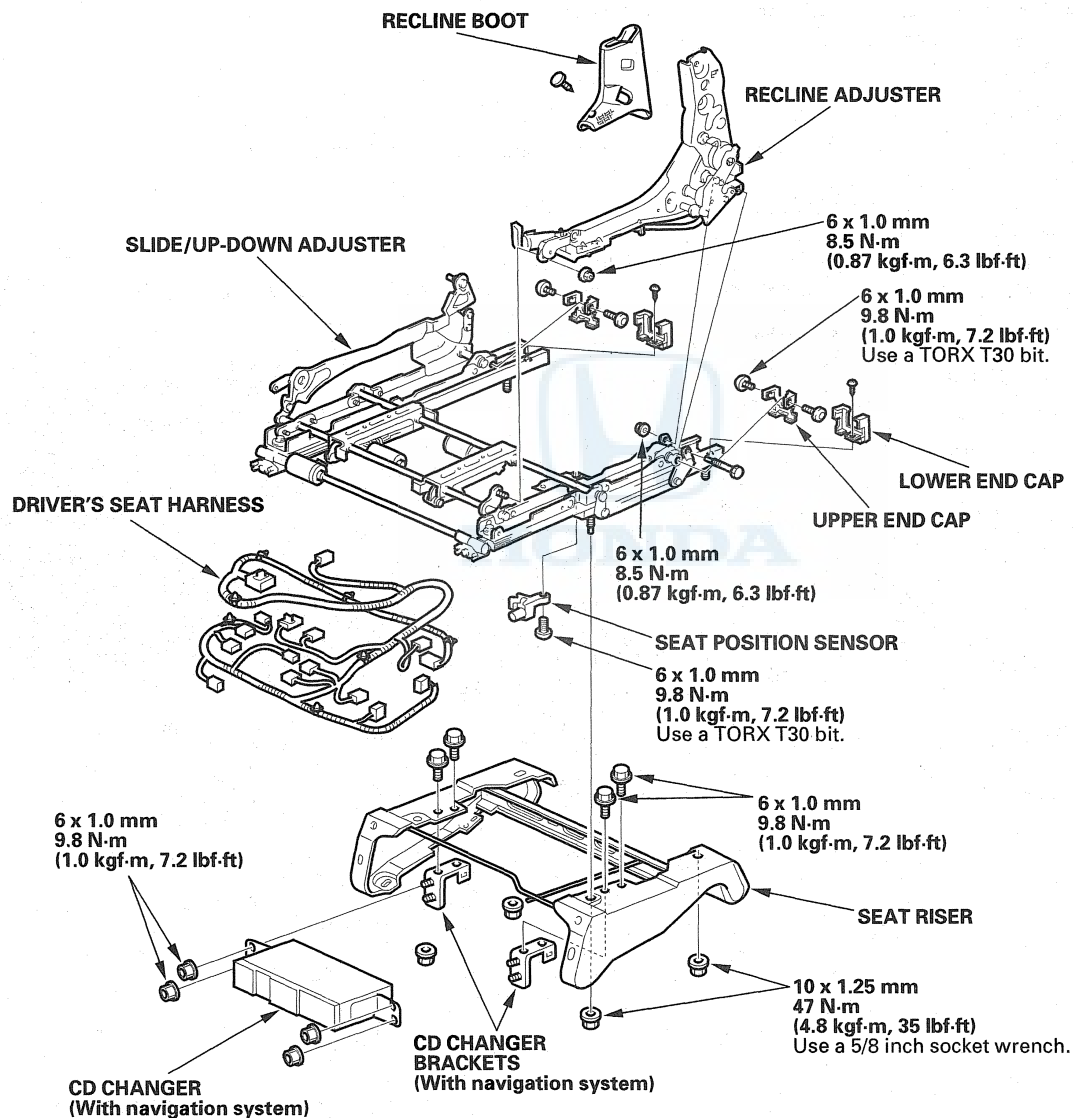
Front Seat Linkage Disassembly/Reassembly - Driver's 8-Way Power

The operation of the driver's seat position sensor must be checked (see page 23-36) after any of these procedures:

- Driver's seat position sensor replacement
- Cover plate (front side of driver's seat slide rail) replacement

NOTE:

- Replace the bushings with new ones.
- Apply multipurpose grease to the sliding and pivot portions.
- Check operation of the recline adjuster and slide/up-down adjuster.





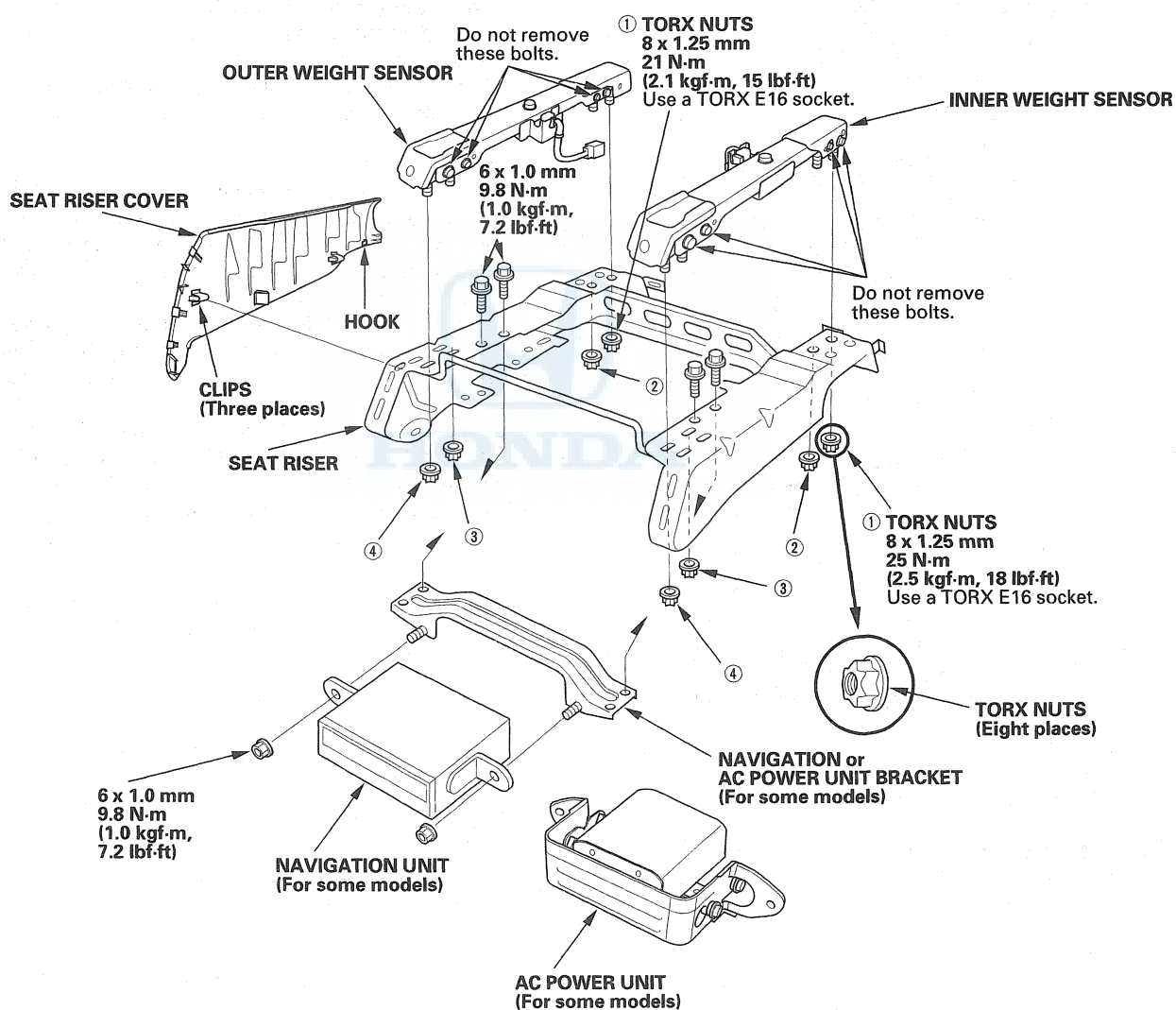
Front Passenger's Seat Riser Disassembly/Reassembly

The ODS unit must be calibrated (see page 23-34) after any of these procedures:

- Front passenger's seat replacement (including any seat components)
- Replacement of the seat weight sensors
- Replacement of the ODS unit

NOTE:

- When tightening the weight sensor mounting nuts, starting at the rear, tighten the nuts in the sequence shown. Improper tightening could cause the front passenger's airbag system to malfunction.
- Make sure the weight sensor connectors are plugged in properly.
- Make sure the weight sensor wires are routed properly so they are not pinched or interfere with other parts.

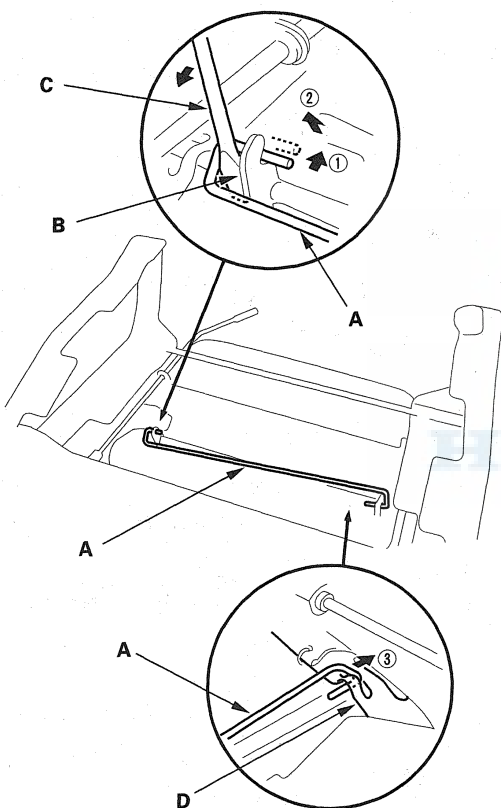


Seats

Front Seat Torsion Bar Replacement - Driver's Manual Height Adjustable

NOTE: Take care not to tear the seams or damage the seat covers.

1. Remove the front seat (see page 20-104).
2. Put on gloves to protect your hands. Remove the torsion bar (A) from the hook (B) with a flat-tip screwdriver (C), then pull out the torsion bar from the seat cushion frame (D).



3. Install the torsion bar in the reverse order of removal.

Front Seat Cover Replacement

- SRS components are located in this area. Review the SRS component locations (see page 23-17) and the precautions and procedures (see page 23-19) before doing repairs or service.
- The operation of the driver's seat position sensor must be checked after any of these actions (see page 23-36):
 - Driver's seat position sensor replacement
 - Cover plate (front side of driver's seat slide rail) replacement
- The ODS unit must be calibrated after any of the these actions (see page 23-34):
 - Front passenger's seat replacement (including any seat components)
 - Replacement of the seat weight sensors
 - Replacement of the ODS unit

NOTE:

- Seats with a side airbag have a "SIDE AIRBAG" label on the seat-back. Because the component parts (seat-back cover, cushion, etc.) of seats with and without airbags are different, make sure you install only the correct replacement parts.
- Do not repair any tears or frayed spots of the seat-back cover. If necessary, replace the seat-back cover.
- Take care not to tear the seams or damage the seat covers.
- On the passenger's seat, do not touch the OPDS sensor in the seat-back pad, and keep it away from oil. Oil can corrode the sensor causing it to fail.
- Put on gloves to protect your hands.

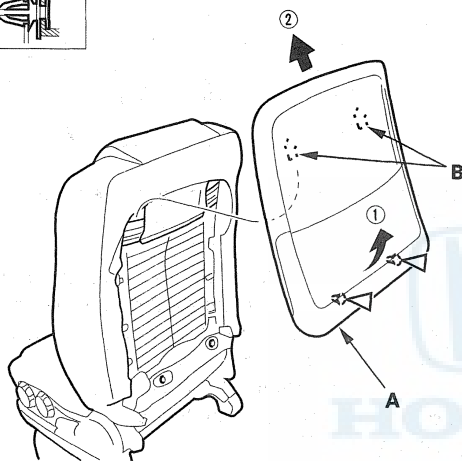


Seat-back Cover

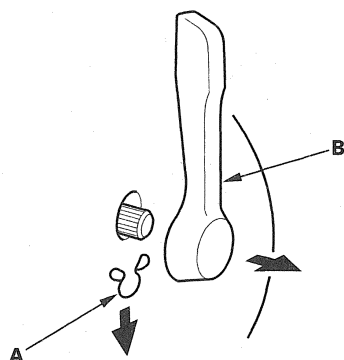
1. Remove the front seat (see page 20-104).
2. Remove the head restraint.
3. Detach the clips by pulling on the bottom of the back panel (A) back, then pull the panel upward to release the hooks (B) from the seat-back frame, and remove the panel.

Fastener Locations

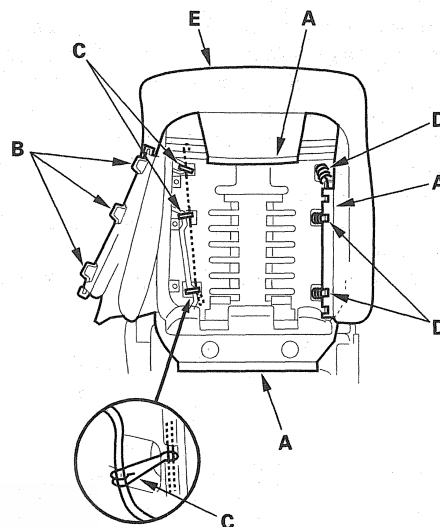
▷ : Clip, 2



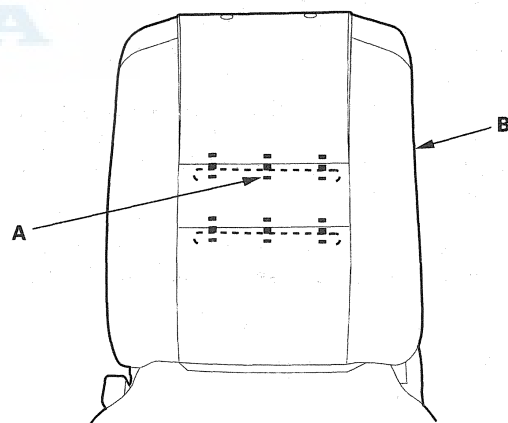
4. For some driver's seats: Remove the clip (A), then remove the lumbar support knob (B).



5. Release the hook strips (A), hooks (B, C), and inside springs (D), then loosen the seat-back cover (E).



6. Pull back the edge of the seat-back cover all the way around. Release the clips (A) from under the seat-back cover (B), then remove the seat-back cover.



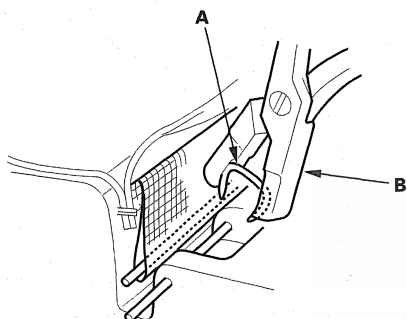
(cont'd)

Seats

Front Seat Cover Replacement (cont'd)

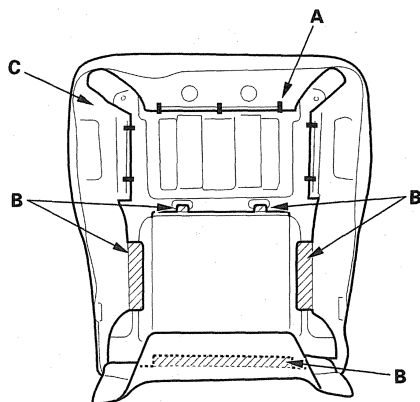
7. Install the seat-back cover in the reverse order of removal, and note these items:

- To prevent wrinkles when installing a seat-back cover, make sure the material is stretched evenly over the pad before securing the fasteners, hooks and inside springs.
- Replace any clips (A) you removed with new ones using commercially available upholstery ring pliers (B).
- Use only original Honda replacement seat-back covers.
- Replace the back panel clips with new ones.

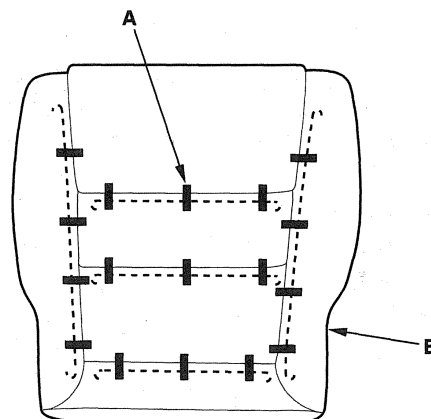


Seat Cushion Cover

1. Remove the front seat (see page 20-104).
2. Remove the seat cushion, driver's 8-way power (see page 20-107), driver's manual height adjustable (see page 20-108), passenger's manual (see page 20-109).
3. Release the clips (A) and hooks (B) from under the seat cushion, then loosen the seat cushion cover (C).

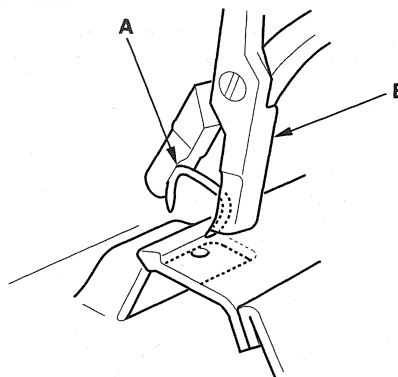


4. Pull back the edge of the seat cushion cover all the way around, and release the clips (A), then remove the seat cushion cover (B).



5. Install the seat cushion cover in the reverse order of removal, and note these items:

- To prevent wrinkles when installing a seat cushion cover, make sure the material is stretched evenly over the pad before securing the clips and hooks.
- Replace any clips (A) you removed with new ones using commercially available upholstery ring pliers (B).





Second Row Seat Removal/Installation

Special Tools Required

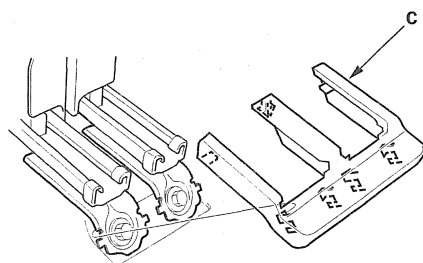
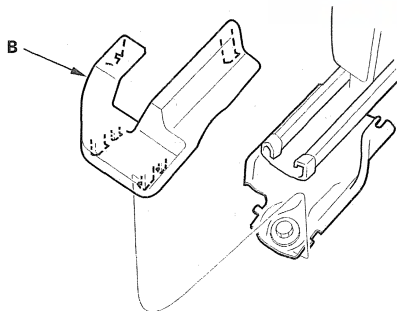
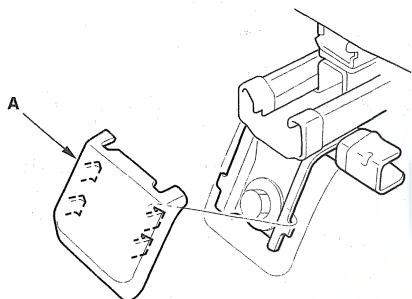
KTC trim tool set SOJATP2014 *

* Available through the American Honda Tool and Equipment Program; call 888-424-6857

NOTE:

- Use the appropriate tool from the KTC trim tool set to avoid damage when prying components.
- Take care not to scratch the body or tear the seat covers.
- Put on gloves to protect your hands.

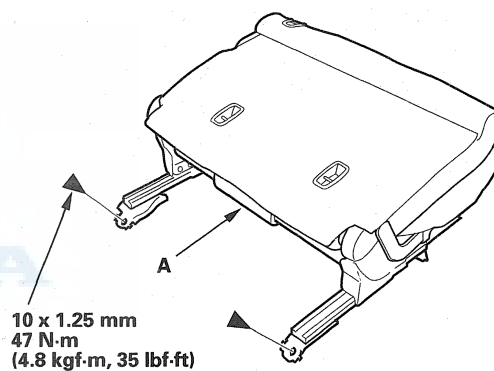
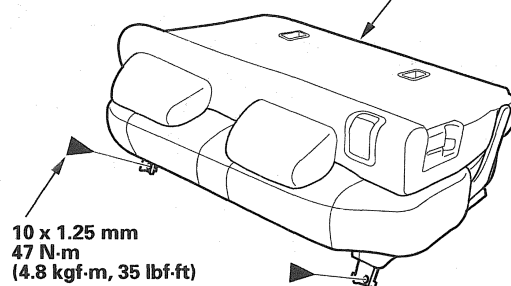
1. Remove the front foot covers (A) from the front of both seat tracks, and remove the rear outer foot cover (B) and rear inner foot cover (C) from the back of the seat tracks.



2. Remove the bolts securing the second row seat (A).

Fastener Locations

► : Bolt, 4



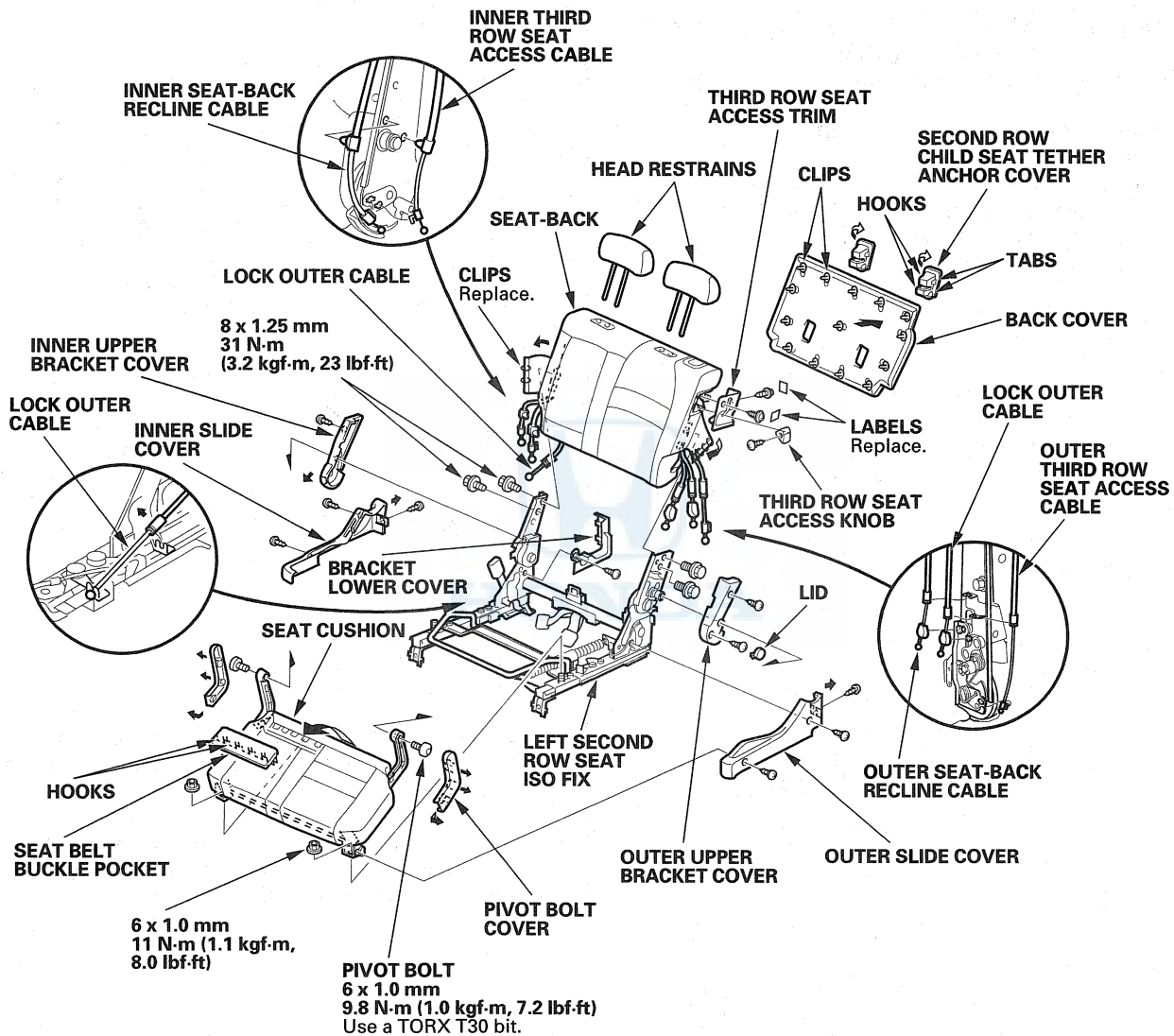
3. Fold the seat-back forward. With the help of an assistant, remove the second row seat through the door opening.
4. Install the seat in the reverse order of removal, and apply liquid thread lock to the seat mounting bolts before reinstallation.

Seats

Left Second Row Seat Disassembly/Reassembly

NOTE:

- Take care not to bend the seat-back recline cables and third row seat access cables.
- Check if the clips are damaged or stress-whitened, and if necessary, replace them with new ones.
- Make sure the seat-back recline cables, third row seat access cables, and lock outer cable are connected securely.
- To prevent wrinkles in the seat-back cover, stretch the material evenly over the pad.

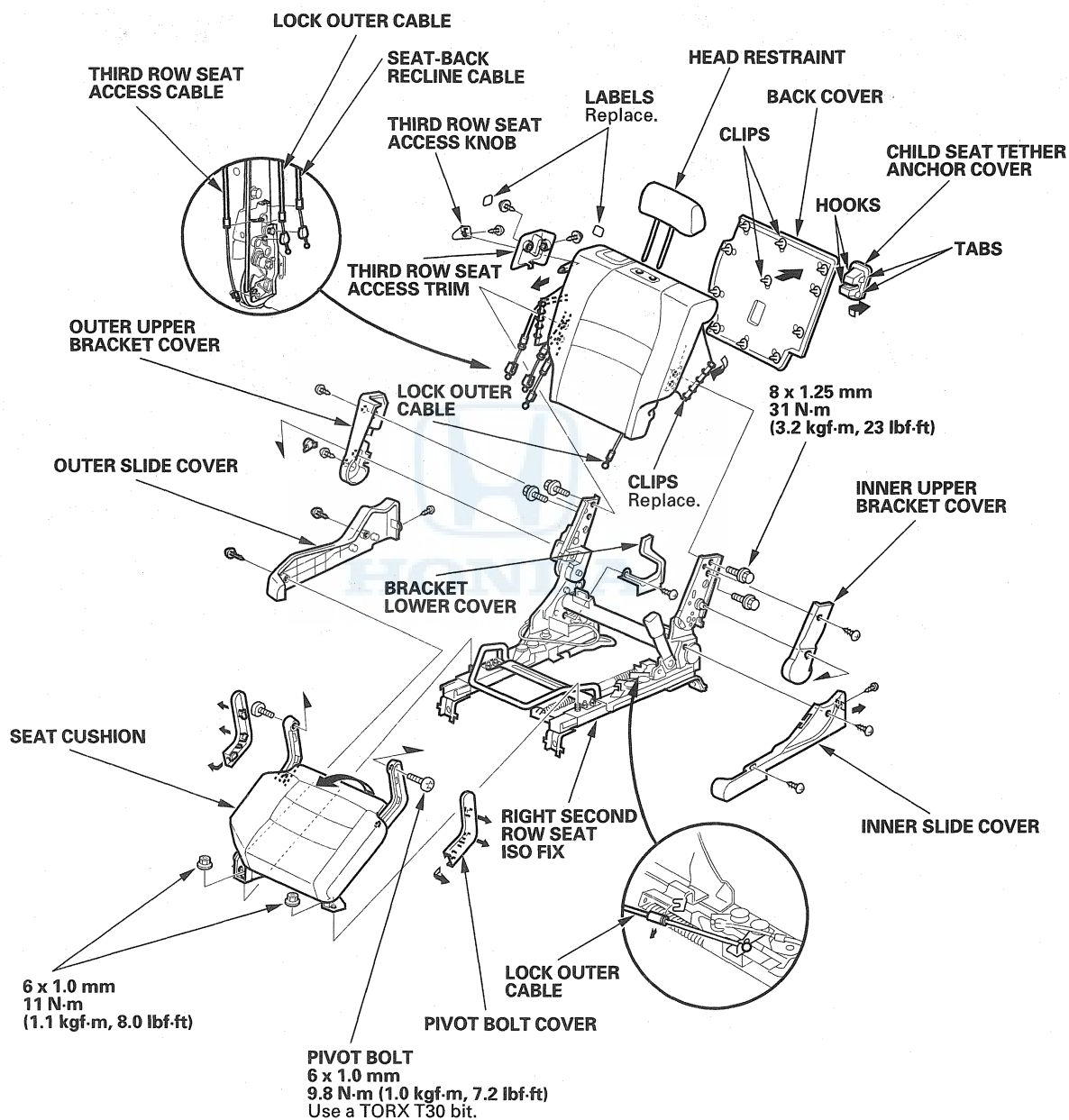




Right Second Row Seat Disassembly/Reassembly

NOTE:

- Take care not to bend the seat-back recline cable and third row seat access cable.
- Check if the clips are damaged or stress-whitened, and if necessary, replace them with new ones.
- Make sure the seat-back recline cable, third row seat access cable, and lock outer cable are connected securely.
- To prevent wrinkles in the seat-back cover, stretch the material evenly over the pad.

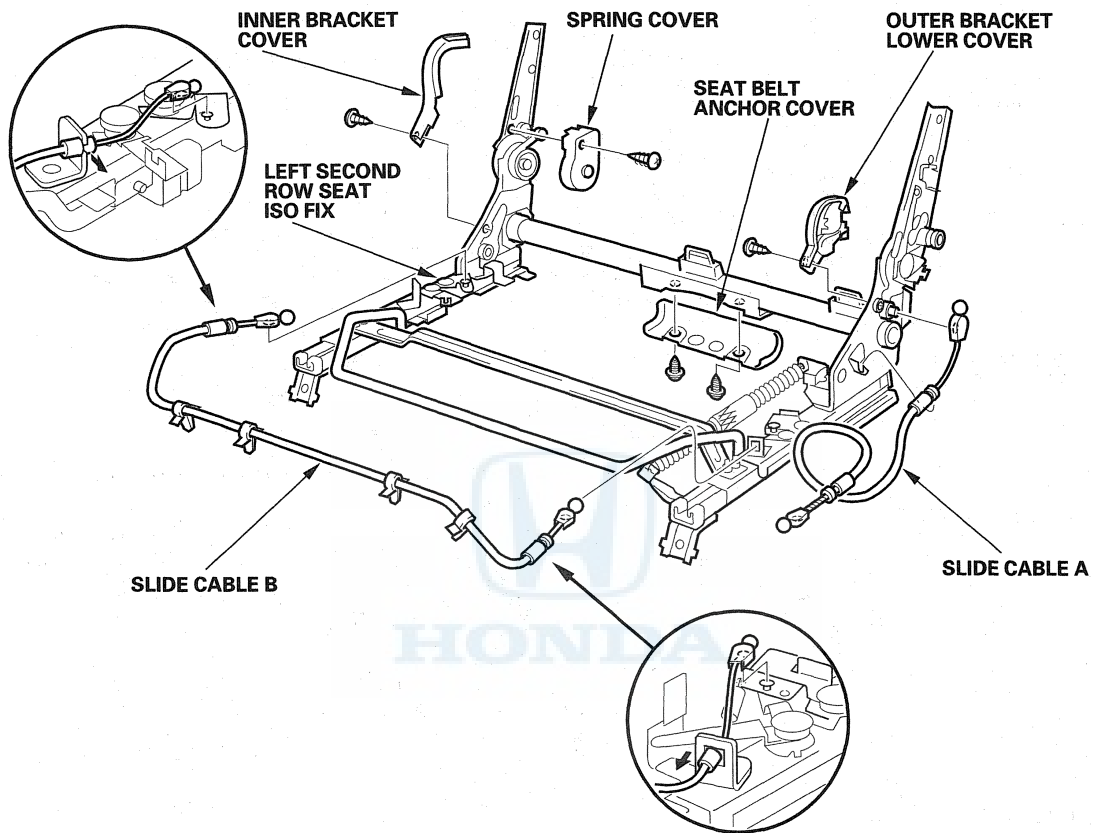


Seats

Left Second Row Seat Linkage Disassembly/Reassembly

NOTE:

- Take care not to bend the slide cable.
- Replace the push nut with a new one.
- Apply multipurpose grease to the sliding portions.
- Make sure the slide cable is connected securely, and if necessary, adjust the cable.

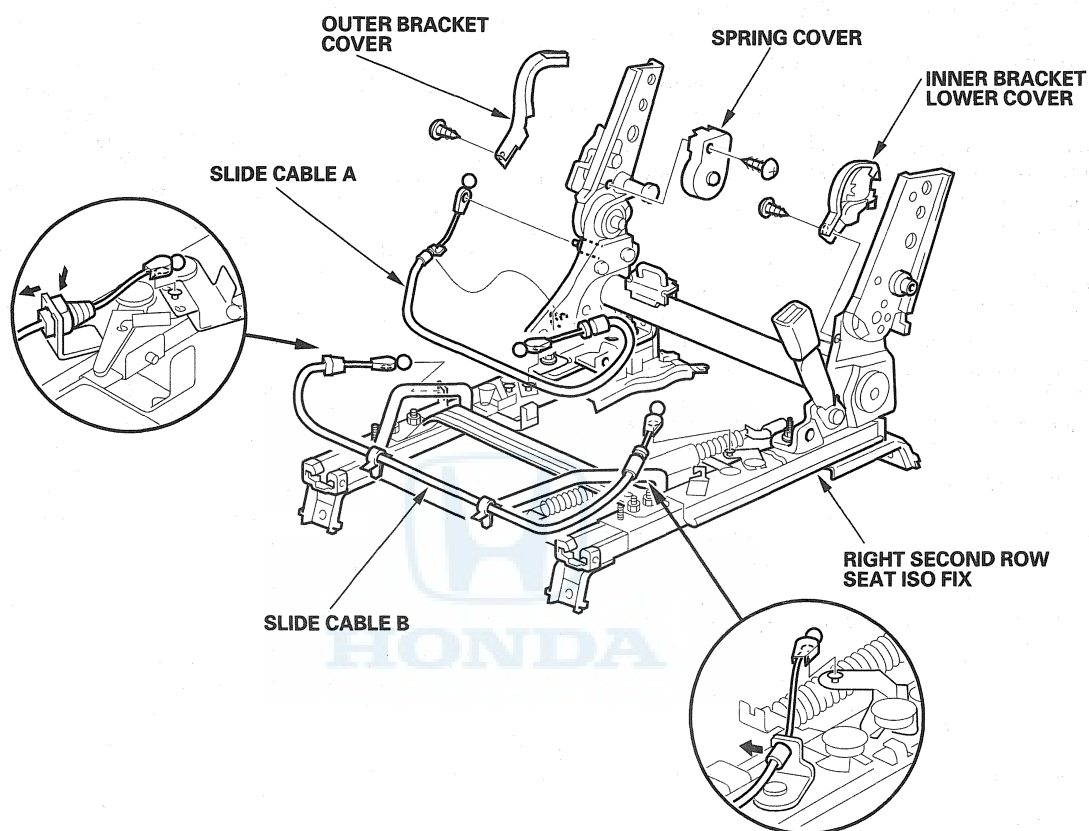




Right Second Row Seat Linkage Disassembly/Reassembly

NOTE:

- Take care not to bend the slide cable.
- Replace the push nut with a new one.
- Apply multipurpose grease to the sliding portions.
- Make sure the slide cable is connected securely, and if necessary, adjust the cable.



Seats

Second Row Seat-back Recline Lever Replacement

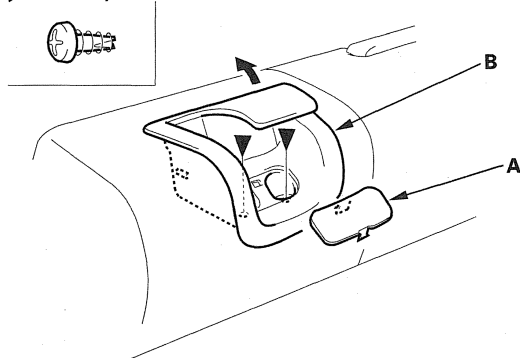
NOTE:

- Take care not to tear the seams or damage the seat covers.
- Take care not to bend the cables.

1. Slide the second row seat forward fully.
2. Left second row seat: Remove the left second row seat belt center anchor bolts (see page 23-9).
3. Remove the pivot bolt cover. Using a TORX T30 bit, remove the pivot bolt from both sides, left second row seat (see page 20-116), right second row seat (see page 20-117).
4. Remove the third row seat access trim (see step 4 on page 20-124) and back cover (see step 5 on page 20-125), then release the clips from behind the seat-back, as necessary (see step 6 on page 20-125).
5. Left second row seat: Lift the seat cushion up, and remove the outer bracket cover and inner bracket cover (see page 20-116).
6. Right second row seat: Lift the seat cushion up, and remove the outer bracket cover (see page 20-117).
7. Return the second row seat-back, and fold down the seat-back.
8. Pry out the lid (A), and remove the screws securing the recline lever (B).

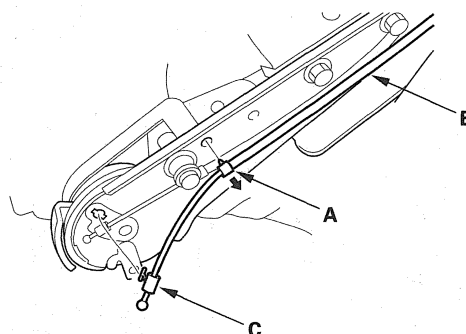
Fastener Locations

► : Screw, 2

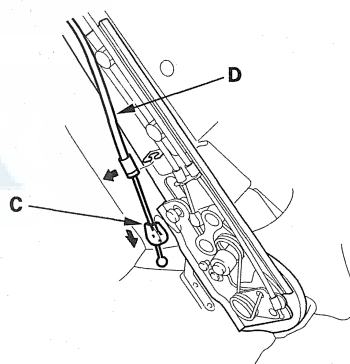


9. Left second row seat: Remove the clip (A) securing the inner recline cable (B), release the clips (C) (see page 20-116), then remove the inner recline cable and outer recline cable (D) from both brackets.

Inner

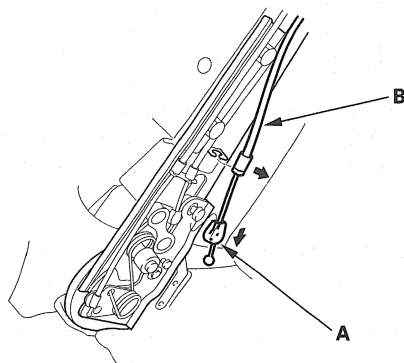


Outer

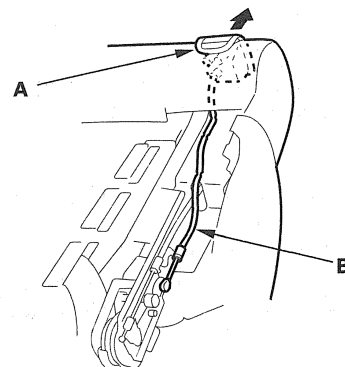




10. Right second row seat: Detach the clip (A) and recline cable (B) from the bracket.



Right second row seat

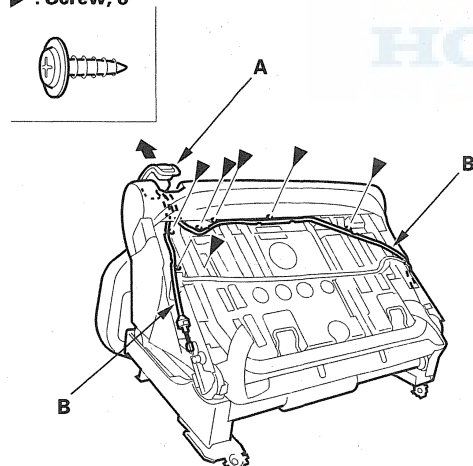


11. Left second row seat: Remove the screws from behind the seat-back.
12. Remove the recline lever (A) with the recline cables (B).

Left second row seat

Fastener Locations

► : Screw, 6



13. Install the lever in the reverse order of removal, and note these items: Make sure the recline cables are connected securely.

Seats

Second Row Seat-back Recline Cable Replacement

Special Tools Required

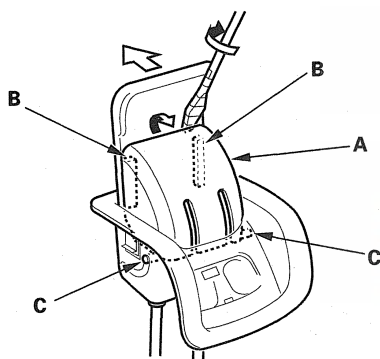
KTC trim tool set SOJATP2014 *

* Available through the American Honda Tool and Equipment Program; call 888-424-6857

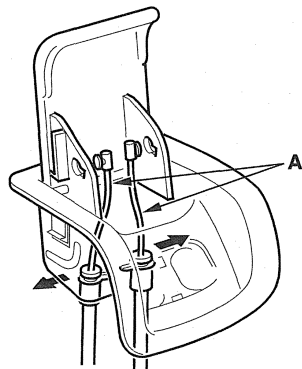
NOTE:

- Use the appropriate tool from the KTC trim tool set to avoid damage when prying components.
- Take care not to bend the cable.

1. Remove the seat-back recline lever (see page 20-120).
2. Carefully pry out the cover (A) with a flat-tip screwdriver at the gap while holding the lever fully open. Release the tabs (B) and the stops (C), then remove the cover.



3. Disconnect the recline cables (A). There is no inner recline cable on the right recline lever.



4. Install the second row seat-back recline cables in the reverse order of removal, and make sure the cables are connected securely.

Third Row Seat Access Cable Replacement

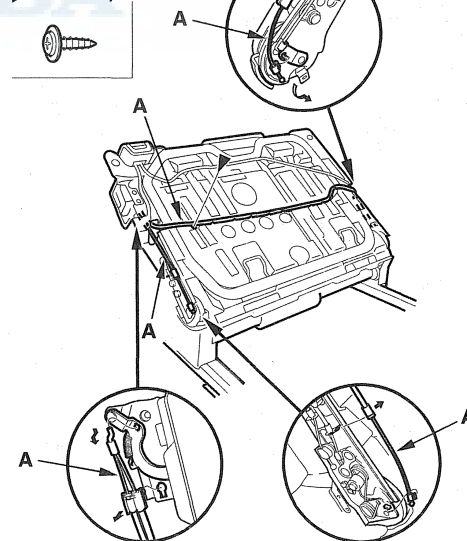
NOTE: Take care not to bend the cable.

1. Slide the second row seat forward fully.
2. Remove the pivot bolt cover. Using a TORX T30 bit, remove the pivot bolt from both sides, left second row seat (see page 20-116), right second row seat (see page 20-117).
3. Remove the second row seat-back cover/pad from the seat-back frame (see page 20-124).
4. Left second row seat: Lift the second row seat cushion up, and remove the outer bracket cover and inner bracket cover (see page 20-116).
5. Right second row seat: Lift the seat cushion up, and remove the outer bracket cover (see page 20-117).
6. Disconnect the third row seat access cable (A) at each end, and remove the screw from behind the left seat-back, then remove the cable(s).

Left second row seat

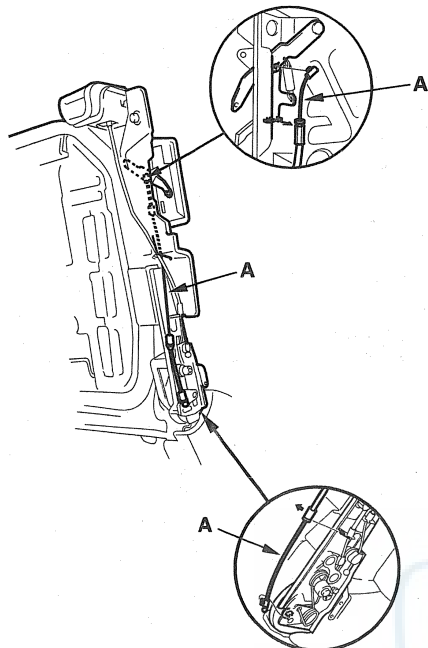
Fastener Location

► : Screw, 1





Right second row seat



7. Install the third row seat access cable in the reverse order of removal, and make sure the cable is connected securely.

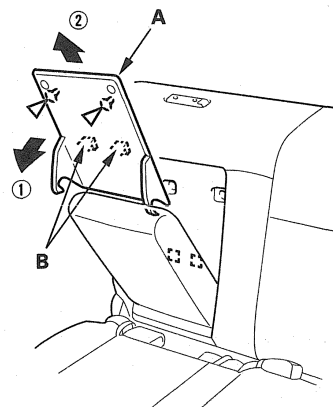
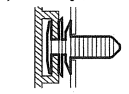
Second Row Seat Beverage Holder/Tray Replacement

NOTE: Take care not to tear the seams or damage the seat covers.

1. Detach the clips of the beverage holder/tray panel (A), then pull the panel upward to release the hooks (B) and remove it.

Fastener Locations

► : Clip, 2



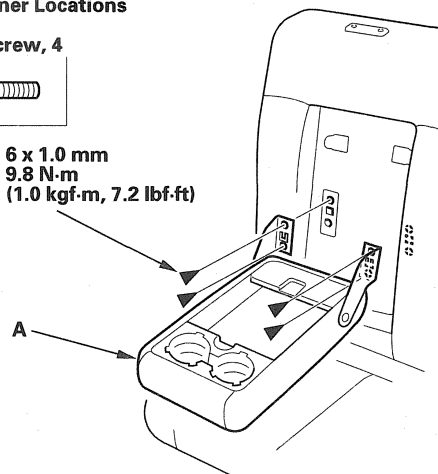
2. Using a TORX T30 bit, remove the screws, then remove the beverage holder/tray (A).

Fastener Locations

► : Screw, 4



6 x 1.0 mm
9.8 N·m
(1.0 kgf·m, 7.2 lbf·ft)



(cont'd)

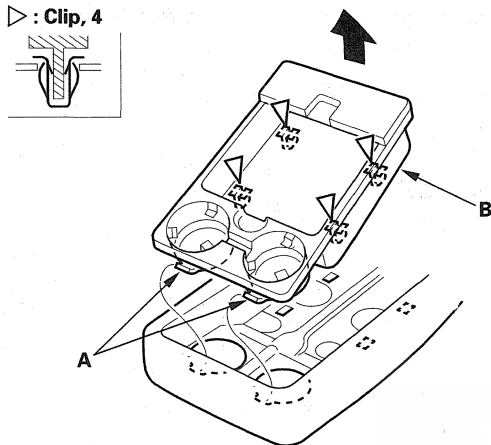
Seats

Second Row Seat Beverage Holder/Tray Replacement (cont'd)

- Detach the clips, and release the front hooks (A), then remove the beverage holder/tray (B).

Fastener Locations

▷ : Clip, 4



- Install the beverage holder/tray in the reverse order of removal, and check if the clips are damaged or stress-whitened, and if necessary, replace them with new ones.

Second Row Seat Cover Replacement

NOTE:

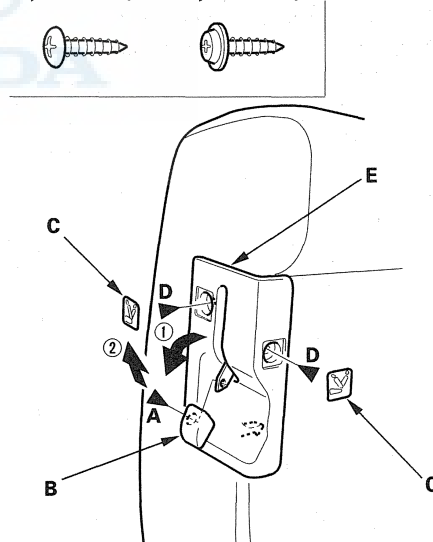
- Take care not to tear the seams or damage the seat covers.
- Put on gloves to protect your hands.

Seat-back Cover

- Slide the second row seat forward fully.
- Remove the pivot bolt cover. Using a TORX T30 bit, remove the pivot bolt from both sides, left second row seat (see page 20-116), right second row seat (see page 20-117).
- If equipped, remove the beverage holder/tray (see page 20-123) left second row seat.
- Remove the screw (A), then remove the third row seat access knob (B). Peel off the labels (C), and remove the screws (D), then remove the third row seat access trim (E).

Fastener Locations

A ▷ : Screw, 1 D ▷ : Screw, 2



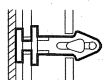


5. Fold the seat-back forward fully, detach the clips, and remove the back cover (A).

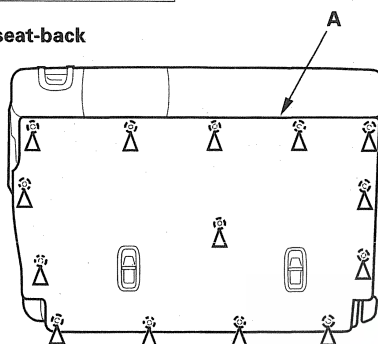
Fastener Locations

▷ : Clip

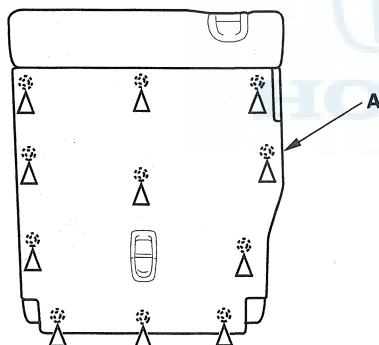
Left seat-back, 14
Right seat-back, 11



Left seat-back

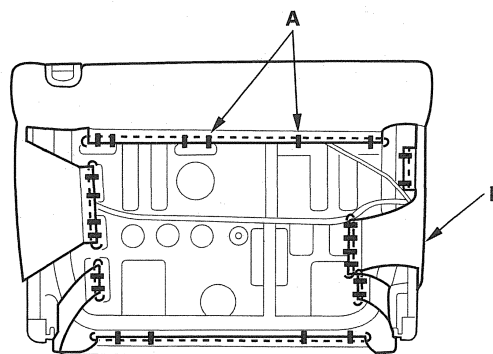


Right seat-back

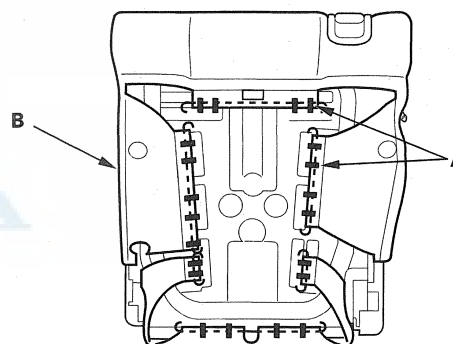


6. Release all of the clips (A) from the back of the seat-back (B).

Left seat-back



Right seat-back

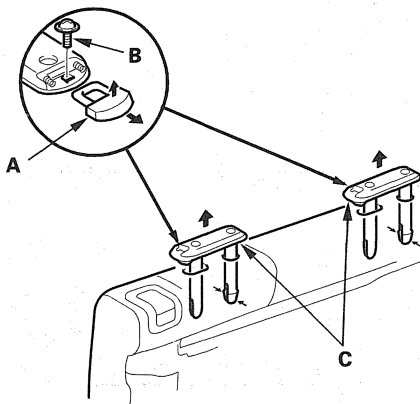


(cont'd)

Seats

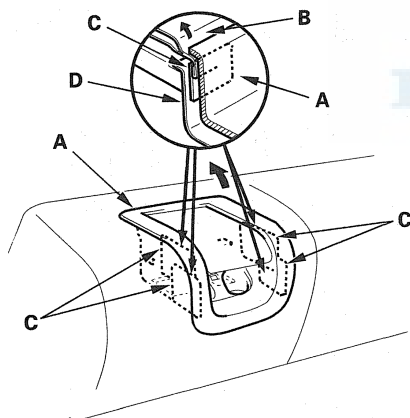
Second Row Seat Cover Replacement (cont'd)

7. Lift and pull out the release button (A), and remove the screw (B), then remove the head restraint guides (C).

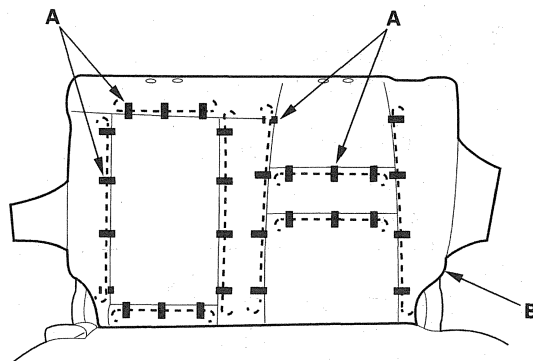


8. Remove the screws securing the recline lever (see step 8 on page 20-120).

9. While holding the recline lever (A) away from the seat-back cover (B), pull the retainers (C) out from under the lever (D).

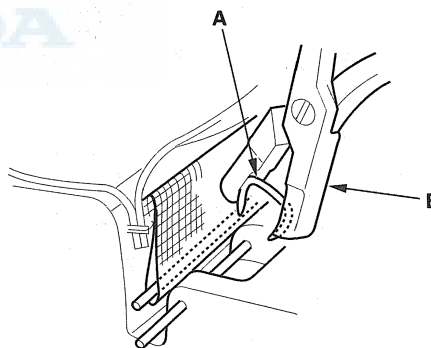


10. Pull back the edge of the seat-back cover all the way around, and release the clips (A), then remove the seat-back cover (B).



11. Install the seat-back cover in the reverse order of removal, and note these items:

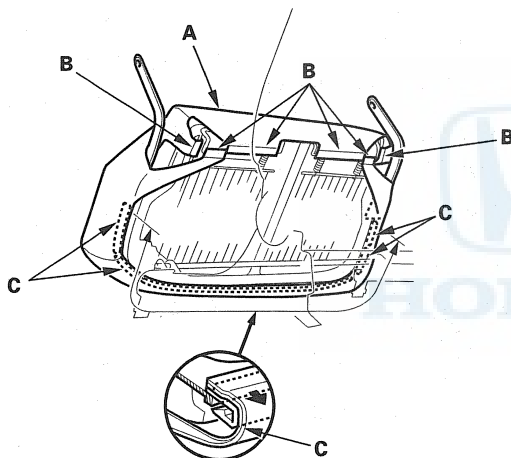
- To prevent wrinkles when installing a seat-back cover, make sure the material is stretched evenly over the pad before securing the hook and clips.
- Replace any clips (A) you removed with new ones using commercially available upholstery ring pliers (B).





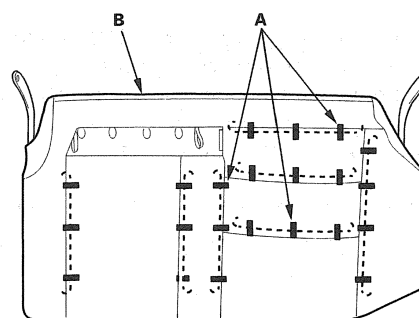
Seat Cushion Cover

1. Left second row seat: Remove the seat belt buckle pocket, then remove the left second row seat belt buckle and center second row seat belt detachable anchor complete from the seat cushion (see page 23-9).
2. Slide the second row seat forward fully.
3. Remove the pivot bolt cover. Using a TORX T30 bit, remove the pivot bolt from both sides, left second row seat (see page 20-116), right second row seat (see page 20-117).
4. Lift the seat cushion (A) up. Release all of the hook strips (B, C) from under the seat cushion.

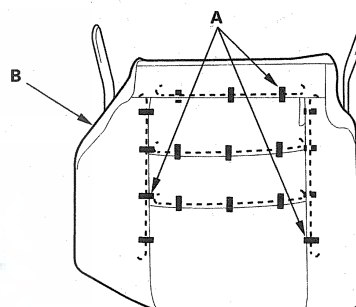


5. Pull back the edge of the seat cushion cover all the way around, and release the clips (A), then remove the seat cushion cover (B).

Left seat cushion

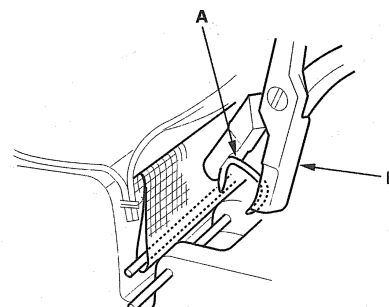


Right seat cushion



6. Install the seat cushion cover in the reverse order of removal, and note these items:

- To prevent wrinkles when installing a seat cushion cover, make sure the material is stretched evenly over the pad before securing the clips and hooks.
- Replace any clips (A) you removed with new ones using commercially available upholstery ring pliers (B).



Seats

Third Row Seat Removal/Installation

Special Tools Required

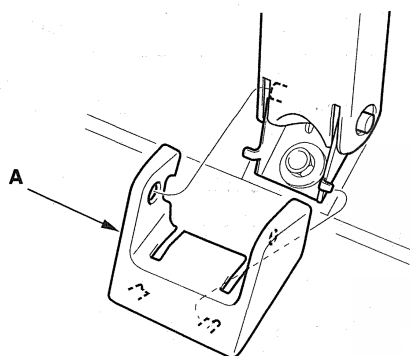
KTC trim tool set SOJATP2014 *

* Available through the American Honda Tool and Equipment Program; call 888-424-6857

NOTE:

- Use the appropriate tool from the KTC trim tool set to avoid damage when prying components.
- Take care not to scratch the body or tear the seat covers.
- Put on gloves to protect your hands.

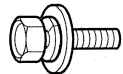
1. Remove the front mounting bolt covers (A) from both front links.



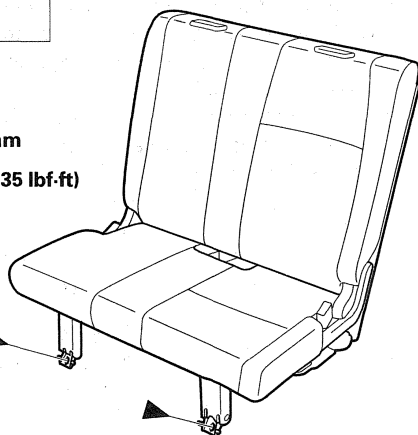
2. Remove the front mounting bolts.

Fastener Locations

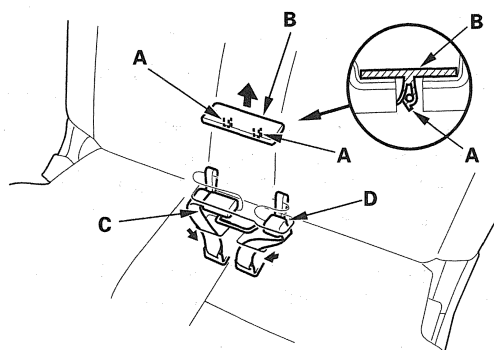
► : Bolt, 2



10 x 1.25 mm
47 N·m
(4.8 kgf·m, 35 lbf·ft)



3. On the left third row seat: Release the hooks (A), then remove the seat belt buckle pocket (B), and tuck the left third row seat belt buckle (C) and center third row seat belt detachable anchor (D) under the seat cushion.

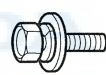


4. Lift the seat cushion up.

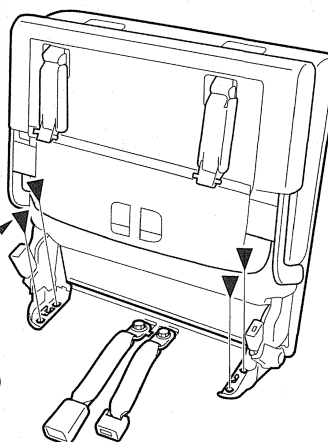
5. Remove the rear mounting bolts while holding the seat cushion.

Fastener Locations

► : Bolt, 4



10 x 1.25 mm
47 N·m
(4.8 kgf·m, 35 lbf·ft)



6. With the help of an assistant, remove the third row seat through the tailgate opening.

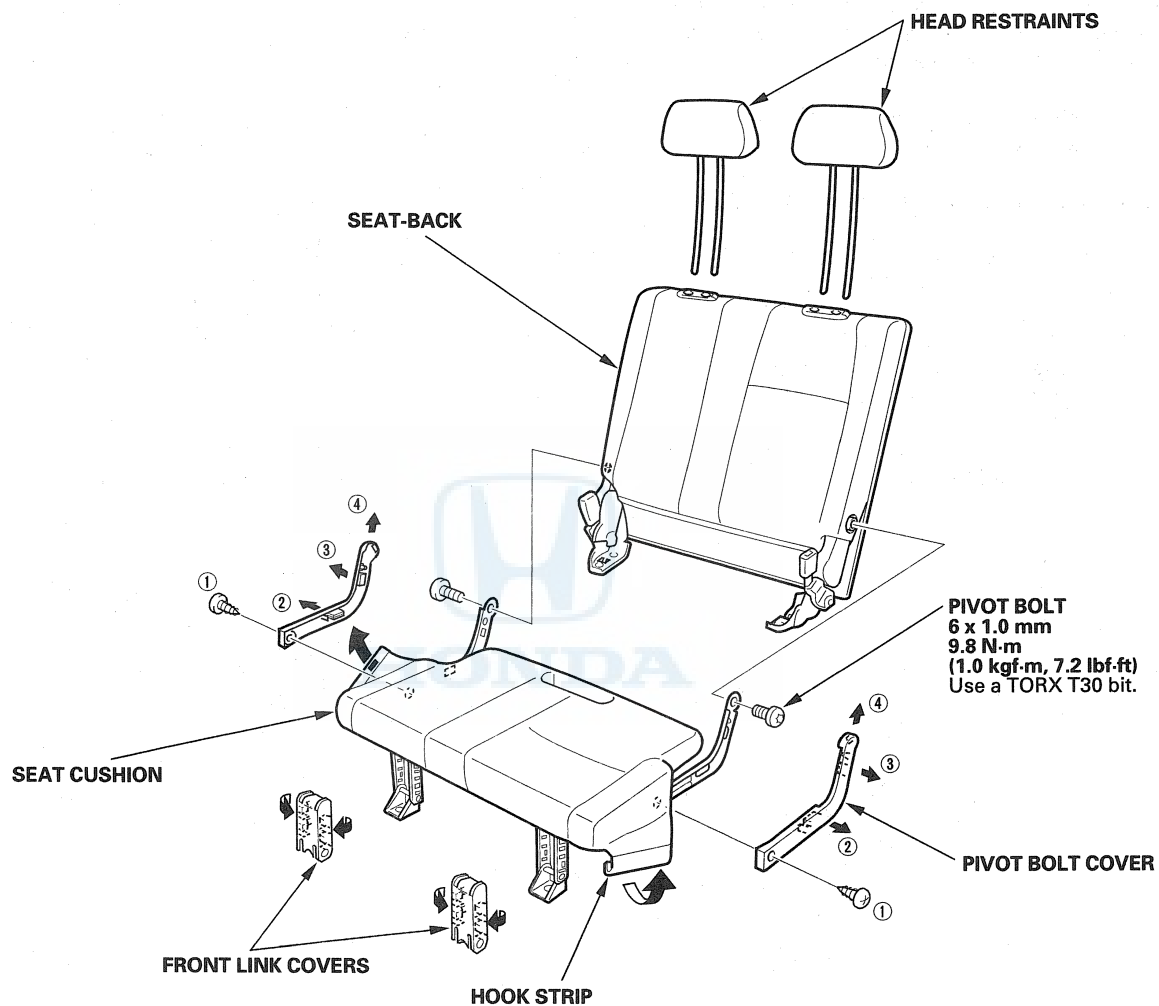
7. Install the seat in the reverse order of removal, and apply liquid thread lock to the seat mounting bolts before reinstallation.



Third Row Seat Disassembly/Reassembly

NOTE:

- Check if the clips are damaged or stress-whitened, and if necessary, replace them with new ones.
- To prevent wrinkles in the seat cushion cover, make sure the material is stretched evenly over the pad before securing the hook strip.



Third Row Seat Recline Adjuster Replacement

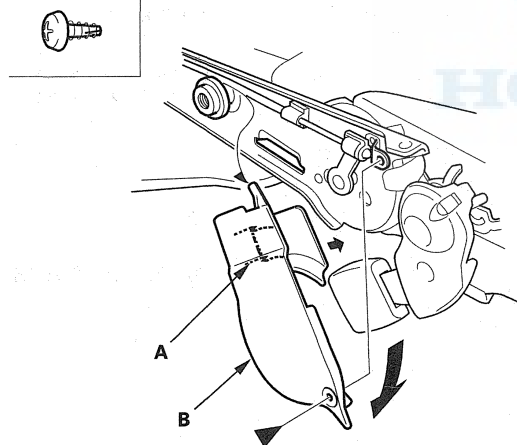
NOTE:

- Take care not to bend the seat-back recline cable.
- Put on gloves to protect your hands.
- The left third row seat outer recline adjuster is shown, the left inner is symmetrical and the right inner is similar except it has the seat belt buckles in place of the seat belt detachable anchor.

1. Remove the left third row seat or right third row seat (see page 20-128).
2. Remove the seat-back (see page 20-129).
3. Remove the screws securing the seat-back recline lever (see step 3 on page 20-132).
4. Remove the back cover (see step 4 on page 20-134), then release the clips from behind the seat-back, as necessary (see step 5 on page 20-134).
5. Remove the screw and release the hook (A), then remove the outer bracket cover (B).

Fastener Location

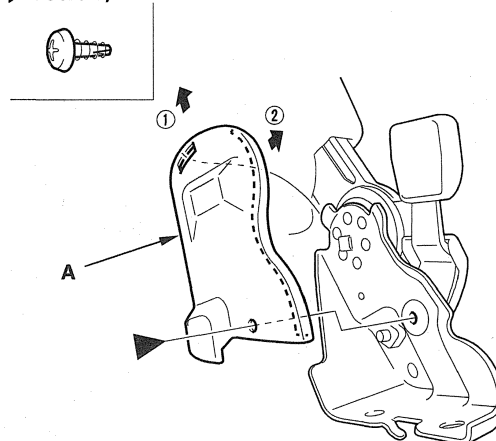
► : Screw, 1



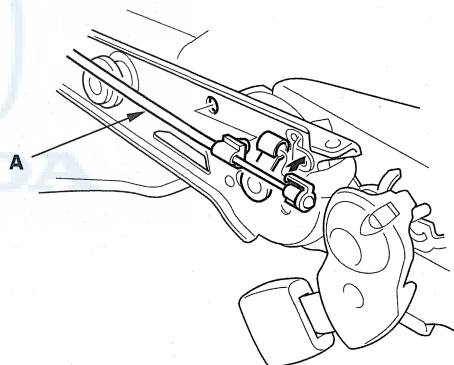
6. If necessary, remove the inner bracket cover (A).

Fastener Location

► : Screw, 1



7. Disconnect the seat-back recline cable (A).

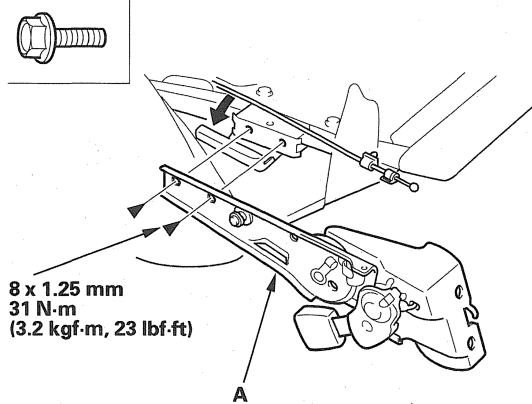




8. Remove the bolts, then remove the recline adjuster (A).

Fastener Locations

► : Bolt, 2



9. Install the adjuster in the reverse order of removal, and make sure the seat-back recline cable is connected securely.

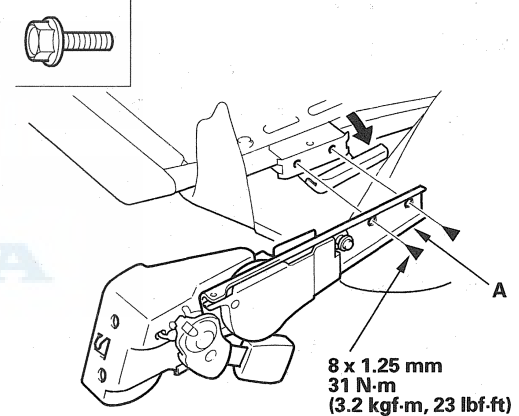
Right Third Row Seat Pivot Replacement

NOTE: Put on gloves to protect your hands.

1. Remove the right third row seat (see page 20-128).
2. Remove the seat-back (see page 20-129).
3. Remove the screws securing the seat-back recline lever (see step 3 on page 20-132).
4. Remove the back cover (see step 4 on page 20-134), then release the clips from behind the seat-back, as necessary (see step 5 on page 20-134).
5. Remove the bolts, then remove the seat pivot (A).

Fastener Locations

► : Bolt, 2



6. Install the pivot in the reverse order of removal.

Seats

Third Row Seat-back Recline Lever Replacement

Special Tools Required

KTC trim tool set SOJATP2014 *

* Available through the American Honda Tool and Equipment Program; call 888-424-6857

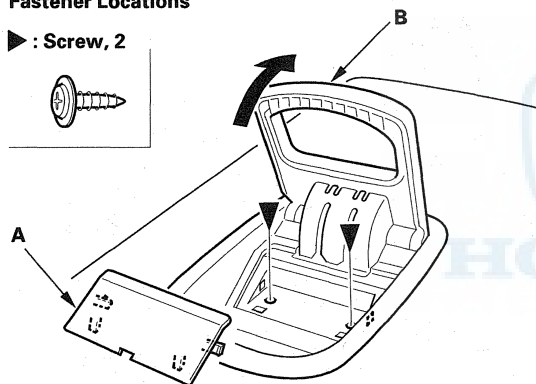
NOTE:

- Use the appropriate tool from the KTC trim tool set to avoid damage when prying components.
- Take care not to bend the seat-back recline cable.
- Put on gloves to protect your hands.

1. Remove the left third row seat or right third row seat (see page 20-128).
2. Remove the seat-back (see page 20-129).
3. Pry out the lid (A), and remove the screws securing the third row seat-back recline lever (B).

Fastener Locations

► : Screw, 2

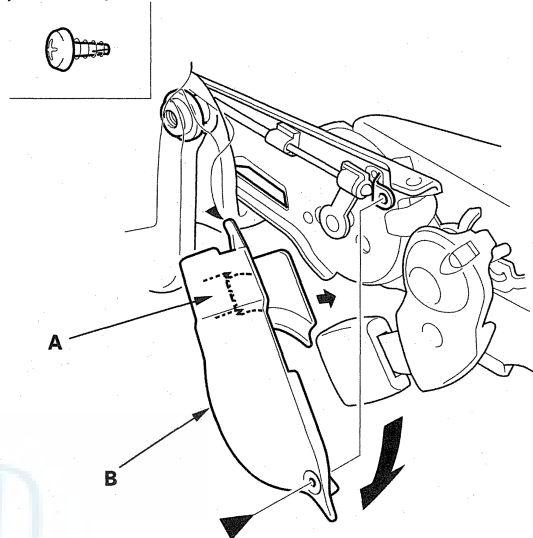


4. Remove the back cover (see step 4 on page 20-134), then release the clips from behind the seat-back, as necessary (see step 5 on page 20-134).

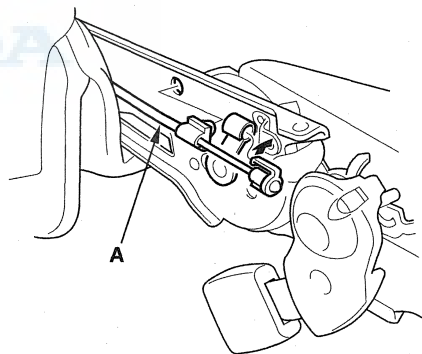
5. Remove the screw and release the hook (A), then remove the outer bracket cover (B).

Fastener Location

► : Screw, 1



6. Disconnect the seat-back recline cable (A).



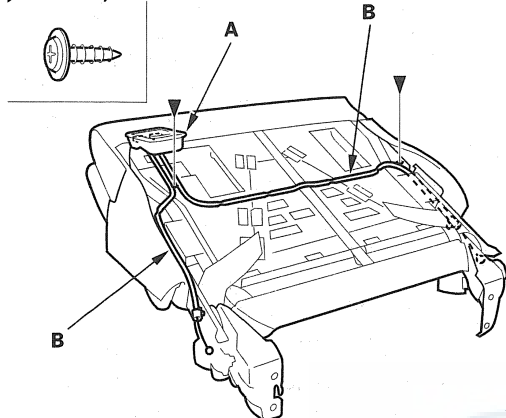


7. Remove the screw(s), then remove the seat-back recline lever (A) with the recline cable(s) (B).

Left third row seat

Fastener Locations

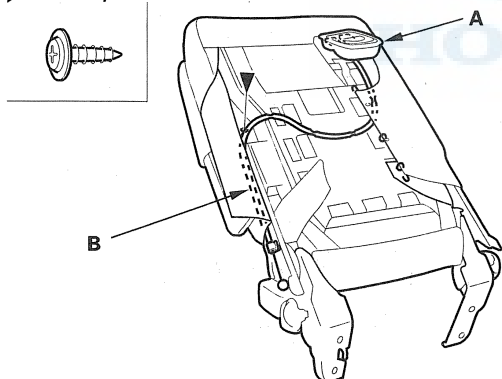
► : Screw, 2



Right third row seat

Fastener Location

► : Screw, 1



8. Install the lever in the reverse order of removal, and make sure the recline cables are connected securely.

Third Row Seat-back Recline Cable Replacement

Special Tools Required

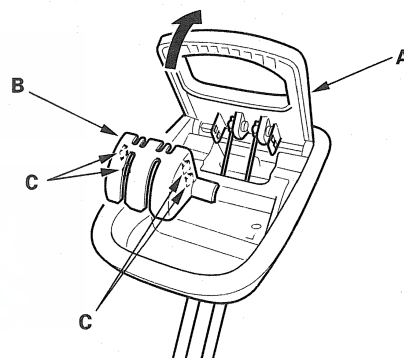
KTC trim tool set SOJATP2014 *

* Available through the American Honda Tool and Equipment Program; call 888-424-6857

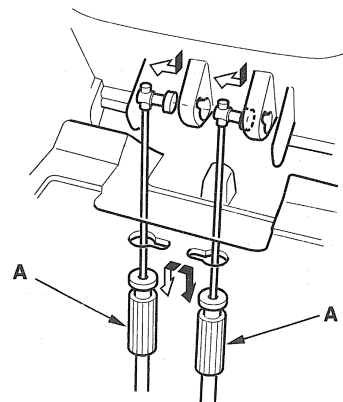
NOTE:

- Use the appropriate tool from the KTC trim tool set to avoid damage when prying components.
- Take care not to bend the cable.

1. Remove the third row seat-back recline lever (see page 20-132).
2. While holding the lever (A) open, carefully pry out the cover (B) with a flat-tip screwdriver to release the tabs (C), then remove the cover.



3. Disconnect the recline cables (A). There is no inner recline cable on the right recline lever.



4. Install the third row seat-back recline cable in the reverse order of removal, and make sure the cables are connected securely.

Seats

Third Row Seat Cover Replacement

NOTE:

- Take care not to scratch the interior trim.
- Take care not to tear the seams or damage the seat covers.
- Put on gloves to protect your hands.

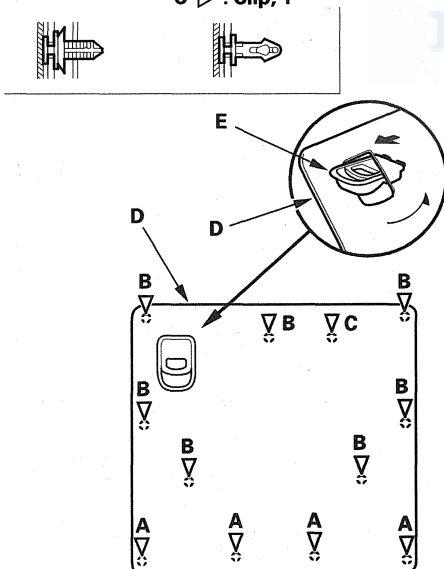
Seat-back Cover

1. Remove both front mounting bolts, then lift the seat cushion up (see page 20-128).
2. Remove the pivot bolt cover and pivot bolt from both sides, then remove the seat cushion (see page 20-129).
3. Remove the screws securing the seat-back recline lever (see step 3 on page 20-132).
4. Detach the clips (A, B, C), and remove the back cover (D) from the frame, then turn the cover to pass the recline lever (E) through a hole in the cover.

Left seat-back

Fastener Locations

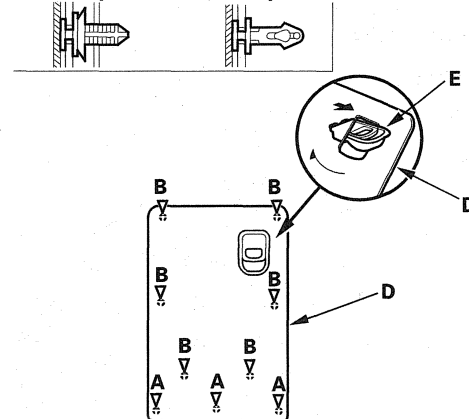
- A ▷ : Clip, 4 B ▷ : Clip, 7 or 8
C ▷ : Clip, 1



Right seat-back

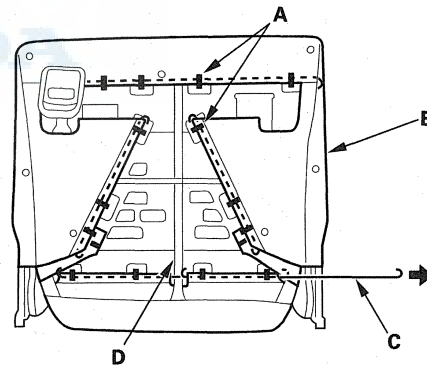
Fastener Locations

- A ▷ : Clip, 3 B ▷ : Clip, 6



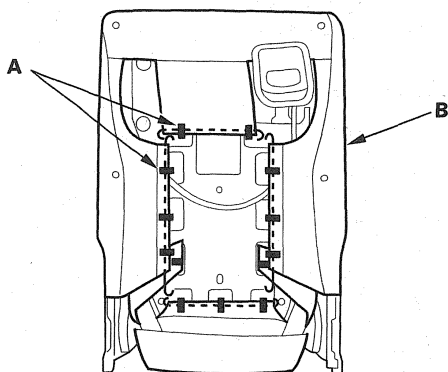
5. Release all of the clips (A) from behind the seat-back (B). On left second row seat-back, pull the wire (C) half-way until the end of it crosses over the middle frame (D).

Left seat-back

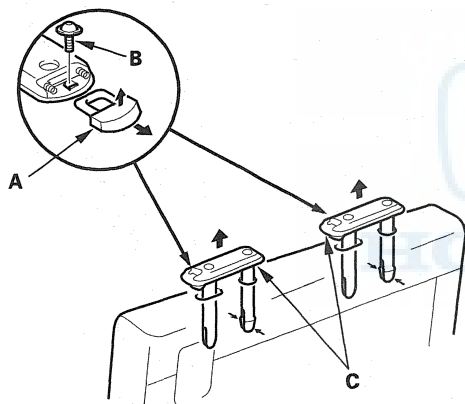




Right seat-back

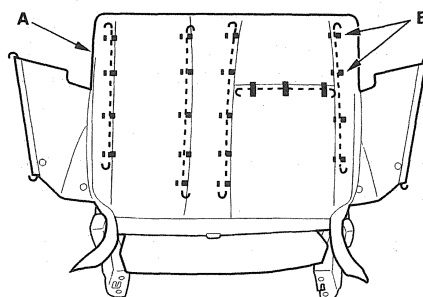


6. Lift and pull out the release button (A), and remove the screws (B), then remove the head restraint guides (C).

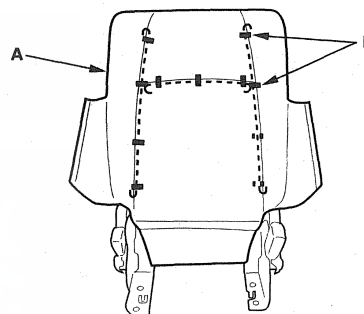


7. Pull back the edge of the seat-back cover (A) all the way around, then release all of the clips (B). Remove the seat-back cover.

Left seat-back

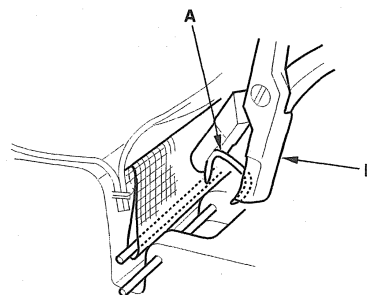


Right seat-back



8. Install the seat-back cover in the reverse order of removal, and note these items:

- To prevent wrinkles when installing a seat-back cover, make sure the material is stretched evenly over the pad before securing the hook and clips.
- Replace any clips (A) you removed with new ones using commercially available upholstery ring pliers (B).



(cont'd)

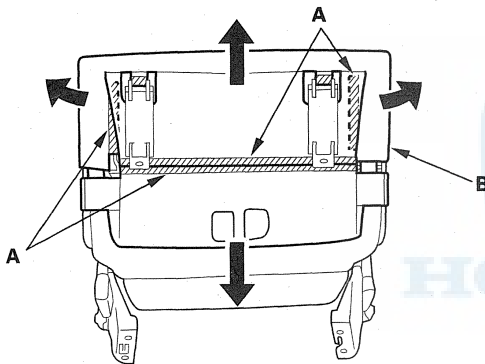
Seats

Third Row Seat Cover Replacement (cont'd)

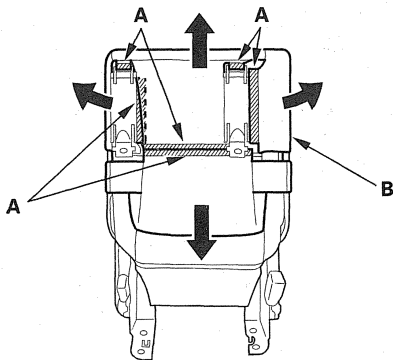
Seat Cushion Cover

1. Remove both front mounting bolts (see page 20-128).
2. On the left third row seat: Remove the seat belt buckle pocket, the left third row seat belt buckle, and the center third row seat belt detachable anchor under the seat cushion (see step 3 on page 20-128).
3. Remove the pivot bolt cover from both sides (see page 20-129).
4. Release the hook strips (A) from under the seat cushion (B).

Left seat cushion

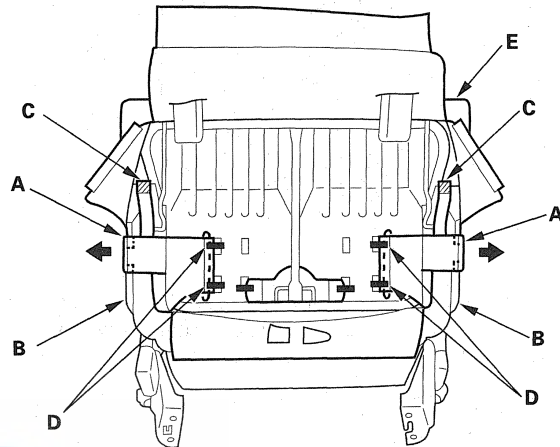


Right seat cushion

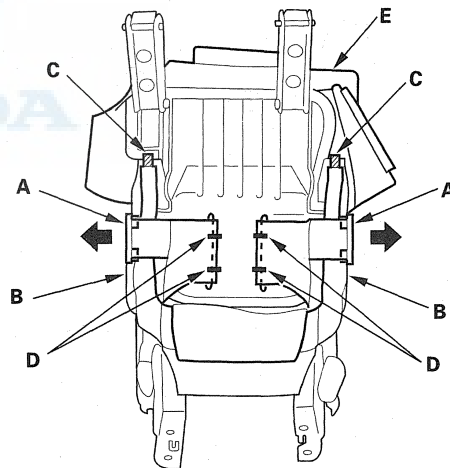


5. Detach the retainers (A) from both sides of the link (B), and release all of the hook strips (C) and clips (D) from under the seat cushion (E).

Left seat cushion



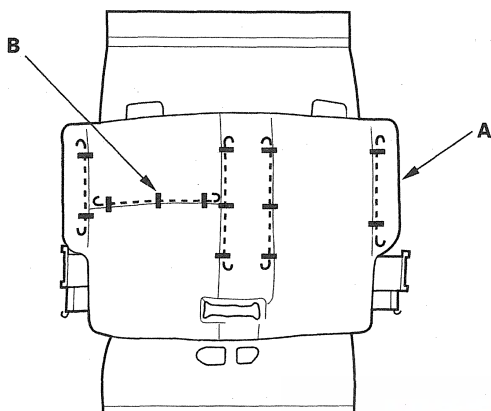
Right seat cushion



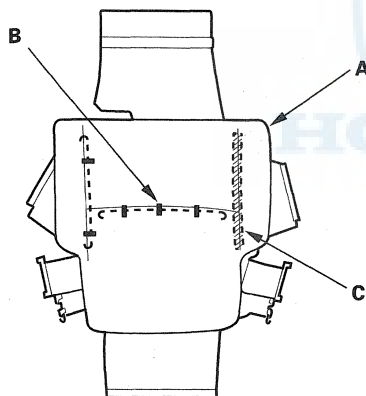


6. Pull back the edge of the seat cushion cover (A) all the way around, release all of the clips (B), and release the Velcro fastener (C) under the right seat cushion cover, then remove the seat cushion cover.

Left seat cushion

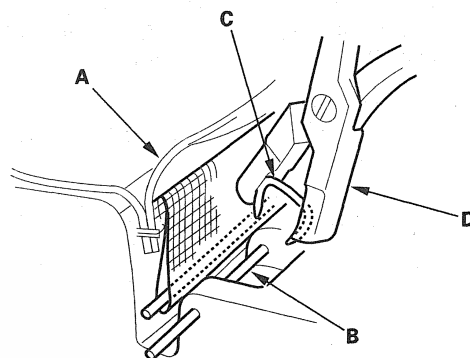


Right seat cushion



7. Install the seat cushion cover in the reverse order of removal, and note these items:

- To prevent wrinkles, make sure the material is stretched evenly over the pad before securing all the clips.
- Replace all of the clips fastening the seat-back cover (A) and pad wire (B) with new ones (C) using commercially available upholstery ring pliers (D).



Bumpers

Front Bumper Removal/Installation

NOTE:

- Have an assistant help you when removing and installing the front bumper.
- Take care not to scratch the front bumper and body.
- Put on gloves to protect your hands.

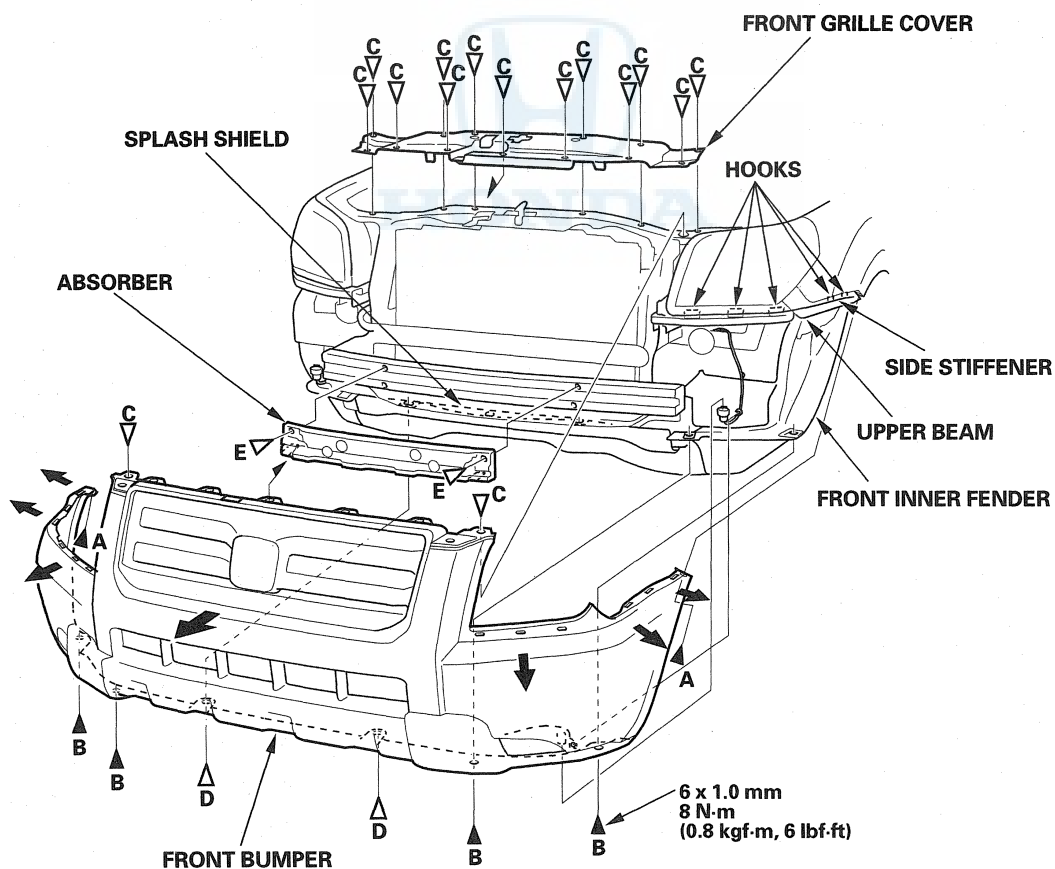
1. Remove the front bumper as shown.

2. Install the bumper in the reverse order of removal, and note these items:

- Make sure the front bumper engages the hooks on both side stiffeners, the corner upper beams, and the center upper beam securely.
- Check if the clips are damaged or stress-whitened, and if necessary, replace them with new ones.
- Push the clips into place securely.

Fastener Locations

A ► : Screw, 2 B ► : Bolt, 4 C ► : Clip, 15 D ► : Clip, 2 E ► : Clip, 2





Rear Bumper Removal/Installation

Special Tools Required

KTC trim tool set SOJATP2014 *

* Available through the American Honda Tool and Equipment Program; call 888-424-6857

NOTE:

- Have an assistant help you when removing and installing the rear bumper.
- Take care not to scratch the rear bumper and body.
- Use the appropriate tool from the KTC trim tool set to avoid damage when prying components.
- Put on gloves to protect your hands.

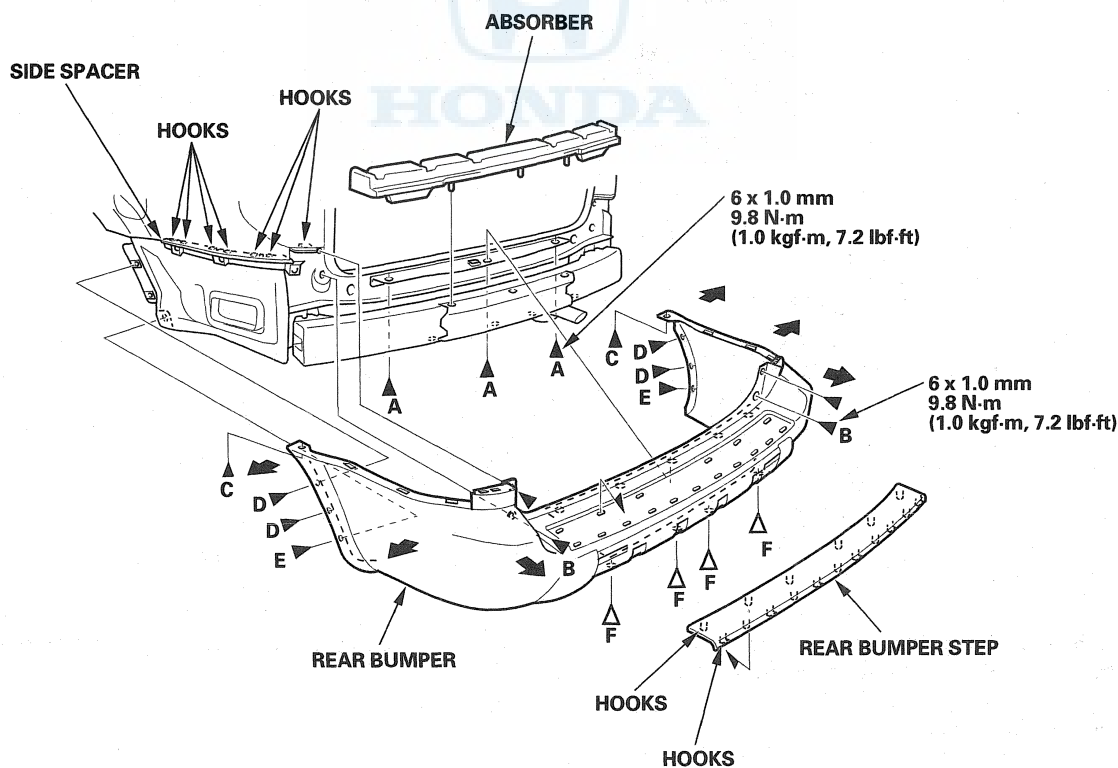
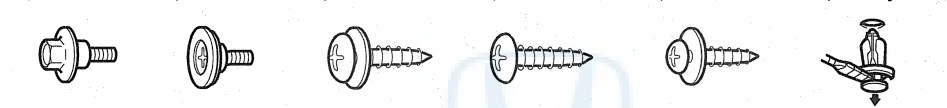
1. Remove the rear bumper as shown.

2. Install the bumper in the reverse order of removal, and note these items:

- Make sure the rear bumper engages the hooks of the side spacers and upper brackets on both sides securely.
- Check if the clips are damaged or stress-whitened, and if necessary, replace them with new ones.
- Push the clips and hooks into place securely.

Fastener Locations

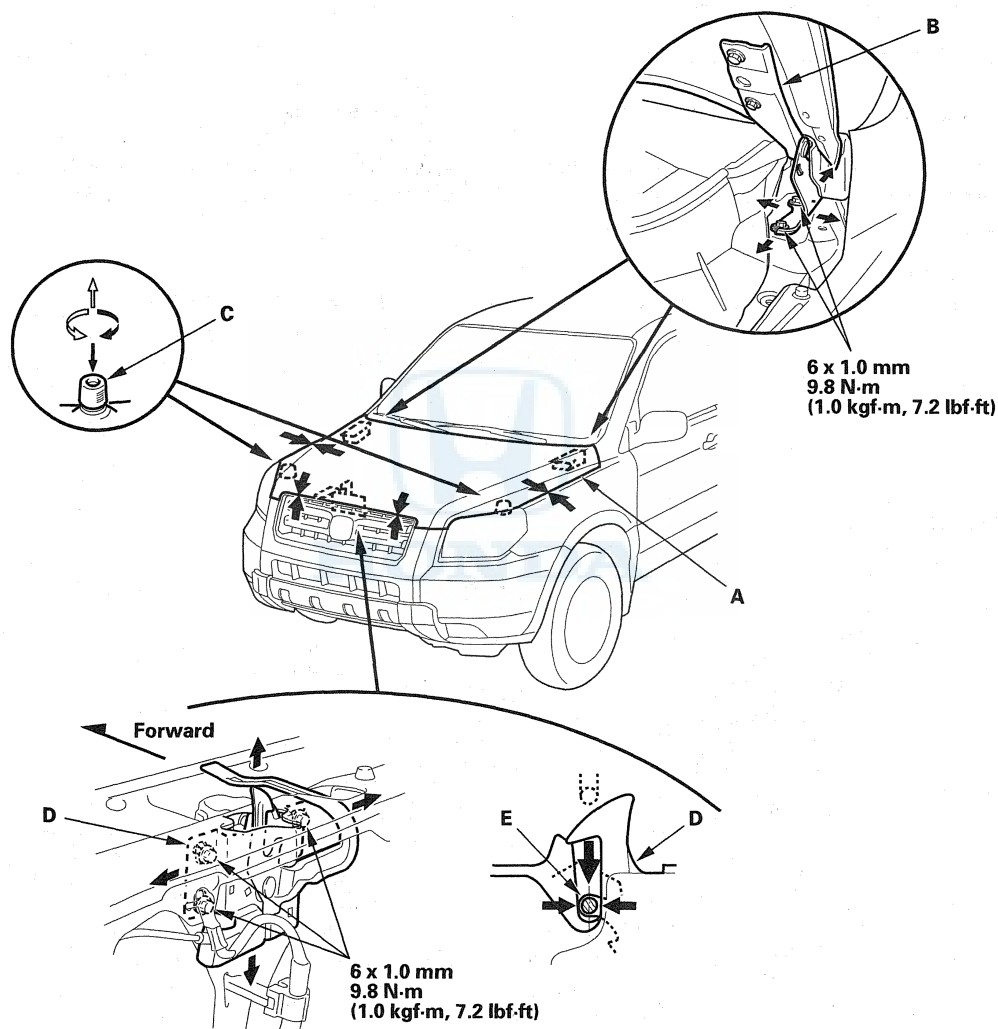
A ▶ : Bolt, 3 B ▶ : Bolt, 2 C ▶ : Screw, 2 D ▶ : Screw, 4 E ▶ : Screw, 2 F ▶ : Clip, 4



Hood

Hood Adjustment

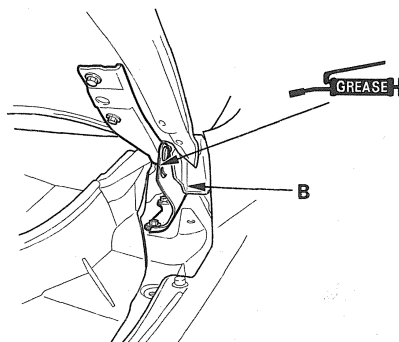
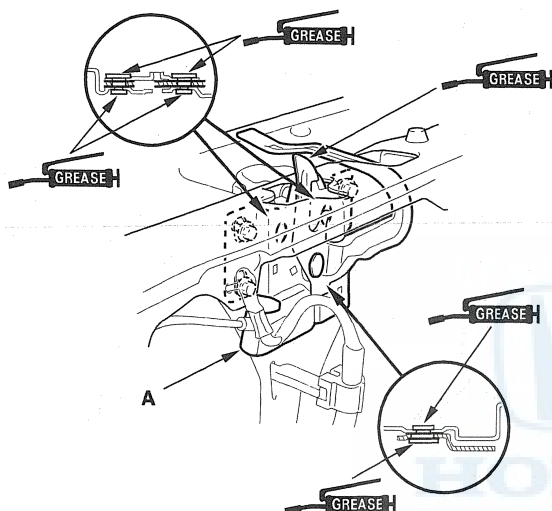
1. Loosen each bolt slightly.
2. Adjust the hood (A) alignment in this sequence.
 - Adjust the hood right and left, as well as forward and rearward, by using the elongated holes on the hood hinge (B).
 - Turn the hood edge cushions (C), as necessary, to make the hood fit flush with the body at the front and side edges.



3. Adjust the hood latch (D) to obtain the proper height at the forward edge, and move the hood latch right or left until the striker (E) is centered in the hood latch.
4. Tighten each bolt securely.



5. Check that the hood opens properly and locks securely.
6. For some models, check that the security system operates properly with the hood opened and closed.
7. Apply touch-up paint to the hinge mounting bolts and around the hinges.
8. Apply multipurpose grease to the hood latch (A) and hood hinge (B) as indicated by the arrows.

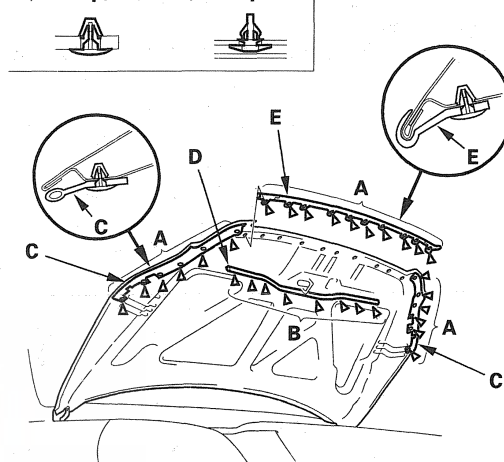


Hood Seal and Hood Molding Replacement

1. Using a clip remover, detach the clips (A, B), then remove the hood seal (C, D). On Canada models: Detach the clips (A), then remove the hood molding (E). Take care not to scratch the hood.

Fastener Locations

A ▷ : Clip, 22 B ▷ : Clip, 8



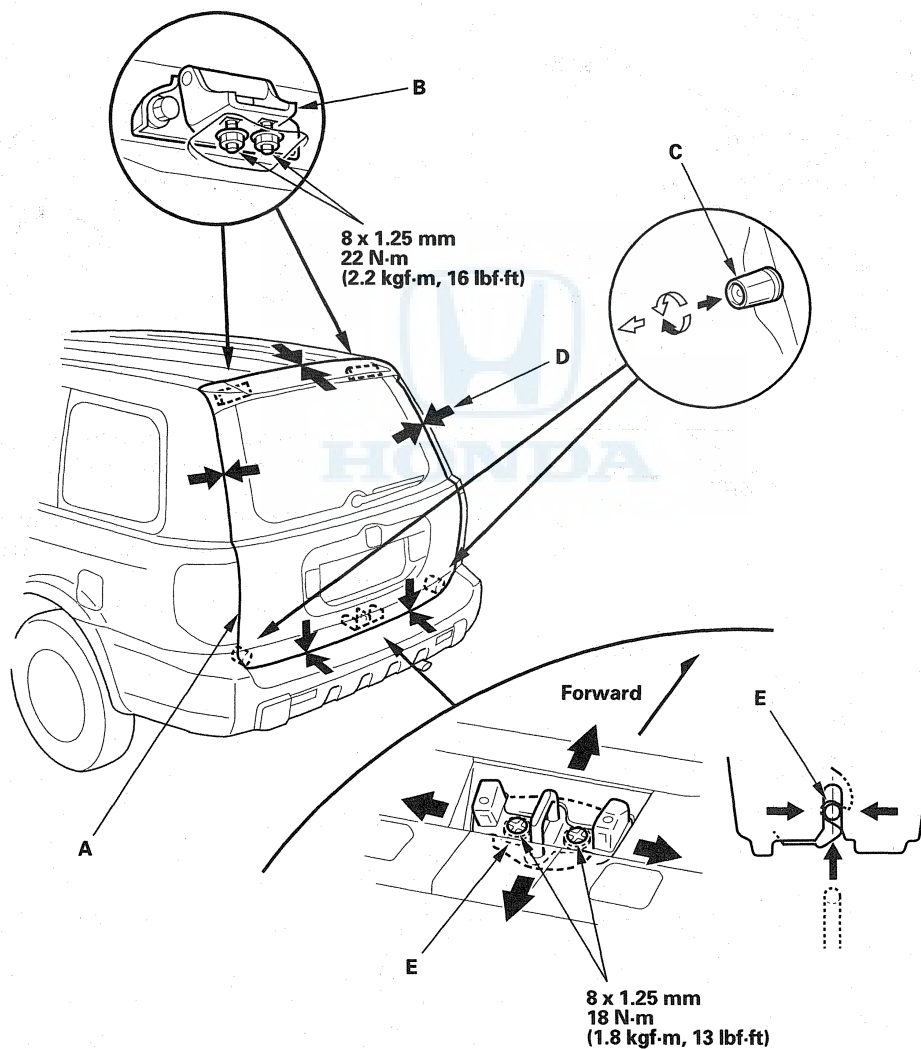
2. Install the hood seal and hood molding in the reverse order of removal, and note these items:

- Check if the clips are damaged or stress-whitened, and if necessary, replace them with new ones.
- Push the clips into place securely.

Tailgate

Tailgate Adjustment

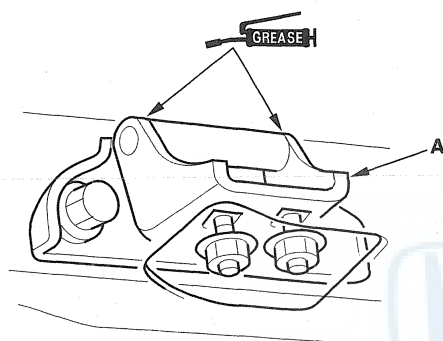
1. Remove the support strut from each side (see page 20-143).
2. Loosen each bolt and nut slightly.
3. Adjust the tailgate (A) alignment in the following sequence.
 - Pull down the rear portion of the headliner (see page 20-83). Take care not to bend the headliner excessively. Adjust the tailgate hinges (B) right and left, as well as forward and rearward, using the elongated holes.
 - Turn the tailgate edge cushions (C), in or out as necessary, to make the tailgate (D) fit flush with the body at the side edges.
 - Adjust the fit between the tailgate and tailgate opening by moving the striker (E).



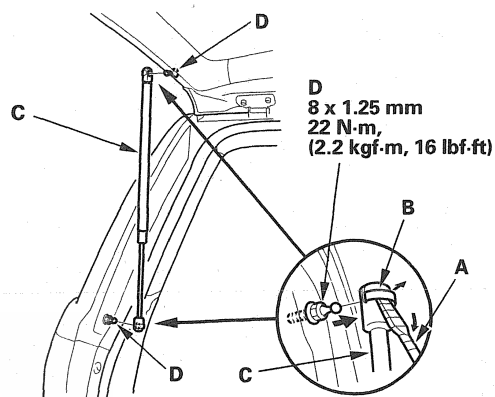


Tailgate Support Strut Replacement

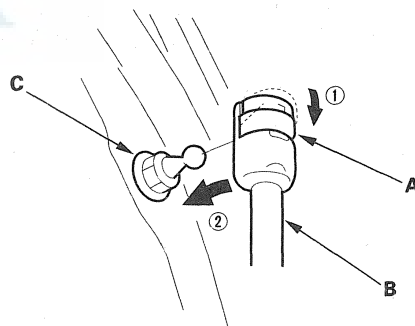
4. Tighten each bolt and nut securely.
5. Check that the tailgate opens properly and locks securely.
6. Reinstall the support struts securely.
7. Apply touch-up paint to the hinge mounting nuts and around the hinges.
8. Apply multipurpose grease to the pivot portion of the tailgate hinges (A) as indicated by the arrows.



1. With the help of an assistant, use a flat-tip screwdriver (A) to pry the support strut clips (B) from each end of the support strut (C) at the tailgate and body, then release the support strut from the pivot bolts (D). Do not remove the clips from the support strut.



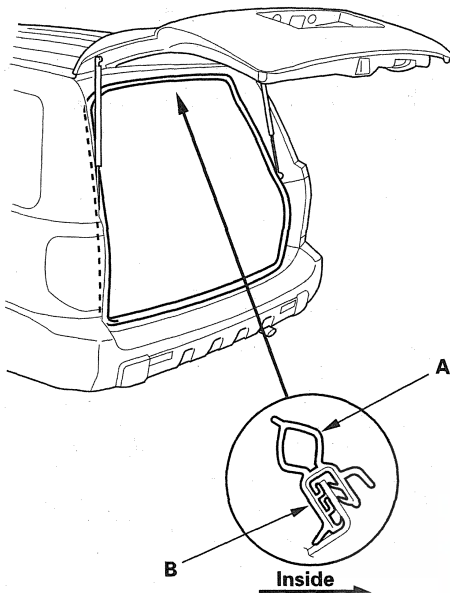
2. Set the clips (A) to the original position, then reattach the support strut (B) on the pivot bolts (C) by pushing on the support strut.



Tailgate

Tailgate Weatherstrip Replacement

1. Remove the tailgate weatherstrip (A) by pulling out on it.



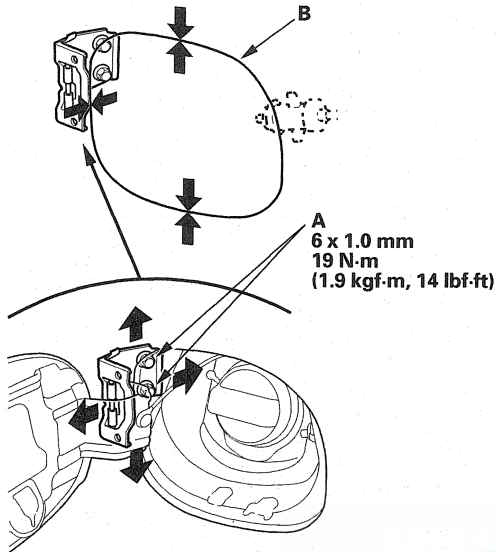
2. Locate the painted alignment mark (B) on the tailgate weatherstrip. Align the painted mark with the alignment tab in the center of the tailgate opening, and install the tailgate weatherstrip all the way around. Make sure there are no wrinkles in the weatherstrip.
3. Check for water leaks.

Fuel Fill Door



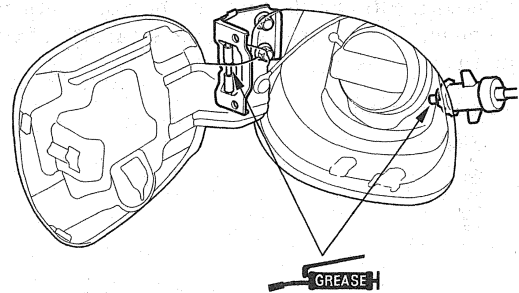
Fuel Fill Door Adjustment

1. Loosen the hinge mounting bolts (A) slightly.



2. Adjust the fuel fill door (B) in or out until it's flush with the body, and up or down as necessary to equalize the gaps.
3. Tighten the hinge mounting bolts.
4. Check that the fuel fill door opens properly and locks securely, and check that the rear of the door is flush with the body.

5. Apply multipurpose grease to each location indicated by the arrows.



6. Apply touch-up paint to the hinge mounting bolts and around the hinges.

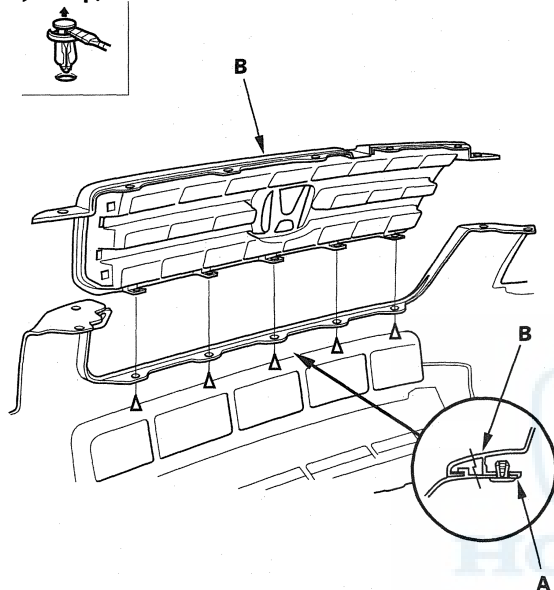
Exterior Trim

Front Grille Replacement

1. Remove the front bumper (see page 20-138).
2. Remove the clips, and release the hooks (A), then remove the front grille (B) from the front bumper by pulling it out. Take care not to scratch the front bumper.

Fastener Locations

▷ : Clip, 5



3. Install the grille in the reverse order of removal, and note these items:
 - Check if the clips are damaged or stress-whitened, and if necessary, replace them with new ones.
 - Push the clips into place securely.

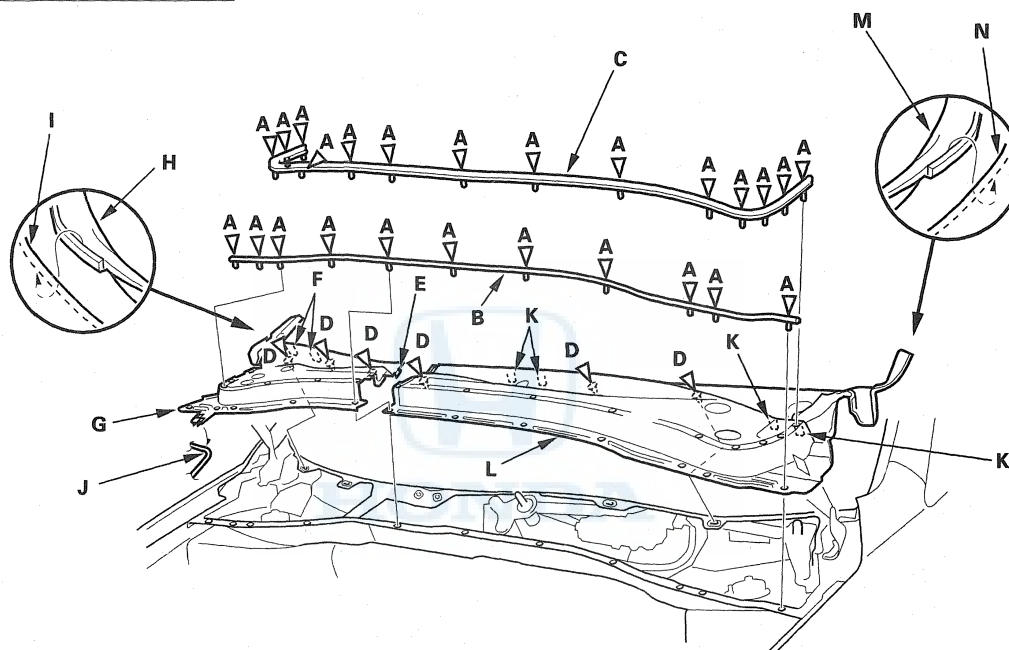


Cowl Cover Replacement

1. Remove the windshield wiper arms (see page 22-214).
2. Using a clip remover, detach the clips (A), then remove the front seal (B) and hood rear seal rubber (C). Take care not to scratch the cowl covers.

Fastener Locations

A ▷ : Clip, 25 D ▷ : Clip, 6



3. Detach the clips (D), and release the hooks (E, F) by carefully pulling the passenger's cowl cover (G) upward. Pull the hinge cover (H) out from the front fender (I), and release the windshield washer tube (J), then remove the cover. Take care not to scratch the body.
4. Detach the clips (D), and release the hooks (K) by carefully pulling the driver's cowl cover (L) upward. Pull the hinge cover (M) out from the front fender (N), then remove the cover. Take care not to scratch the body.
5. Install the covers in the reverse order of removal, and note these items:
 - Check if the clips are damaged or stress-whitened, and if necessary, replace them with new ones.
 - Push the clips into place securely.

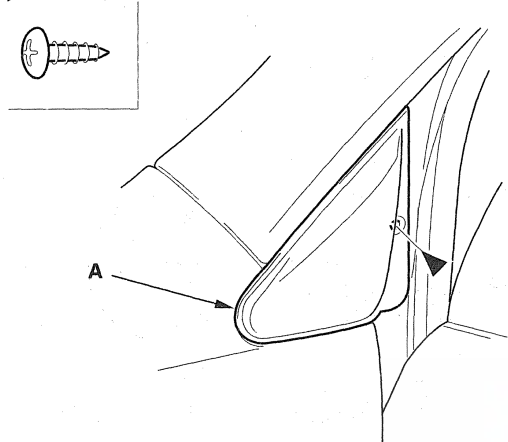
Exterior Trim

A-Pillar Corner Trim Replacement

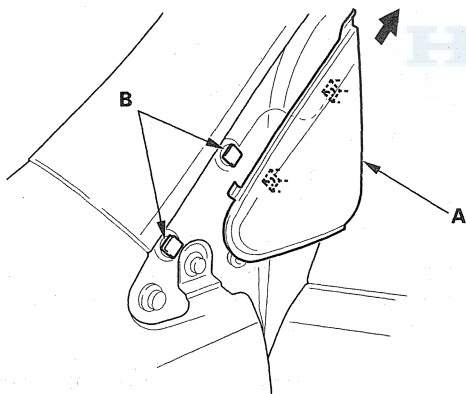
1. Open the front door.
2. Remove the screw securing the A-pillar corner trim (A).

Fastener Location

► : Screw, 1



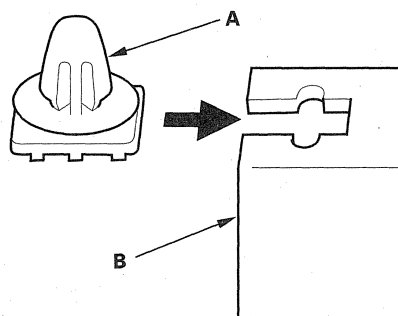
3. Gently slide the A-pillar corner trim (A) to release it from the clips (B).



4. Using a clip remover, remove the clips from the body.

5. Check if the clips are damaged or stress-whitened, and if necessary, replace them with new ones.

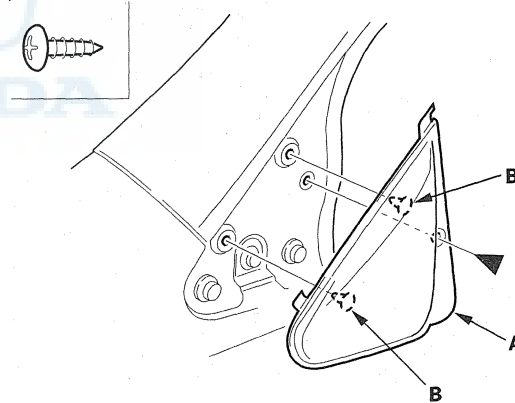
6. Install the clips (A) on the trim (B).



7. Hold the trim (A) up, and fit the clips (B) into the holes in the body, then push on the trim until the clips snap into place.

Fastener Location

► : Screw, 1



8. Install the screw.



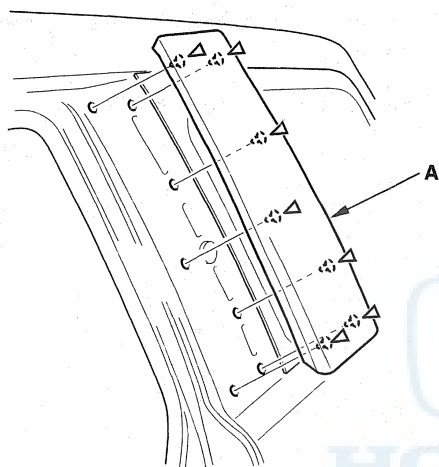
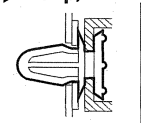
C-Pillar Outer Trim Replacement

NOTE: Take care not to scratch the body.

1. Using a clip remover, detach the clips, then remove the C-pillar outer trim (A).

Fastener Locations

▷ : Clip, 7



2. Check if the clips are damaged or stress-whitened, and if necessary, replace them with new ones.
3. Hold the trim up, and fit the clips into the holes in the body, then push on the trim until the clips snap into place.

Exterior Trim

Roof Rail Replacement

Special Tools Required

KTC trim tool set SOJATP2014 *

* Available through the American Honda Tool and Equipment Program; call 888-424-6857

For Some Models

NOTE:

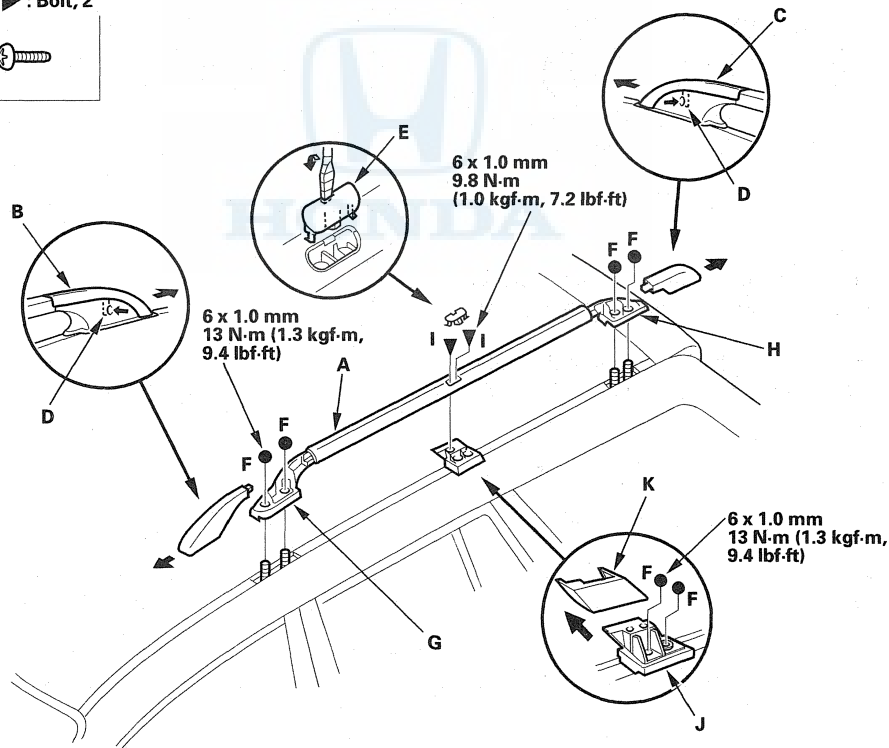
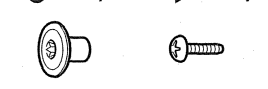
- Use the appropriate tool from the KTC trim tool set to avoid damage when prying components.
- Take care not to scratch each cover, roof rail, and the body.

1. Remove the roof rail (A).

- 1 Remove the front cover (B) and rear cover (C) by sliding them in the direction shown while pushing the spring plates (D) through the hole in each bracket with a flat-tip screwdriver.
- 2 Remove the center cap (E).
- 3 Using a TORX T30 bit, remove the nuts (F) from the front bracket (G) and rear bracket (H).
- 4 Remove the bolts (I) from the center bracket (J).
- 5 Remove the roof rail. Do not remove the rubber pads from the brackets.

Fastener Locations

F ● : Nut, 6 I ► : Bolt, 2



2. Remove the center cover (K). Using a TORX T30 bit, remove the nuts (F), then remove the center bracket. Do not remove the rubber pad from the center bracket.
3. Install the roof rail in the reverse order of removal and make sure the front and rear covers are tightly snapped into place.



Roof Molding Replacement

NOTE:

- Take care not to scratch the body.
- The steel core in the roof molding cannot be restored to its original shape once it is bent. Replace the roof molding if the steel core is bent.

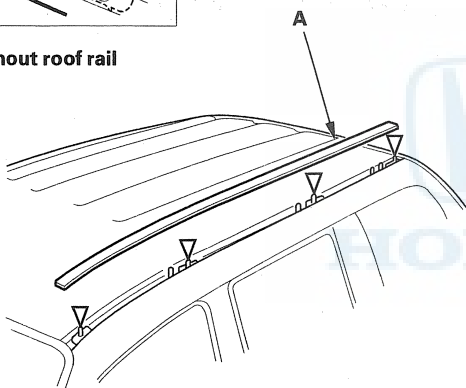
1. If equipped, remove the roof rail and center bracket (see page 20-150).
2. Using a flat-tip screwdriver wrapped with protective tape and a shop towel on the body, detach the clips by prying up the roof molding (A).

Fastener Locations

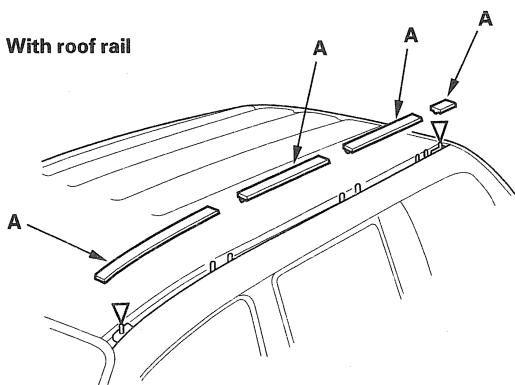
▷ : Clip
Without roof rail, 4
With roof rail, 2



Without roof rail

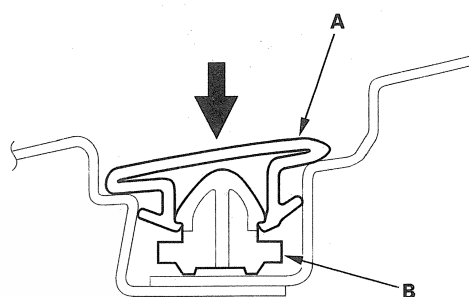


With roof rail



3. Install the roof molding(s) in the reverse order of removal, and note these items:

- Check if the clips are damaged or stress-whitened, and if necessary, replace them with new ones. The front clip should be installed on the body with its hook toward the front, and the rear clip should be installed with its hook toward the rear.
- Make sure the roof moldings (A) are installed on the clips (B) securely.



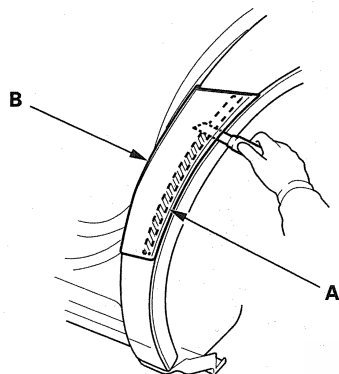
Exterior Trim

Rear Fender Side Molding Replacement

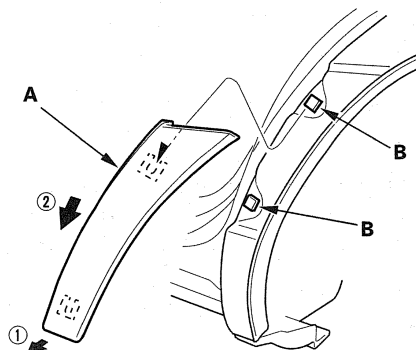
NOTE:

- Take care not to scratch the body.
- Put on gloves to protect your hands.

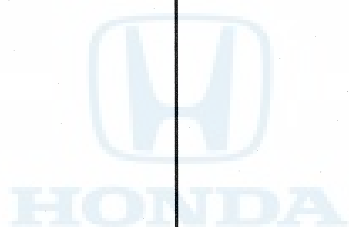
1. Using a utility knife, carefully cut the double-sided adhesive tape (A) along the rear wheel arch side edge of the rear fender side molding (B).



2. Slide the rear fender side molding (A) down to remove it from the clips (B).



3. Using a clip remover, remove the clips, and check if the clips are damaged or stress-whitened, and if necessary, replace them with new ones.

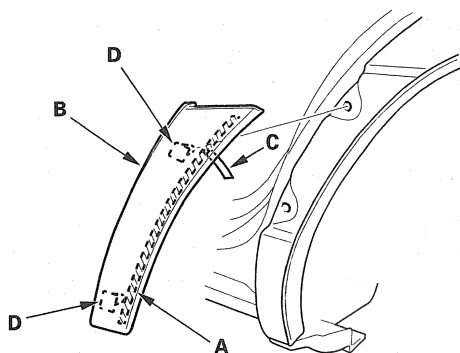




Door Molding Replacement

4. Scrape off the remaining double-sided adhesive tape from the molding and body, then clean the molding and body surfaces with a sponge dampened with isopropyl alcohol.
5. Attach the double-sided adhesive tape (A) (3M 5355, or equivalent) to the molding (B), and fold the upper edge of the adhesive backing (C) from the double-sided adhesive tape.

Adhesive tape: Thickness 2 mm (0.08 in.)
Width 5 mm (0.2 in.)



6. Install the clips (D) on the molding.
7. Hold the molding up, and fit all the clips into the holes in the body, then push on the molding until the clips snap into place.
8. Carefully pull the adhesive backing away, and push the molding into place securely.

NOTE:

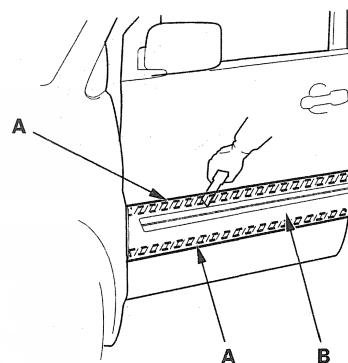
- Take care not to scratch the door.
- Put on gloves to protect your hands.

1. Remove these items:

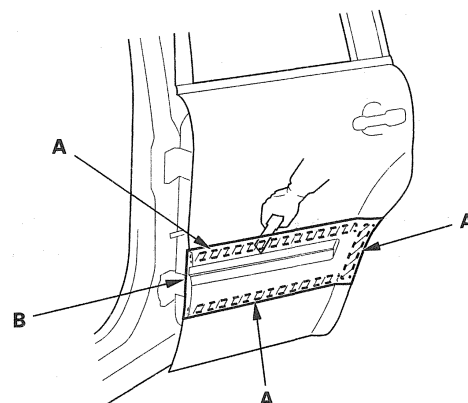
- Door panel, front door (see page 20-6), rear door (see page 20-16)
- Plastic cover, front door (see page 20-2), rear door (see page 20-4)

2. Using a utility knife, carefully cut the double-sided adhesive tape (A) along the edge of the door moldings (B).

Front door



Rear door



(cont'd)

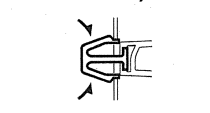
Exterior Trim

Door Molding Replacement (cont'd)

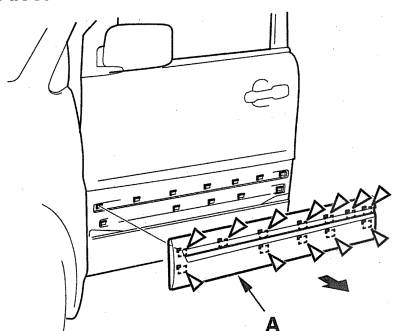
3. From inside the door, detach the clips, then remove the door molding (A).

Fastener Locations

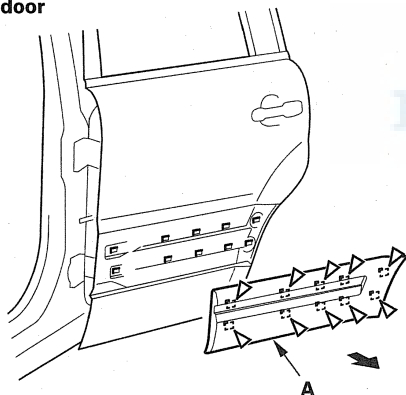
▷ : Clip
Front door, 12
Rear door, 10



Front door



Rear door



4. Check if the clips are damaged or stress-whitened, and if necessary, replace them with new ones.

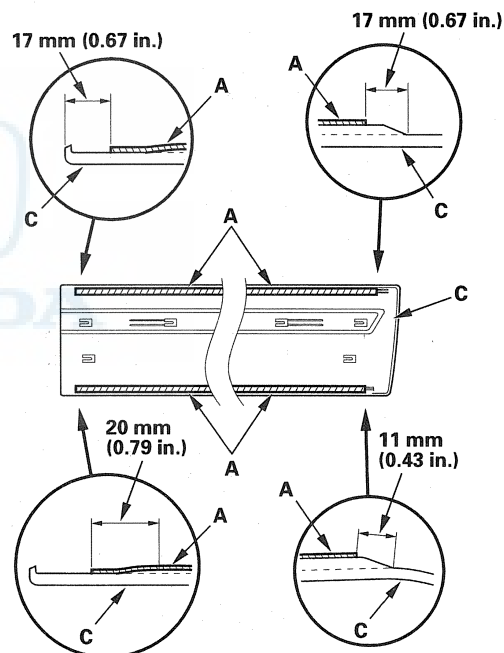
5. Scrape off the remaining double-sided adhesive tape from the molding and door, then clean the molding and door surfaces with a sponge dampened with isopropyl alcohol.

6. Attach the double-sided adhesive tape (A) (3M 5311, or equivalent) and double-sided adhesive tape (B) (3M 4213, or equivalent) to the molding (C), and fold the edge of each adhesive backing from the double-sided adhesive tape.

**Adhesive tape (A): Thickness 1.2 mm (0.047 in.)
Width 5 mm (0.2 in.)**

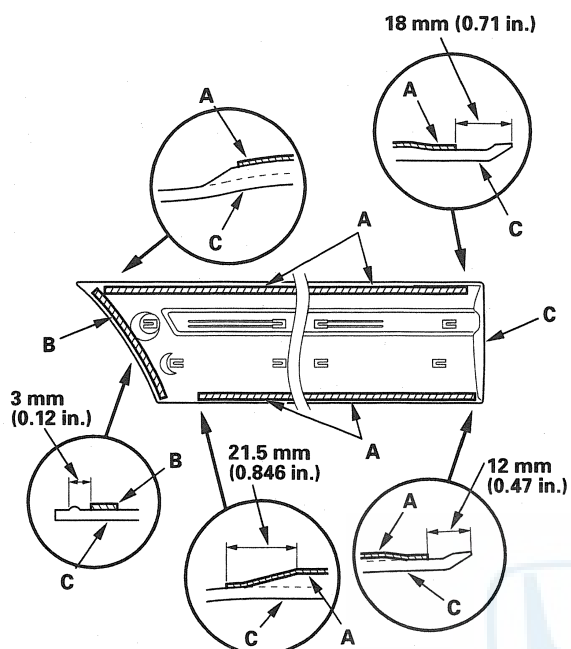
**Adhesive tape (B): Thickness 0.8 mm (0.031 in.)
Width 5 mm (0.2 in.)**

Front door



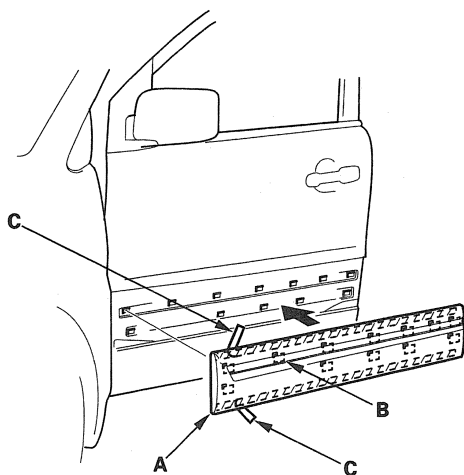


Rear door

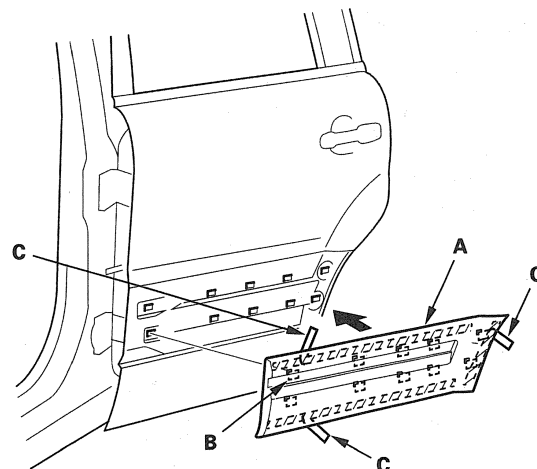


7. Hold the molding (A) up, and fit all the clips (B) into the holes in the door, then push on the molding until the clips snap into place.

Front door



Rear door



8. Carefully pull the adhesive backing (C) away, and push the molding into place securely.
9. Reinstall the plastic cover and door panel.

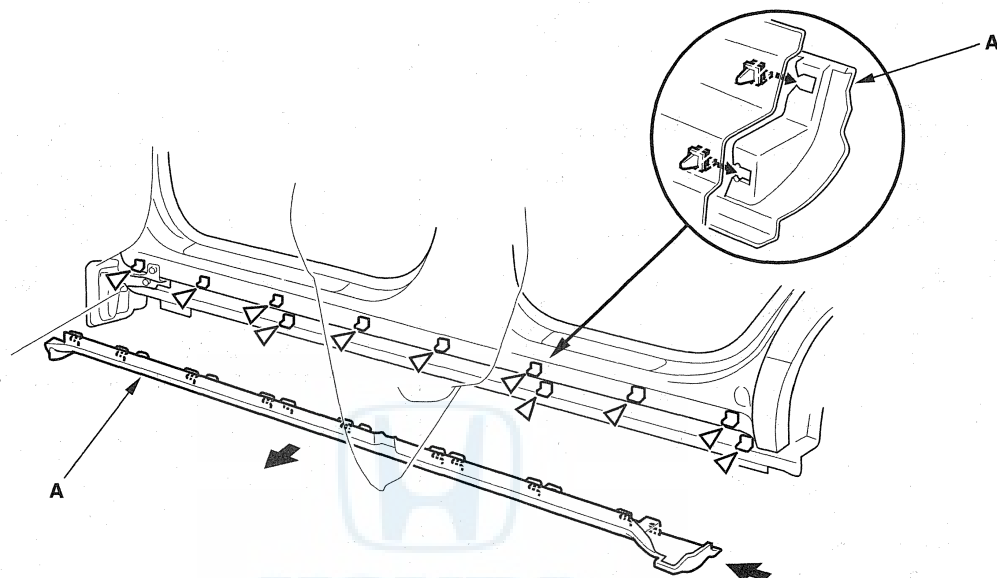
Exterior Trim

Side Sill Panel Replacement

1. Remove the front splash guard (see page 20-161).
2. Slide the side sill panel (A) forward, and remove it. The clips will stay in the body.

Fastener Locations

▷ : Clip, 11



3. Remove the clips from the body.
4. Check if the clips are damaged or stress-whitened, and if necessary, replace them with new ones.
5. Install the clips on the side sill panel.
6. Hold the panel up, and fit all the clips into the holes in the body, then push on the panel until the clips snap into place.
7. Reinstall the front splash guard.

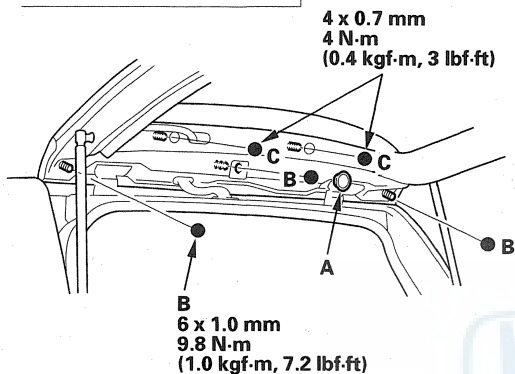


Tailgate Spoiler Trim Replacement

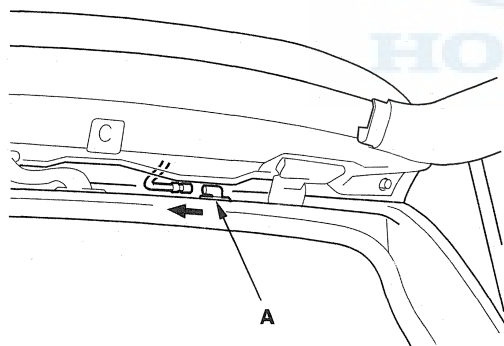
1. Remove the tailgate upper trim (see page 20-82).
2. Remove the access cap (A) from the tailgate, and remove the nuts (B, C) securing the tailgate spoiler trim.

Fastener Locations

B ● : Nut, 3 C ● : Nut, 2



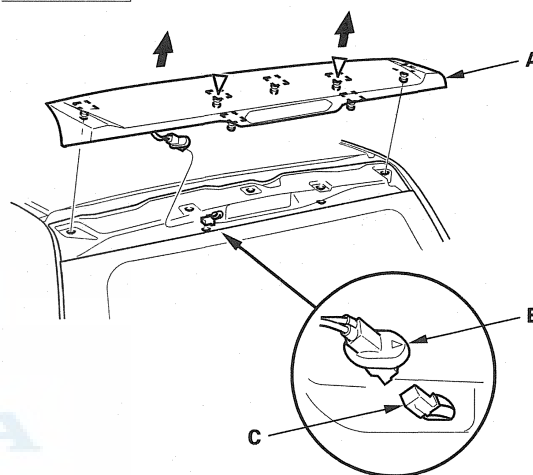
3. Disconnect the rear window washer tube (A).



4. Gently close the tailgate, and lift up on the tailgate spoiler trim (A) to detach the clips. Remove the high mount brake light connector grommet (B) from the tailgate, and disconnect the high mount brake light connector (C), then remove the tailgate spoiler trim. Take care not to scratch the tailgate and body.

Fastener Locations

▷ : Clip, 2



5. Install the spoiler trim in the reverse order of removal, and note these items:

- Make sure the connector is plugged in properly and the washer tube is connected properly.
- Check if the clips are damaged or stress-whitened, and if necessary, replace them with new ones.
- Push the clips into place securely.

Exterior Trim

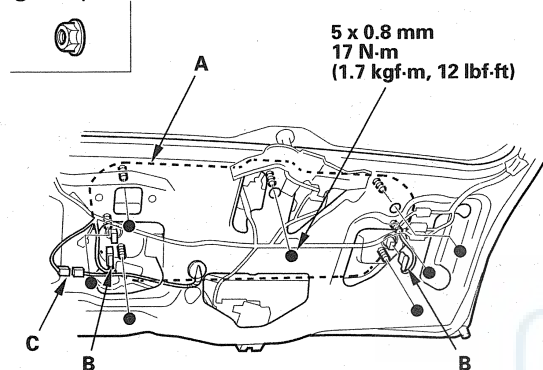
Rear License Trim Replacement

NOTE: Put on gloves to protect your hands.

1. Remove the tailgate trim panel (see page 20-82).
2. From inside the tailgate, remove the nuts securing the rear license trim (A), and disconnect the back-up light connectors (B), rear view camera connector (C).

Fastener Locations

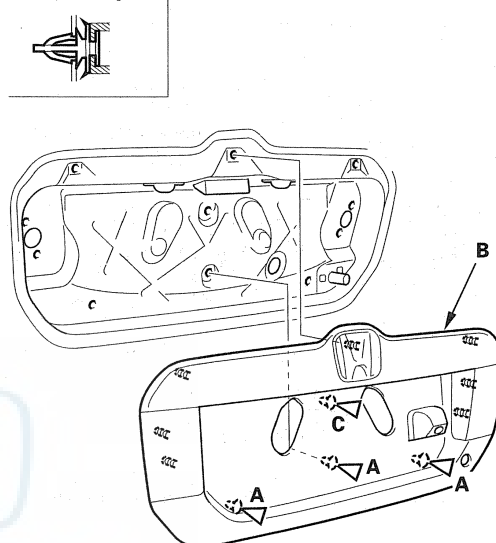
● : Nut, 7



3. From inside the tailgate, release the lower clips (A). Gently close the tailgate, and pull the rear license trim (B) out to detach the upper clip (C), then remove the trim. Take care not to scratch the tailgate.

Fastener Locations

A, C ▷ : Clip, 4



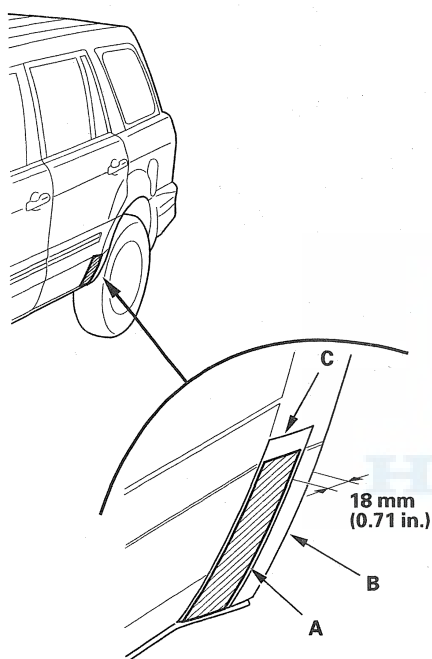
4. Install the trim in the reverse order of removal, and note these items:

- Check if the clips are damaged or stress-whitened, and if necessary, replace them with new ones.
- Make sure the back-up light connectors and the rear view camera harness connector are plugged in properly.
- Push the clips into place securely.



Rear Door Protection Tape Replacement

1. Slowly peel up the old rear door protection tape.
2. Clean the door bonding surface with a sponge dampened in alcohol. After cleaning, keep oil, grease, and water from getting on the surface.
3. Peel the adhesive backing from the rear door protection tape.
4. Align the rear door protection tape (A) with the edge of the door (B), then press the tape into place.



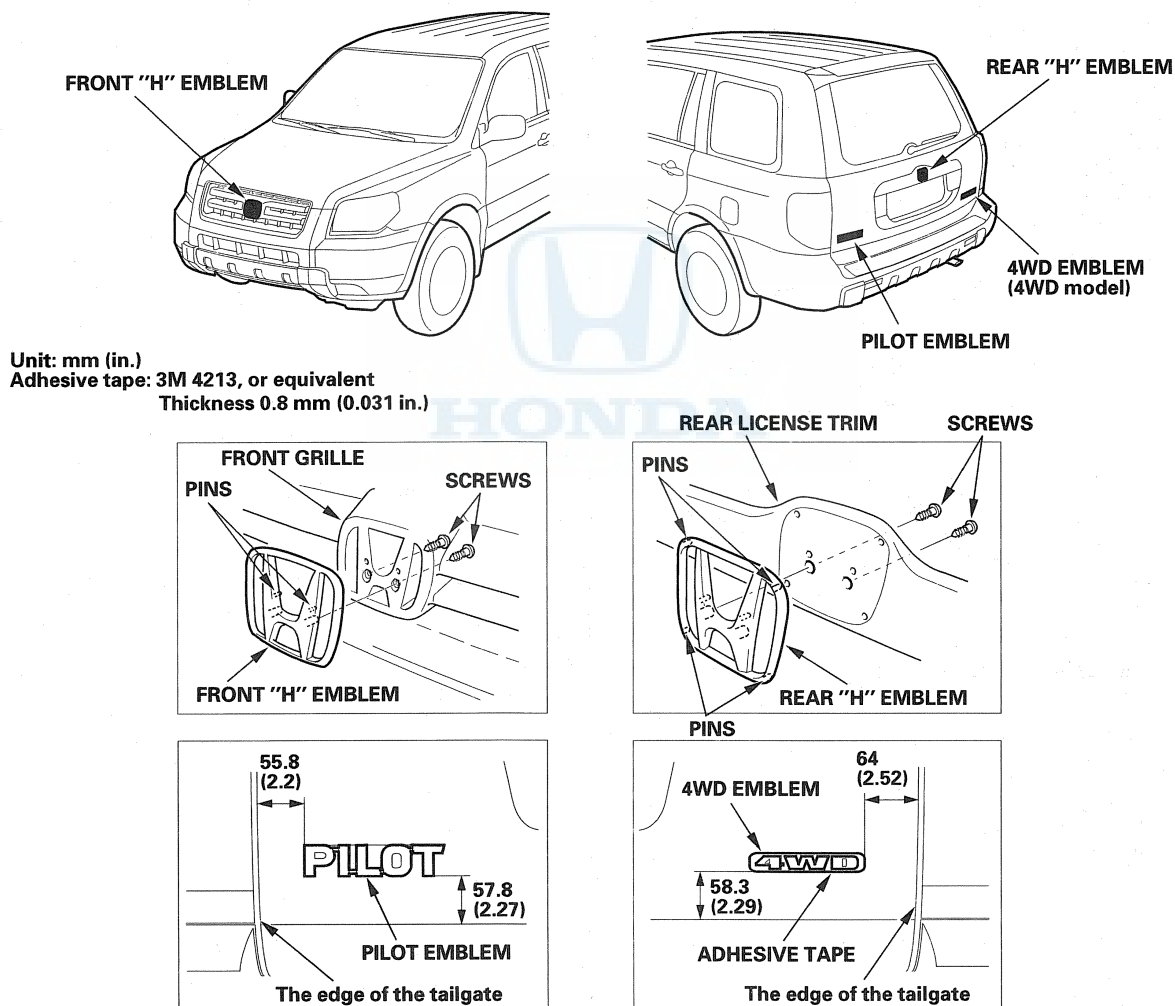
5. Remove the application tape (C).

Exterior Trim

Emblem Replacement

NOTE: When removing the emblems, take care not to scratch the body.

1. Remove the screws securing the "H" emblems:
 - To remove the front "H" emblem, remove the front bumper (see page 20-138).
 - To remove the rear "H" emblem, remove the rear license trim (see page 20-158).
2. Use a piece of string to cut through the adhesive tape on the emblem.
3. Clean the body surface with a sponge dampened with isopropyl alcohol. After cleaning, keep oil, grease, and water from getting on the surface.
4. Apply the emblems where shown.



5. Reinstall the front bumper and rear license trim.



Front Inner Fender Replacement

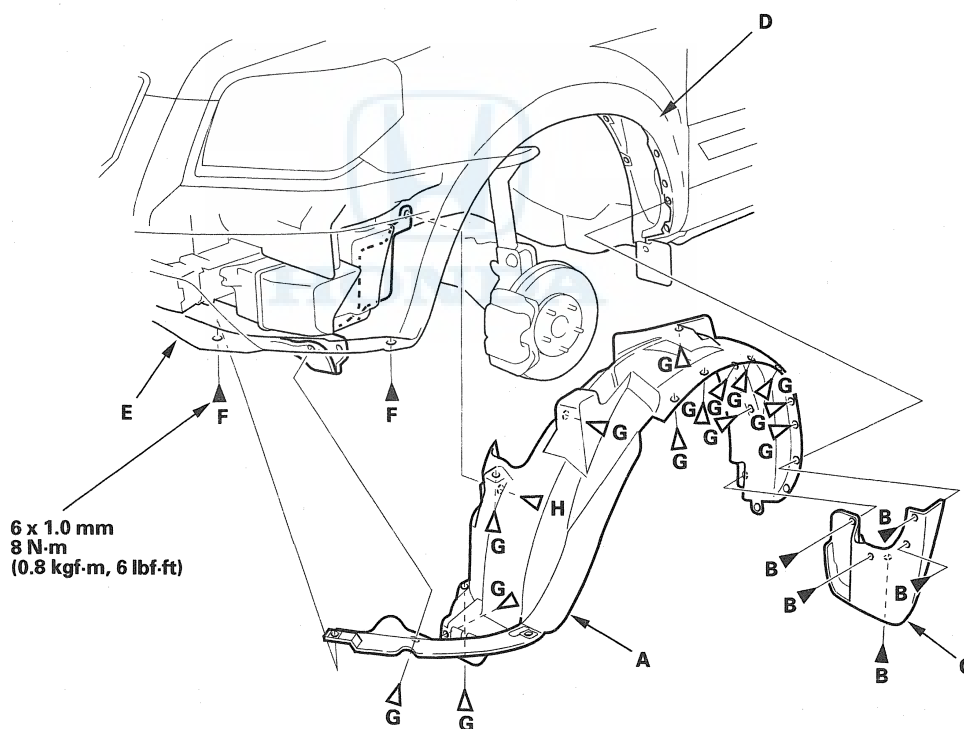
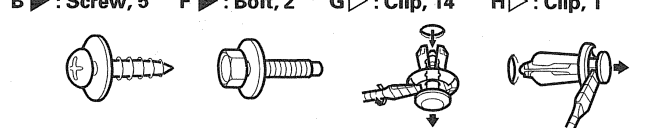
NOTE: Take care not to scratch the body.

1. Remove the front inner fender (A).

- 1 On the back of the wheel arch, remove the screws (B), then remove the front splash guard (C).
- 2 On the back of the wheel arch, remove the screws (B) securing the front fender side molding (D).
- 3 From under the front bumper (E), remove the bolts (F) securing the front bumper and front inner fender.
- 4 From the wheel arch, remove the clips (G, H) securing the front inner fender (and splash shield) on the body.
- 5 Pull the front inner fender out.

Fastener Locations

B ► : Screw, 5 F ► : Bolt, 2 G ► : Clip, 14 H ► : Clip, 1



2. Install the inner fender in the reverse order of removal, and note these items:

- Check if the clips are damaged or stress-whitened, and if necessary, replace them with new ones.
- Push the clips into place securely.

Fenderwell

Splash Shield Replacement

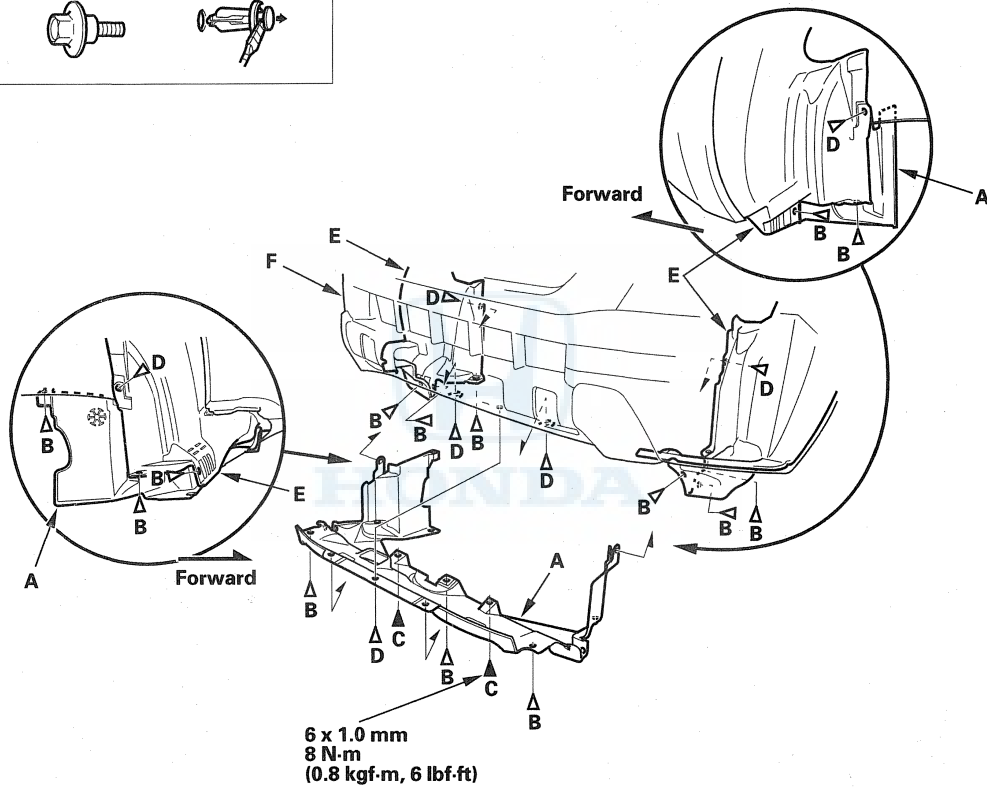
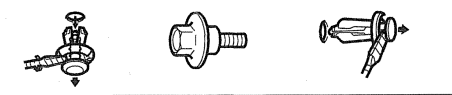
NOTE: Take care not to scratch the body.

1. Remove the splash shield (A).

- 1 From under the front suspension subframe, remove the clips (B) and bolts (C).
- 2 From both wheel arch, remove the clips (B) securing the front inner fender (E) and splash shield (on the body).
- 3 From under the front bumper (F), remove the clips (B, D).
- 4 Pull the splash shield out.

Fastener Locations

B ▷ : Clip, 9 C ▷ : Bolt, 2 D ▷ : Clip, 5



2. Install the splash shield in the reverse order of removal, and note these items:

- Check if the clips are damaged or stress-whitened, and if necessary, replace them with new ones.
- Push the clips into place securely.

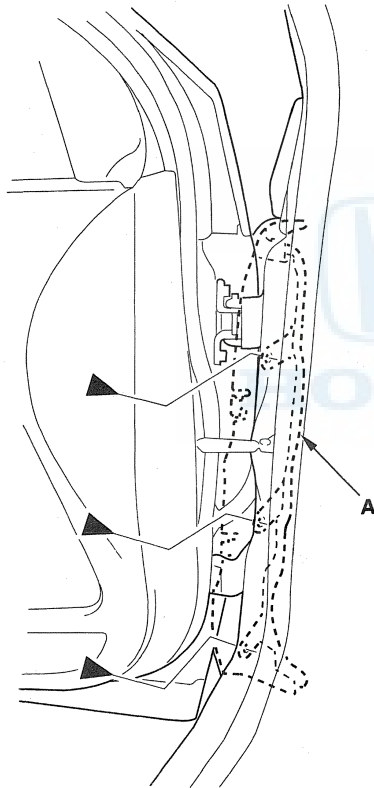


Front Fender Fairing Replacement

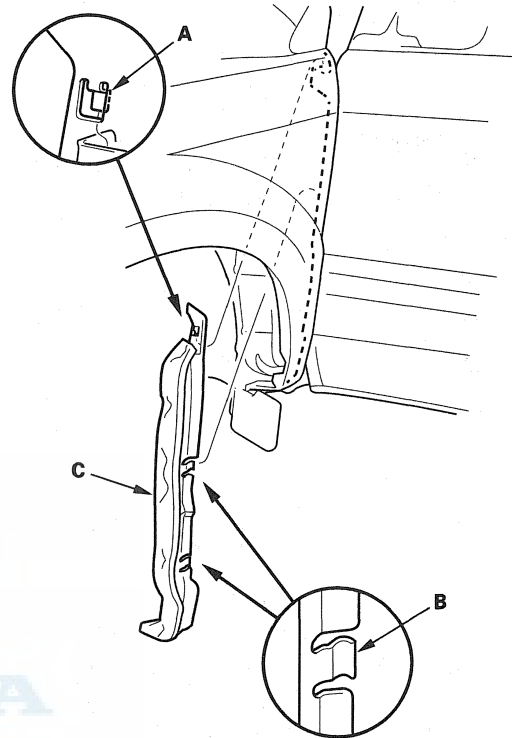
1. Remove the front inner fender as necessary (see page 20-161).
2. Open the front door, and from inside the door, remove the screws securing the front fender fairing (A).

Fastener Locations

► : Screw, 3



3. From the wheel arch, release the hooks (A, B) from the front fender, then remove the front fender fairing (C).



4. Install the fender fairing in the reverse order of removal, and make sure the hooks are installed to the front fender properly.

Fenderwell

Rear Fender Cover Replacement

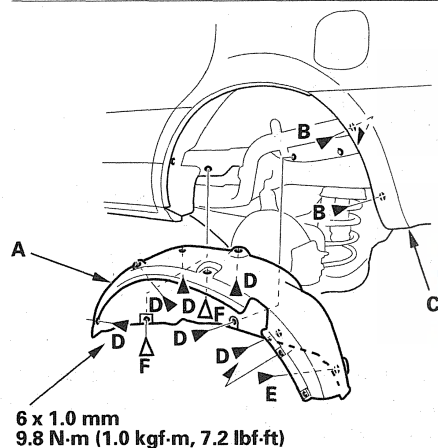
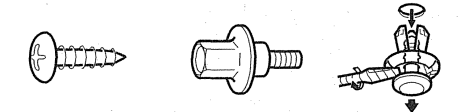
NOTE: Take care not to scratch the rear fender cover and body.

1. Remove the rear wheel (see step 2 on page 18-28).
2. Remove the rear fender cover (A).

- 1 Remove the screws (B) securing the rear bumper (C) and rear fender cover.
- 2 Remove the bolts (D), screw (E), and clips (F), then remove the rear fender cover.

Fastener Locations

B, E ▷ : Screw, 3 D ▷ : Bolt, 6 F ▷ : Clip, 2



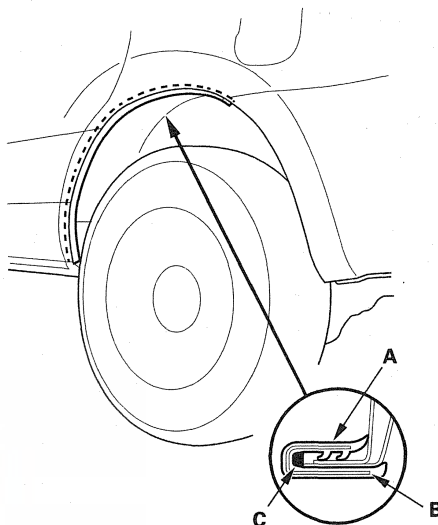
3. Install the rear fender cover in the reverse order of removal, and note these items:

- Check if the clips are damaged or stress-whitened, and if necessary, replace them with new ones.
- Push the clips into place securely.

Fenderwell Trim Replacement

1. Remove the fenderwell trim (A) by pulling it out.

NOTE: The steel core (B) in the fenderwell trim cannot be restored to its original shape once it is bent. Replace the fenderwell trim if the steel core is bent.



2. Clean the body bonding surface with a sponge dampened in alcohol. After cleaning, keep oil, grease and water from getting on the clean surface.
3. Apply clear sealant (C) into the channel of the fenderwell trim from end to end.

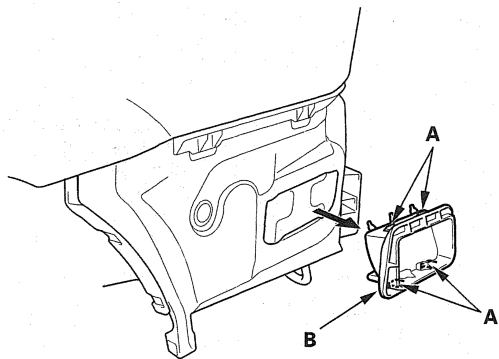
Sealant: Cemedine P/N 08712-0004, or equivalent

4. Install the fenderwell trim.
5. Scrape or wipe the excess sealant off with a towel. To remove sealant from a painted surface, wipe with a soft shop towel dampened with isopropyl alcohol.



Rear Air Outlet Replacement

1. Remove the rear bumper (see page 20-139).
2. Detach the hooks (A), then remove the rear air outlet (B). Take care not to scratch the body.



3. Install the rear air outlet by pushing on the hook portions until the hooks snap into place.

Left Front Splash Guard Reinforcement Replacement

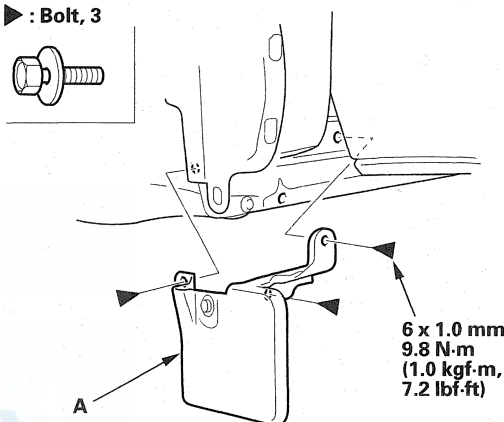
1. Remove these items:

- Left front inner fender, as necessary (see page 20-161)
- Left side sill panel (see page 20-156)

2. Remove the bolts, then remove the left front splash guard reinforcement (A). Take care not to scratch the body.

Fastener Locations

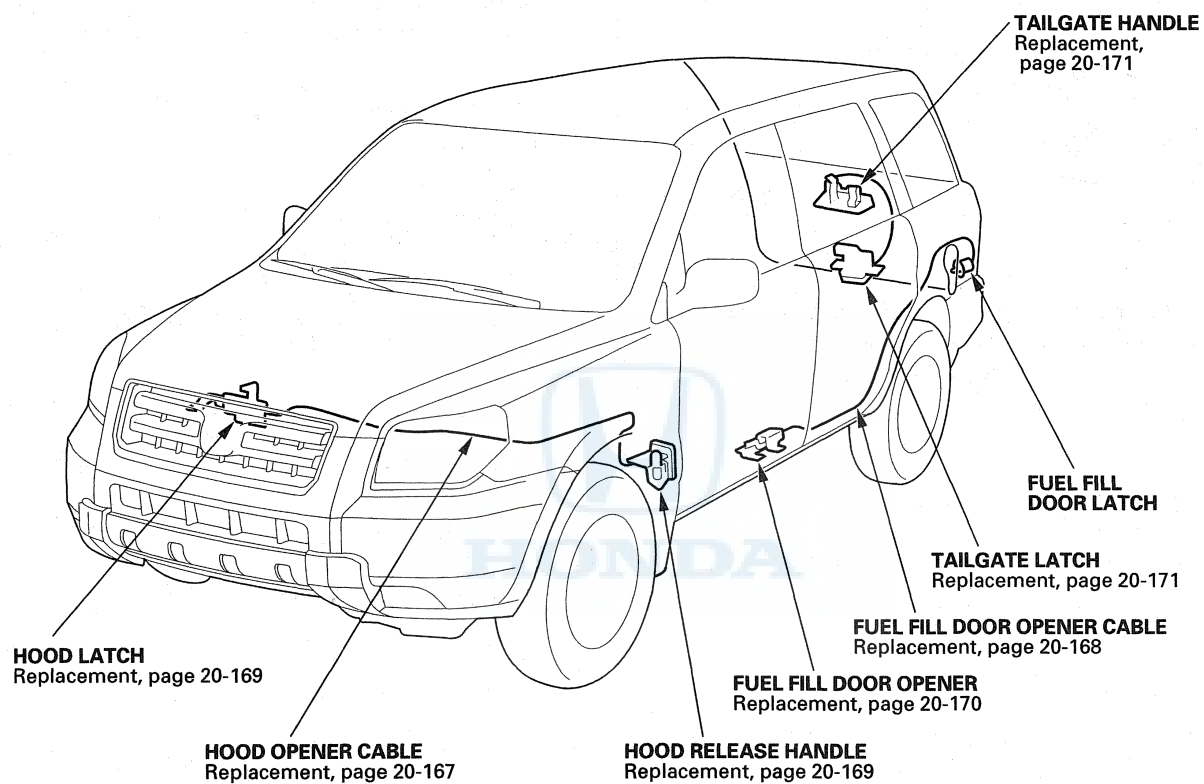
► : Bolt, 3



3. Install the reinforcement in the reverse order of removal.

Openers

Component Location Index





Hood Opener Cable Replacement

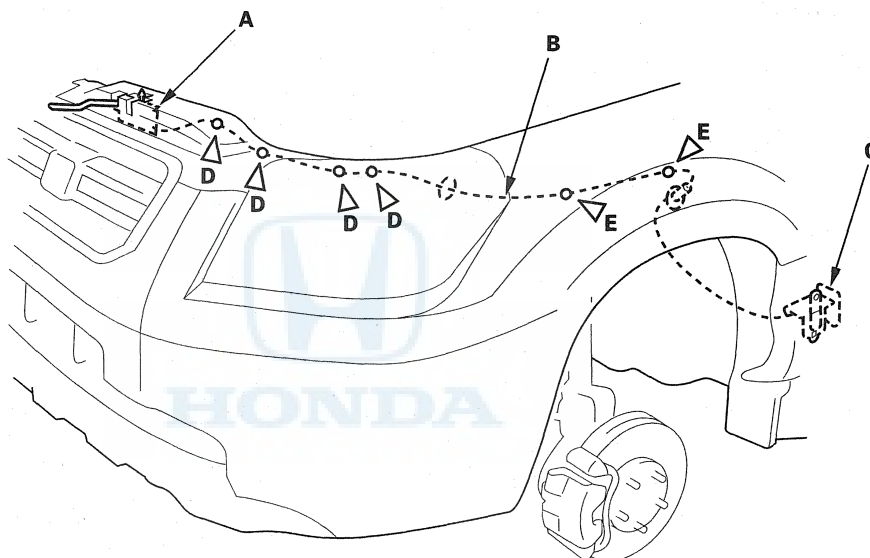
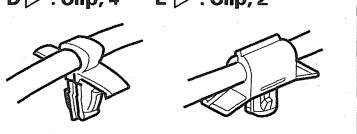
1. Remove these items from the left side of the vehicle:

- Front inner fender (see page 20-161)
- Kick panel (see page 20-65)

2. Remove the hood latch (A) (see page 20-169), and disconnect the hood opener cable (B).

Fastener Locations

D ▷ : Clip, 4 E ▷ : Clip, 2



3. Remove the hood release handle (C) (see page 20-169), and disconnect the hood opener cable.

4. Using a clip remover, detach the clips (D, E) from the body, then remove the hood opener cable from the vehicle. Take care not to bend the cable.

5. Install the cable in the reverse order of removal, and note these items:

- Check if the clips are damaged or stress-whitened, and if necessary, replace them with new ones.
- Push the clips into place securely.

Openers

Fuel Fill Door Opener Cable Replacement

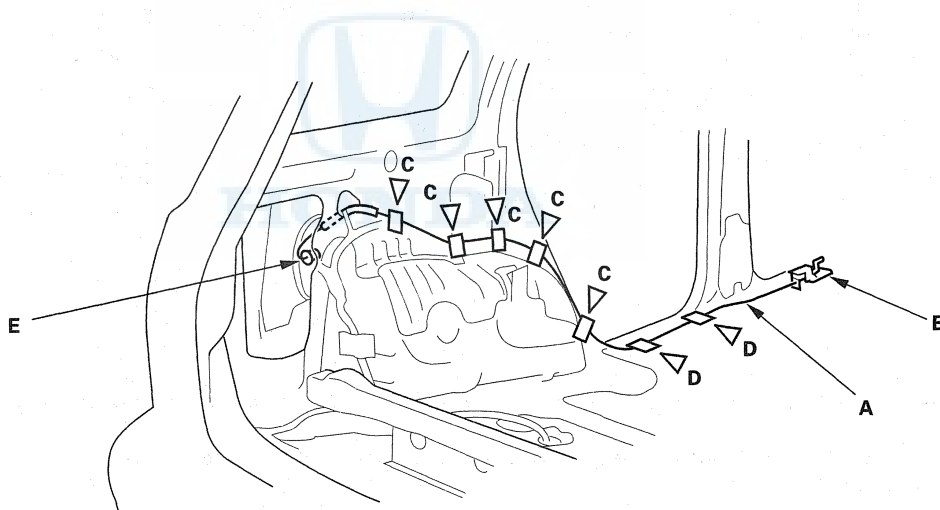
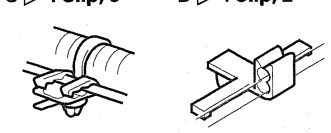
SRS components are located in this area. Review the SRS component locations (see page 23-17) and the precautions and procedures (see page 23-19) before doing repairs or service.

1. Remove these items from the left side of the vehicle:
 - Front door sill trim (see page 20-65)
 - B-pillar lower trim (see page 20-70)
 - Rear door sill trim (see page 20-65)
 - Rear side trim panel (see page 20-80)
2. Pull the carpet back as necessary (see page 20-87).
3. Disconnect the fuel fill door opener cable (A) from the opener (B) (see page 20-170).

Fastener Locations

C ▷ : Clip, 5

D ▷ : Clip, 2



4. Release the opener cable from the clips (C, D), then remove the fuel fill door latch (E) from the body by turning it 90°.
5. Remove the fuel fill door opener cable from the vehicle. Take care not to bend the cable.
6. Install the cable in the reverse order of removal.

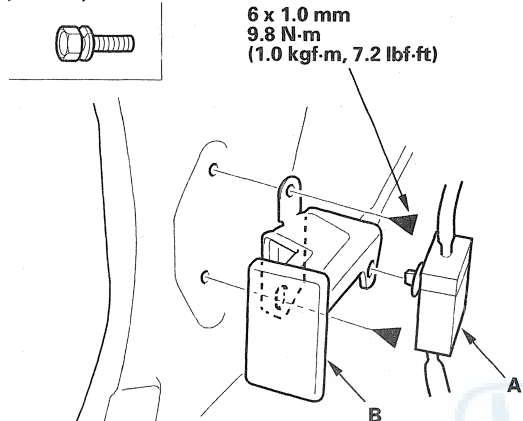


Hood Release Handle Replacement

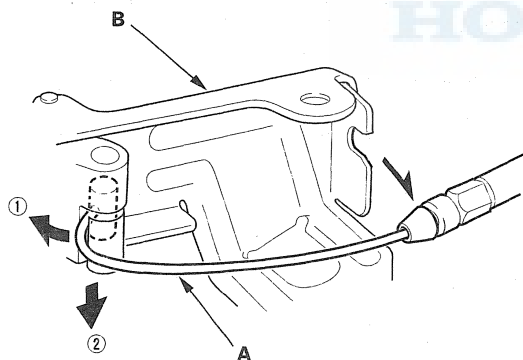
1. Remove the left kick panel (see page 20-65).
2. Detach the side wire harness connector (A) and remove the bolts, then remove the hood release handle (B).

Fastener Locations

► : Bolt, 2



3. Disconnect the hood opener cable (A) from the hood release handle (B). Take care not to bend the cable.



4. Install the hood release handle in the reverse order of removal, and note these items:

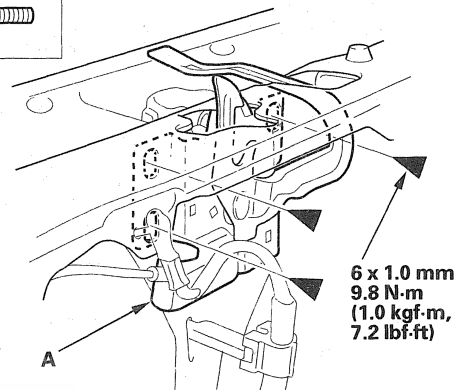
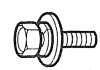
- Make sure the hood opener cable is connected properly.
- Make sure the hood opens properly.

Hood Latch Replacement

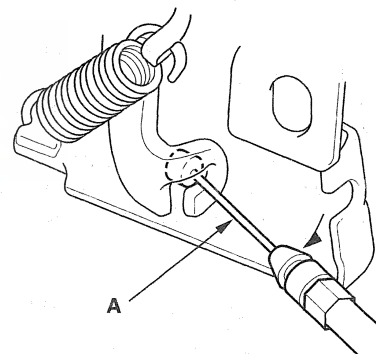
1. Remove the bolts securing the hood latch (A) on the body.

Fastener Locations

► : Bolt, 3



2. Detach the hood opener cable (A) from the latch, then remove the latch from the body.

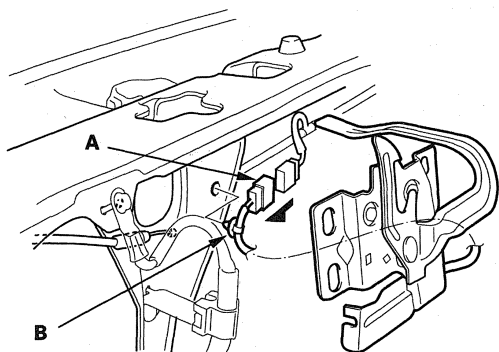


(cont'd)

Openers

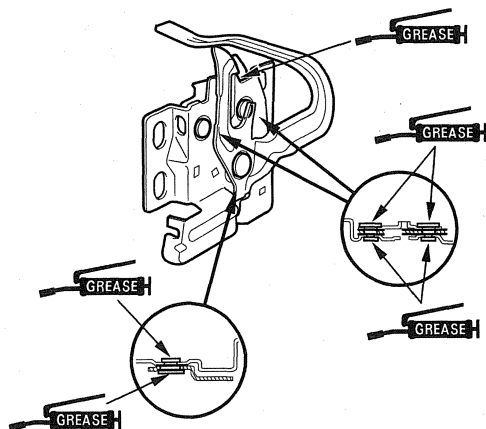
Hood Latch Replacement (cont'd)

3. If equipped, disconnect the hood switch connector (A) and detach the harness clip (B).



4. Install the hood in the reverse order of removal, and note these items:

- Apply multipurpose grease to each location of the hood latch as indicated by the arrows.
- Make sure the hood opener cable is connected properly and hood switch connector is plugged in properly.
- Make sure the cable actuates the latch before you close the hood.
- Adjust the hood latch alignment (see page 20-140).
- Make sure the hood locks securely.
- For some models, make sure the security system operates properly with the hood opened and closed.



Fuel Fill Door Opener Replacement

1. Remove the left front door sill trim (see page 20-65).

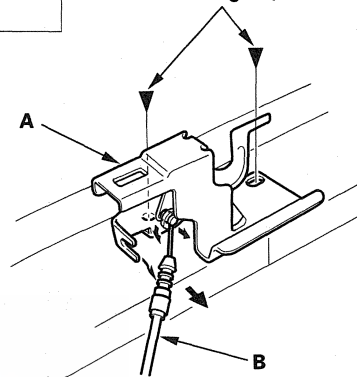
2. Remove the bolts, then remove the fuel fill door opener (A) from the floor.

Fastener Locations

► : Bolt, 2



6 x 1.0 mm
9.8 N·m
(1.0 kgf·m, 7.2 lbf·ft)



3. Disconnect the fuel fill door opener cable (B), then remove the fuel fill door opener.

4. Install the fuel fill door opener in the reverse order of removal, and note these items:

- Make sure the opener cable is connected properly.
- Make sure the fuel fill door opens properly.



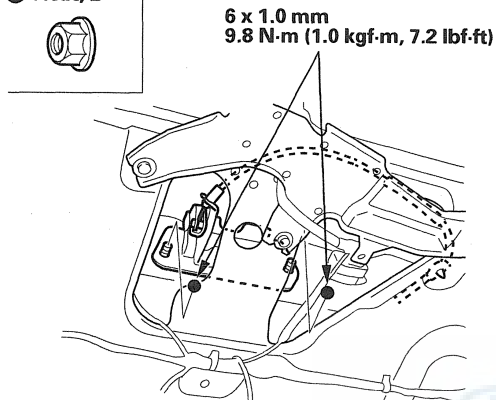
Tailgate Handle Replacement

NOTE: Put on gloves to protect your hands.

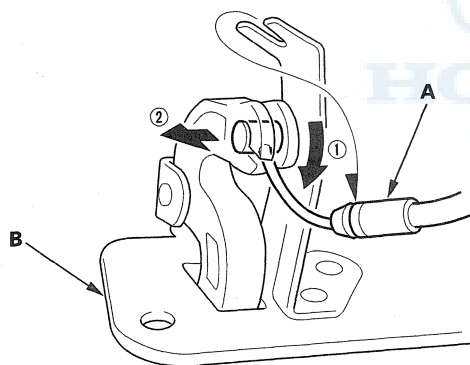
1. Remove the tailgate trim panel (see page 20-82).
2. Remove the nuts, then remove the tailgate handle.

Fastener Locations

● : Nut, 2



3. Disconnect the handle cable (A) from the tailgate handle (B).

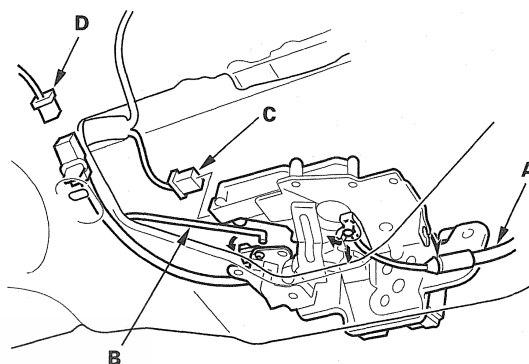


4. Install the tailgate handle in the reverse order of removal, and note these items:
 - Make sure the handle cable is connected securely.
 - Make sure the tailgate opens properly.

Tailgate Latch Replacement

NOTE: Put on gloves to protect your hands.

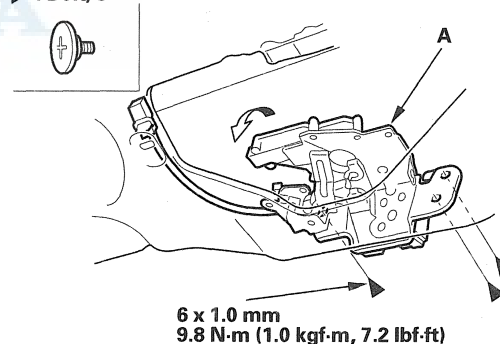
1. Remove the tailgate trim panel (see page 20-82).
2. Disconnect the handle cable (A), cylinder rod (B), tailgate latch actuator connector (C), and tailgate latch switch connector (D), and detach the connector.



3. Remove the bolts, then remove the tailgate latch (A).

Fastener Locations

► : Bolt, 3



4. Install the tailgate latch in the reverse order of removal, and note these items:
 - Make sure the connectors are plugged in properly and the handle cable is connected properly.
 - Make sure the cable actuates the latch before you close the tailgate.
 - Make sure the tailgate opens properly and locks securely.
 - For some models, make sure the security system operates properly with the tailgate opened and closed.

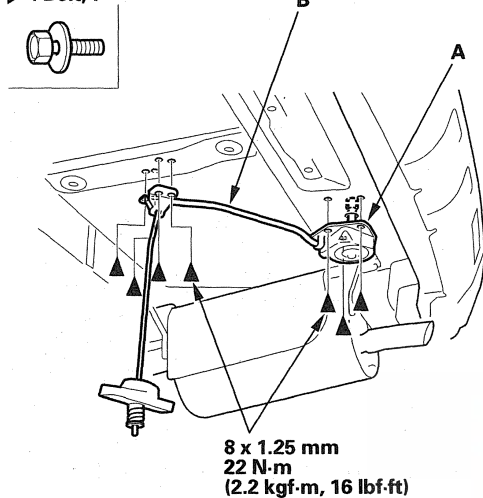
Frame

Spare Tire Hoist Replacement

1. Remove the spare tire.
2. Remove the bolts, then remove the spare tire hoist (A). Take care not to bend the cable (B).

Fastener Locations

► : Bolt, 7



3. Install the hoist in the reverse order of removal.



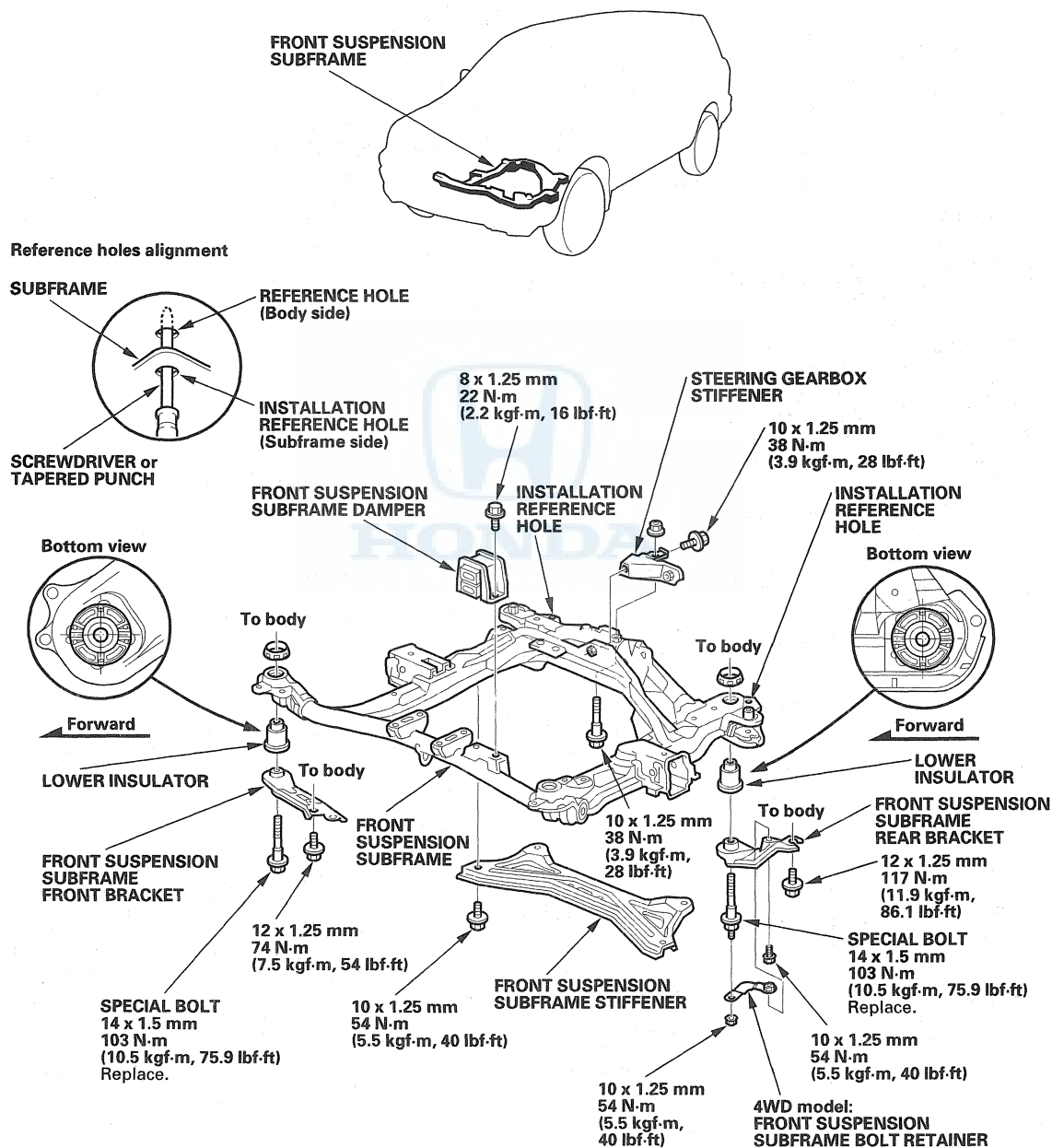


Front Subframe Replacement

Subframe Torque

NOTE:

- After removing the subframe mounting bolts and front suspension subframe stiffener mounting bolts, be sure to replace them with new ones.
- When installing, align both installation reference holes in the subframe with both reference holes in the body using a screwdriver or tapered punch as a guide.

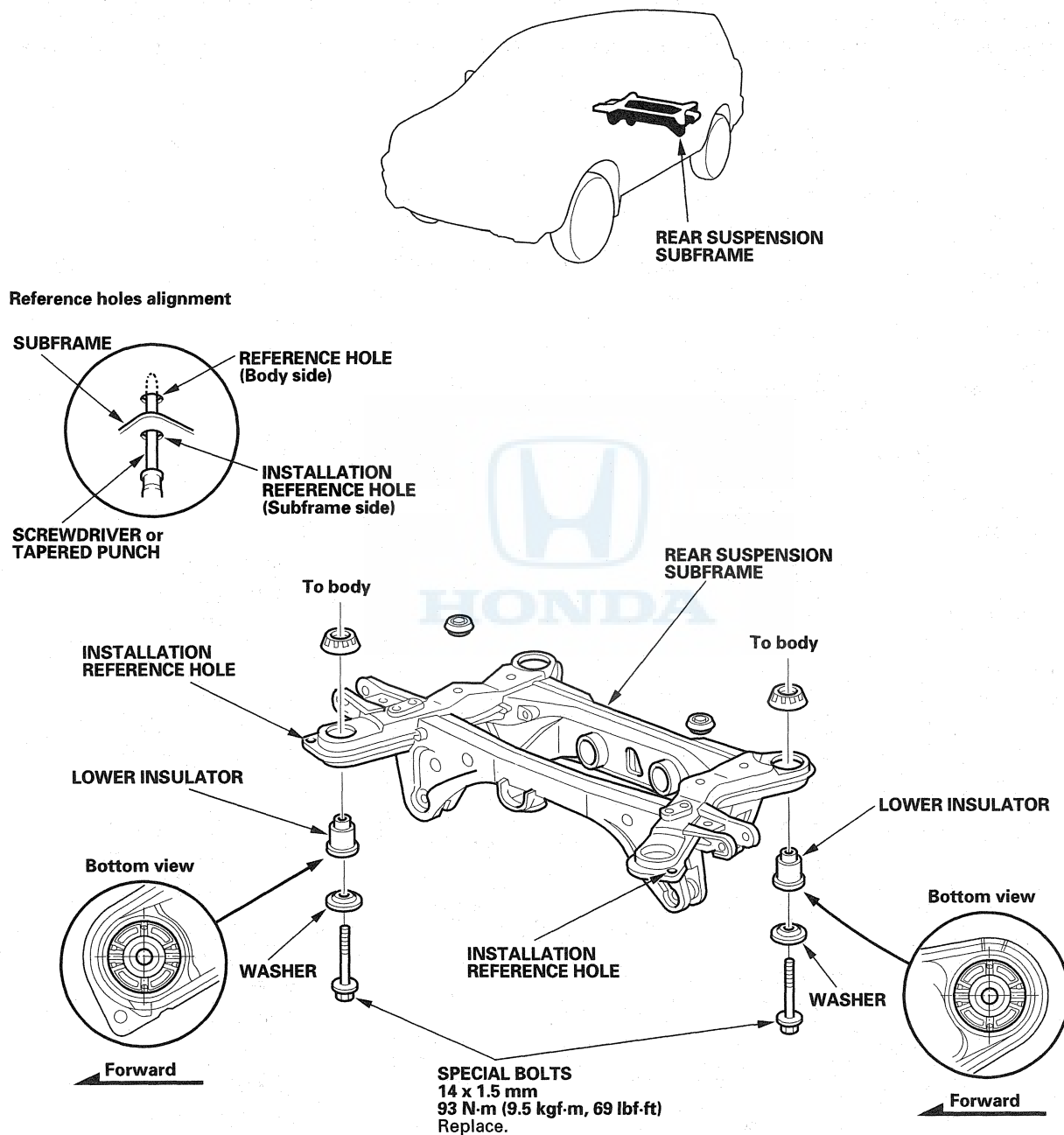


Frame

Rear Subframe Replacement

Subframe Torque

After removing the subframe mounting bolts, be sure to replace them with new ones.





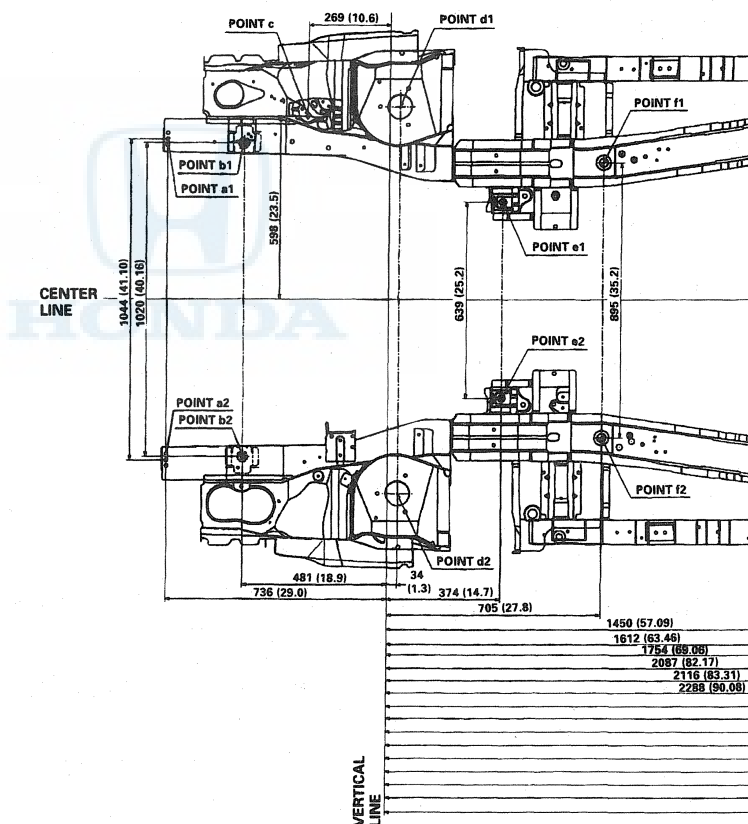
Frame

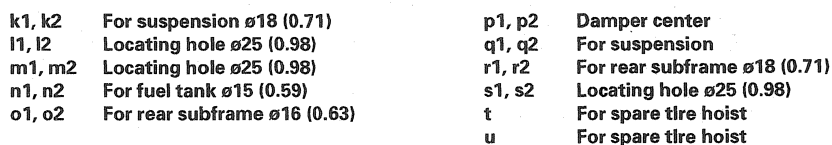
Frame Repair Chart

Top View

Unit: mm (in.)
 ø: Inner diameter

a1, a2	For bumper beam ø11 (0.43)	f1, f2	Locating hole ø28 (1.1)
b1, b2	For subframe ø15 (0.59)	g1, g2	For propeller shaft ø11 (0.43)
c	For engine mount ø11 (0.43)	h	For fuel tank ø15 (0.59)
d1, d2	Damper center	i	For fuel tank ø15 (0.59)
e1, e2	For subframe ø15 (0.59)	j1, j2	For suspension ø18 (0.71)





Frame

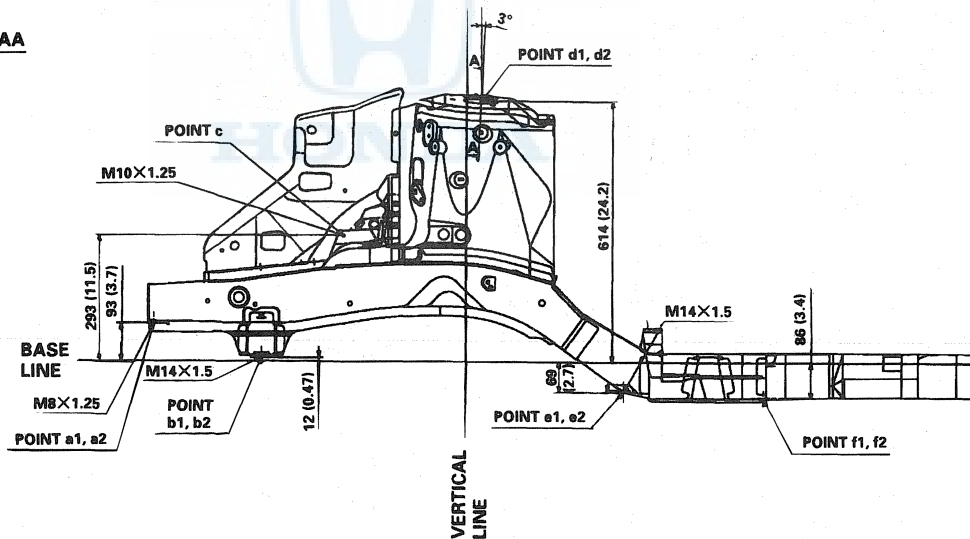
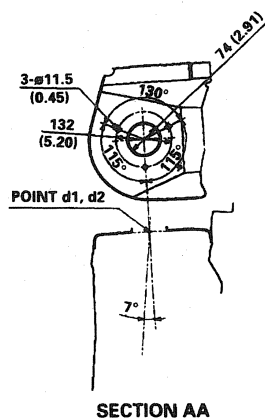
Frame Repair Chart (cont'd)

Side View

Unit: mm (in.)
 ø: Inner diameter

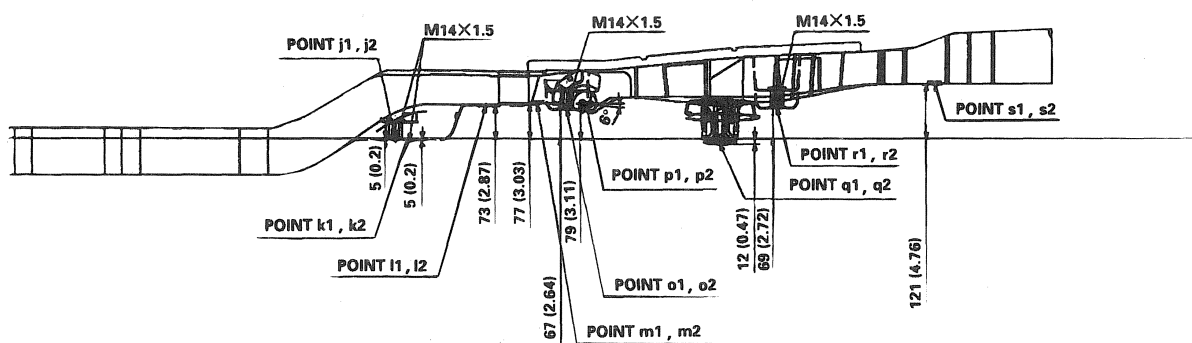
a1, a2 For bumper beam ø11 (0.43)
 b1, b2 For subframe ø15 (0.59)
 c For engine mount ø11 (0.43)
 d1, d2 Damper center
 e1, e2 For subframe ø15 (0.59)

f1, f2 Locating hole ø28 (1.1)
 j1, j2 For suspension ø18 (0.71)





k1, k2	For suspension $\varnothing 18$ (0.71)	p1, p2	Damper center
l1, l2	Locating hoist hole $\varnothing 25$ (0.98)	q1, q2	For suspension
m1, m2	Locating hole $\varnothing 25$ (0.98)	r1, r2	For rear subframe $\varnothing 18$ (0.71)
o1, o2	For rear subframe $\varnothing 16$ (0.63)	s1, s2	Locating hole $\varnothing 25$ (0.98)



SUPPLEMENTAL RESTRAINT SYSTEM (SRS) (If HVAC maintenance is required)

The Pilot SRS includes a driver's airbag in the steering wheel hub, a passenger's airbag in the dashboard above the glove box, seat belt tensioners in the front seat belt retractors, side curtain airbags in the side of the roof, and side airbags in the front seat-backs. Information necessary to safely service the SRS is included in this Service Manual. Items marked with an asterisk (*) on the contents page include or are located near SRS components. Servicing, disassembling, or replacing these items requires special precautions and tools, and should be done by an authorized Honda dealer.

- To avoid rendering the SRS inoperative, which could lead to personal injury or death in the event of a severe frontal or side collision, all SRS service work should be done by an authorized Honda dealer.
- Improper service procedures, including incorrect removal and installation of the SRS, could lead to personal injury caused by unintentional deployment of the airbags and/or side airbags.
- Do not bump or impact the SRS unit, front impact sensors, or side impact sensors when the ignition switch is ON (II), or for at least 3 minutes after the ignition switch is turned OFF; otherwise, the system may fail in a collision, or the airbags may deploy.
- SRS electrical connectors are identified by yellow color coding. Related components are located in the steering column, front console, dashboard, dashboard lower panel, in the dashboard above the glove box, in the front seats, in the roof side, and around the floor. Do not use electrical test equipment on these circuits.



HVAC (Heating, Ventilation, and Air Conditioning)

Heating/Air Conditioning

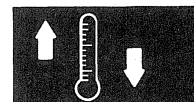
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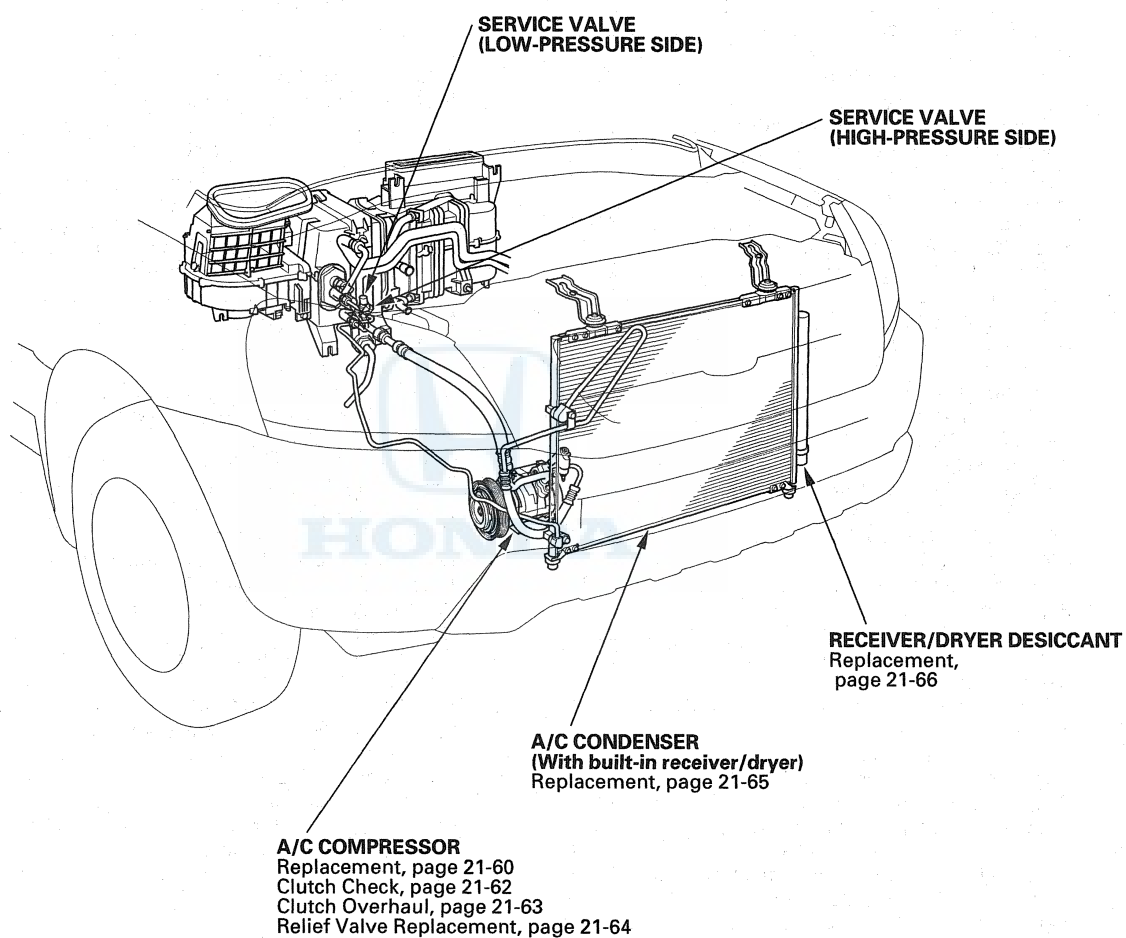
Rear Heater-A/C

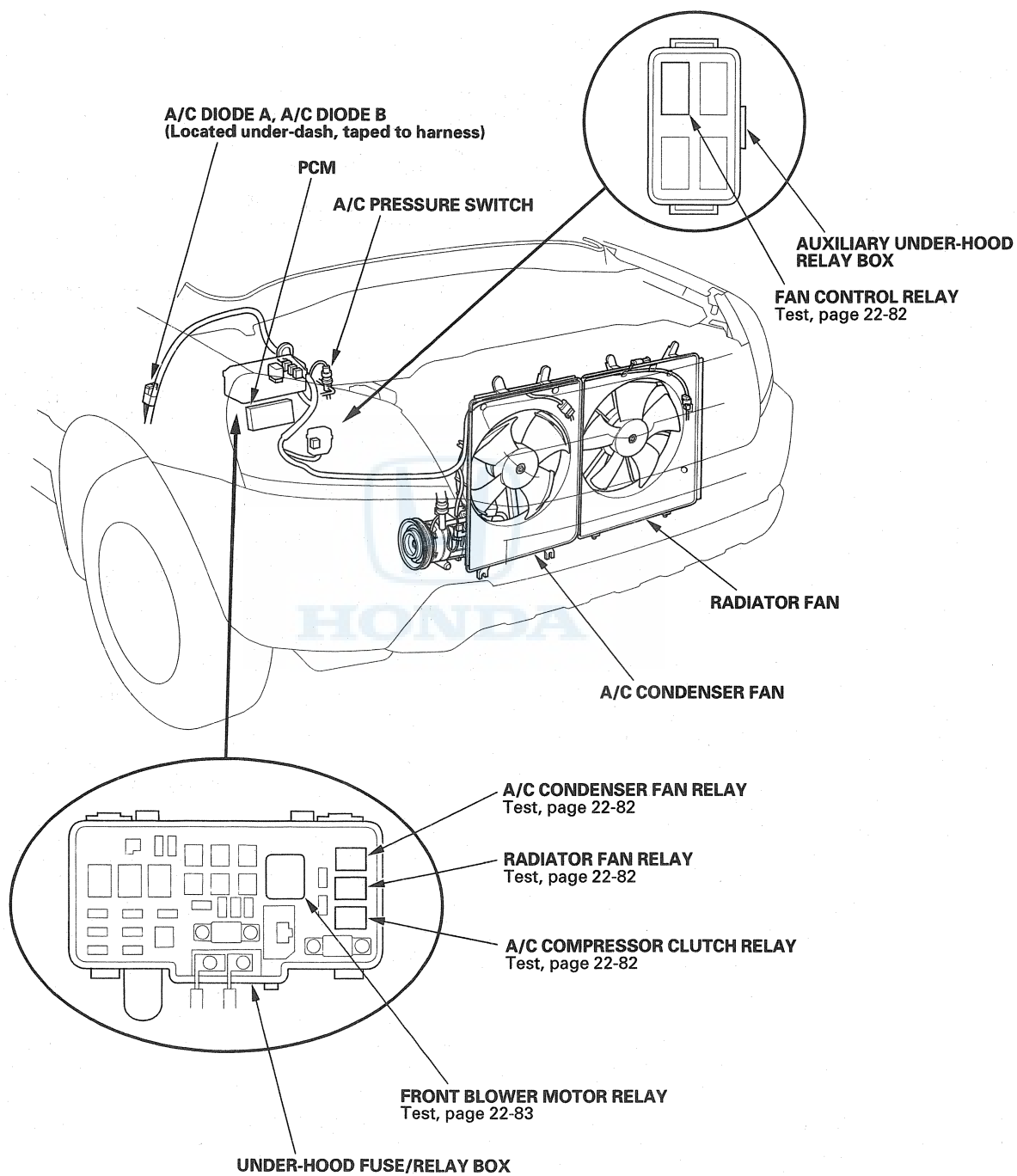
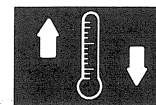
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Heating/Air Conditioning

Component Location Index

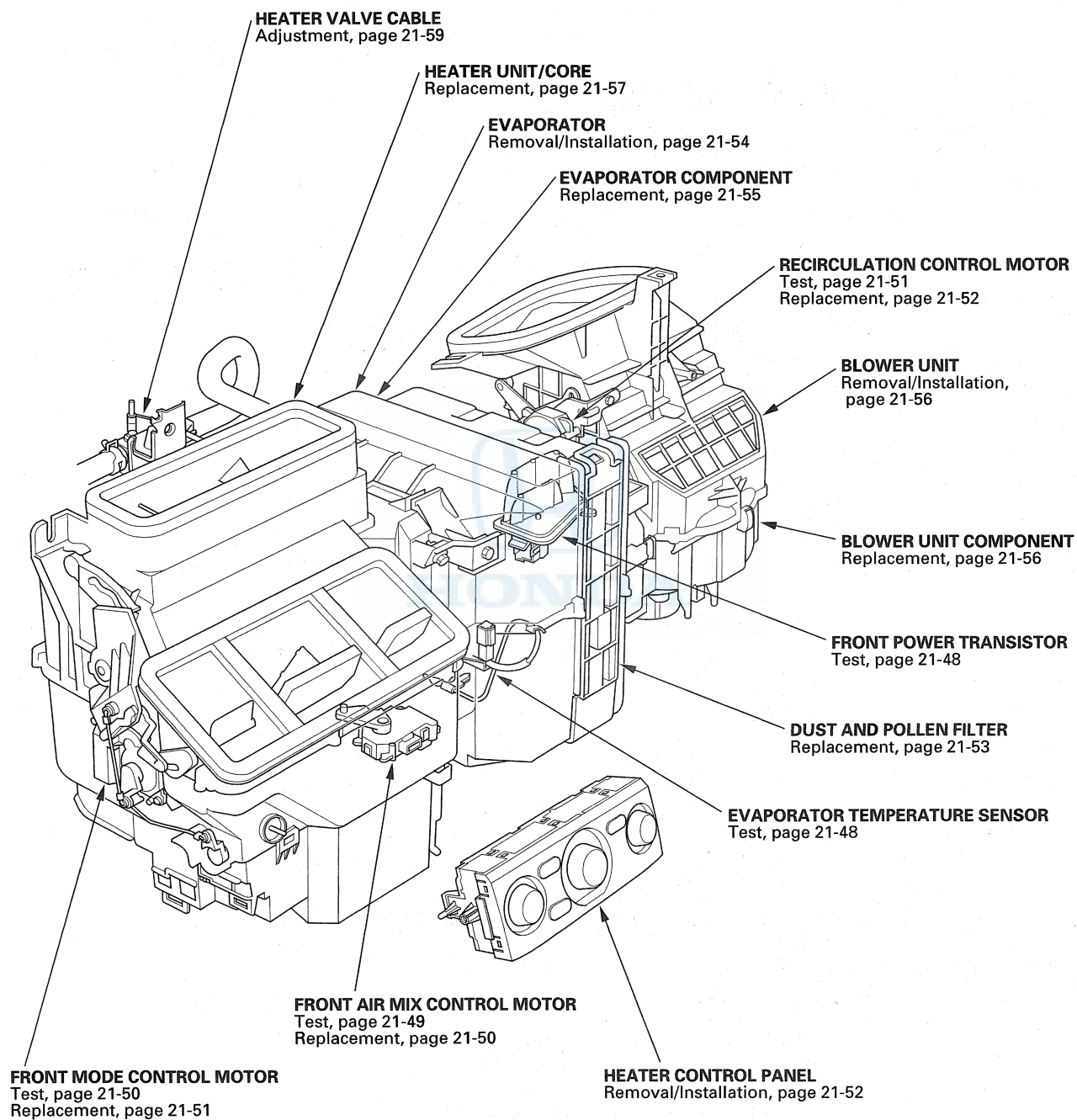


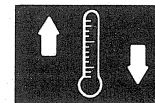


(cont'd)

Heating/Air Conditioning

Component Location Index (cont'd)





A/C Service Tips and Precautions

⚠ WARNING

- Compressed air mixed with the R-134a forms a combustible vapor.
- The vapor can burn or explode causing serious injury.
- Never use compressed air to pressure test R-134a service equipment or vehicle air conditioning systems.

⚠ CAUTION

- Air conditioning refrigerant or lubricant vapor can irritate your eyes, nose, or throat.
- Be careful when connecting service equipment.
- Do not breathe refrigerant or vapor.

The air conditioning system uses HFC-134a (R-134a) refrigerant and polyalkyleneglycol (PAG) refrigerant oil, which are not compatible with CFC-12 (R-12) refrigerant and mineral oil. Do not use R-12 refrigerant or mineral oil in this system, and do not attempt to use R-12 servicing equipment; damage to the air conditioning system or your servicing equipment will result. Use only service equipment that is U.L.-listed and is certified to meet the requirements of SAE J2210 to remove R-134a from the air conditioning system.

If accidental system discharge occurs, ventilate the work area before resuming service.

R-134a service equipment or vehicle air conditioning systems should not be pressure tested or leak tested with compressed air.

Additional health and safety information may be obtained from the refrigerant and lubricant manufacturers.

- Always disconnect the negative cable from the battery whenever replacing air conditioning parts.
- Keep moisture and dirt out of the system. When disconnecting any lines, plug or cap the fittings immediately; don't remove the caps or plugs until just before you reconnect each line.
- Before connecting any hose or line, apply a few drops of refrigerant oil to the O-ring.
- When tightening or loosening a fitting, use a second wrench to support the matching fitting.
- When discharging the system, use an R-134a refrigerant recovery/recycling/charging station; don't release refrigerant into the atmosphere.

A/C Refrigerant Oil Replacement

Recommended PAG oil: DENSO ND-OIL 8

- P/N 38897-PR7-A01AH: 120 mL (4 fl-oz)
- P/N 38899-PR7-A01: 40 mL (1 1/3 fl-oz)

Add the recommended refrigerant oil in the amount listed if you replace any of the following parts.

- To avoid contamination, do not return the oil to the container once dispensed, and never mix it with other refrigerant oils.
- Immediately after using the oil, reinstall the cap on the container, and seal it to avoid moisture absorption.
- Do not spill the refrigerant oil on the vehicle; it may damage the paint; if it gets on the paint, wash it off immediately.

A/C Condenser35 mL (1 1/6 fl-oz)

Front evaporator40 mL (1 1/3 fl-oz)

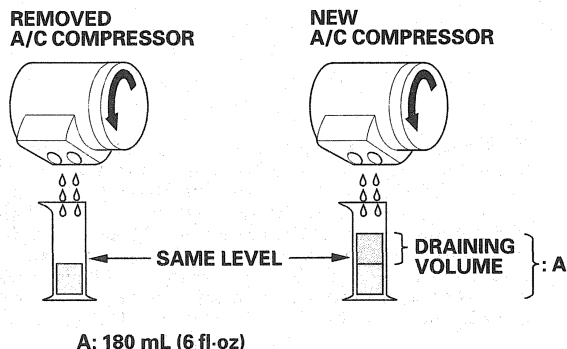
Rear evaporator30 mL (1 fl-oz)

Line or hose10 mL (1/3 fl-oz)

Leakage repair25 mL (5/6 fl-oz)

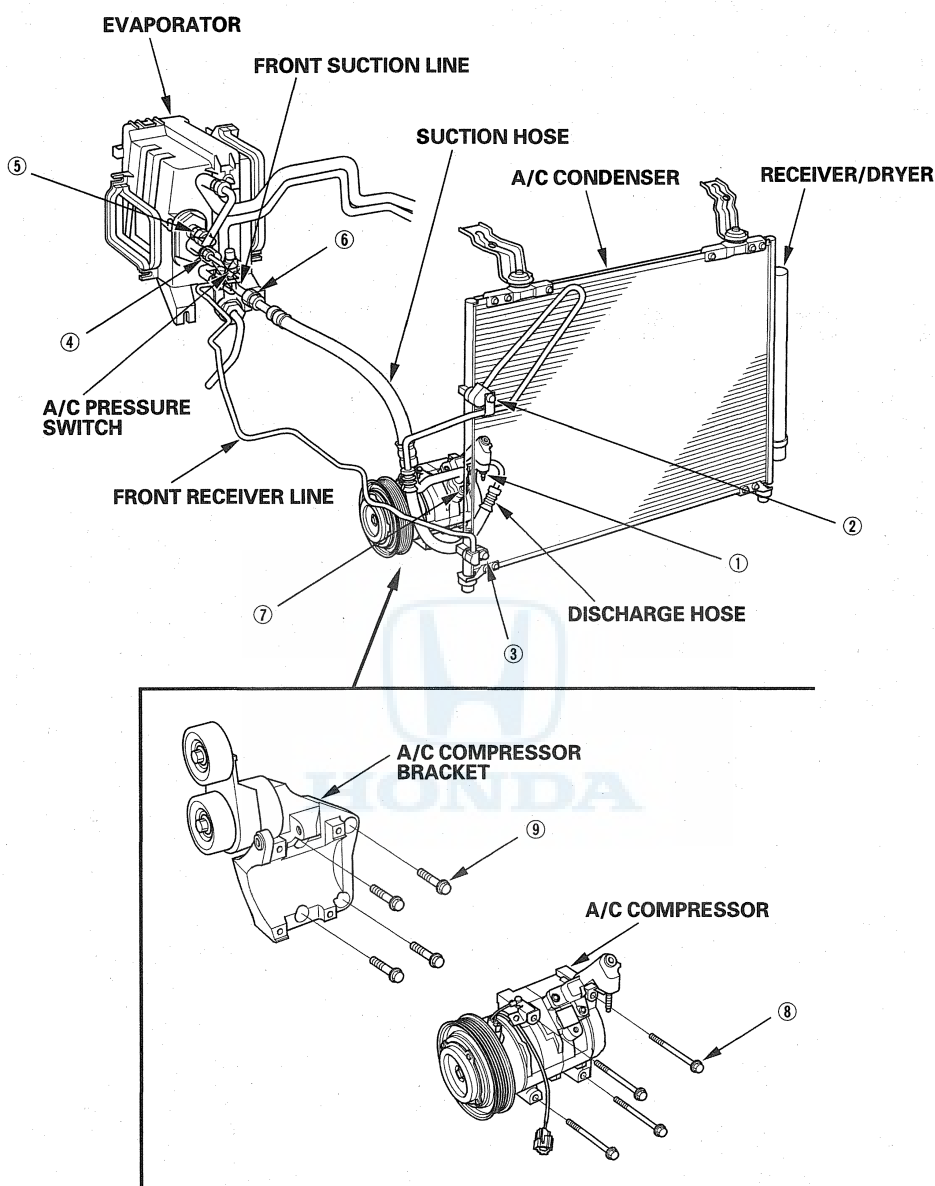
A/C CompressorFor A/C compressor replacement, subtract the volume of oil drained from the removed A/C compressor from 180 mL (6 fl-oz), and drain the calculated volume of oil from the new A/C compressor: 180 mL (6 fl-oz) — Volume of removed A/C compressor = Volume to drain from new A/C compressor.

NOTE: Even if no oil is drained from the removed A/C compressor, don't drain more than 50 mL (1 2/3 fl-oz) from the new A/C compressor.

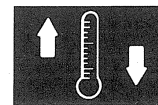


Heating/Air Conditioning

Front A/C Line Replacement



- ① Discharge hose to the A/C compressor (6 x 1.0 mm): 9.8 N·m (1.0 kgf·m, 7.2 lbf·ft)
- ② Discharge hose to the A/C condenser (6 x 1.0 mm): 9.8 N·m (1.0 kgf·m, 7.2 lbf·ft)
- ③ Front Receiver line to the A/C condenser (6 x 1.0 mm): 9.8 N·m (1.0 kgf·m, 7.2 lbf·ft)
- ④ Front Receiver line to the evaporator: 13 N·m (1.3 kgf·m, 9.4 lbf·ft)
- ⑤ Front Suction line to the evaporator: 31 N·m (3.2 kgf·m, 23 lbf·ft)
- ⑥ Suction hose to the suction line: 31 N·m (3.2 kgf·m, 23 lbf·ft)
- ⑦ Suction hose to the A/C compressor (6 x 1.0 mm): 9.8 N·m (1.0 kgf·m, 7.2 lbf·ft)
- ⑧ A/C compressor to the A/C compressor bracket (8 x 1.25 mm): 22 N·m (2.2 kgf·m, 16 lbf·ft)
- ⑨ A/C compressor bracket to the engine block (10 x 1.25 mm): 44 N·m (4.5 kgf·m, 33 lbf·ft)

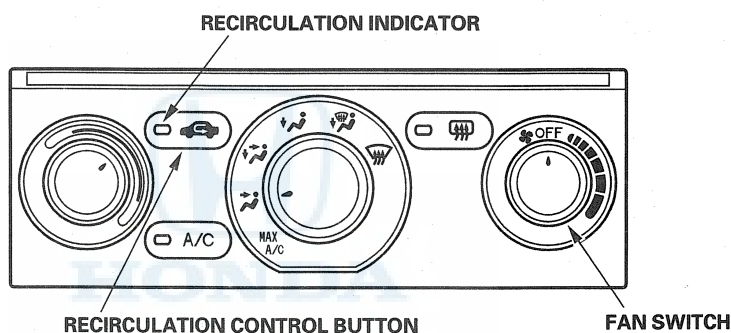


General Troubleshooting Information

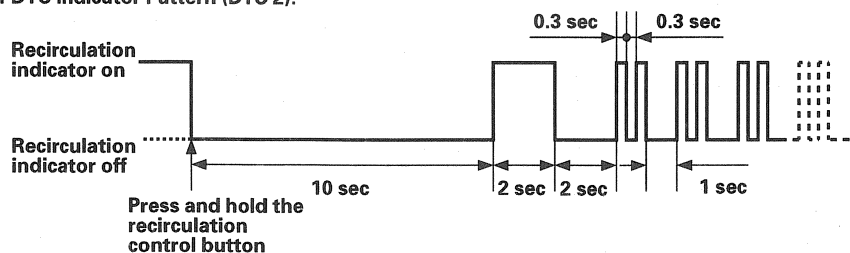
How to Retrieve a DTC

The heater control panel has a self-diagnostic function. To run the self-diagnostic function, do the following:

1. Turn the ignition switch ON (II).
2. Turn the fan switch OFF.
3. Press the recirculation control button to select Recirculation (recirculation indicator comes on).
4. Press and hold the recirculation control button to select Fresh (recirculation indicator goes off). Continue to hold the button for 10 seconds. The recirculation indicator comes on for 2 seconds, and the self-diagnosis begins.
5. After recording the DTC, release the recirculation control button.
 - If the system is OK, the recirculation indicator stays off.
 - If any trouble is found, the recirculation indicator blinks the diagnostic trouble code (DTC) to indicate a faulty circuit or component.



Example of DTC Indicator Pattern (DTC 2):



Canceling the Self-diagnostic Function

6. Turn the ignition switch OFF to cancel the self-diagnostic function. After completing repair work, run the self-diagnostic function again to make sure that there are no other malfunctions.

Max Cool Position Function

When the mode control dial is in the MAX A/C position, the heater control panel will automatically select the VENT mode and turn the A/C on. The VENT switch and A/C switch are disabled and cannot be turned off in this mode. If the control panel fails to function as described, replace it.

(cont'd)

Heating/Air Conditioning

General Troubleshooting Information (cont'd)

DTC (Recirculation Indicator Blinks)	Detection Item	Page
1	A problem in the front blower motor circuit	(see page 21-18)
2	A problem in the front air mix control motor circuit	(see page 21-21)
3	A problem in the front mode control motor circuit	(see page 21-22)
4	A problem in the evaporator temperature sensor circuit	(see page 21-24)

In case of multiple problems, the recirculation indicator will indicate only the DTC with the least number of blinks.
In case of an intermittent failure, the heater control panel will store the DTC until the ignition switch is turned off.





Symptom Troubleshooting Index

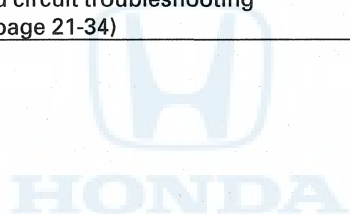
Symptom	Diagnostic procedure	Also check for
Recirculation control doors do not change between Fresh and Recirculate	Recirculation control motor circuit troubleshooting (see page 21-26)	<ul style="list-style-type: none"> HVAC DTCs (see page 21-7) Blown fuse No. 3 (7.5 A) in the driver's under-dash fuse/relay box Cleanliness and tightness of all terminals
Blower, heater controls, and A/C do not work	Heater control power and ground circuit troubleshooting (see page 21-28)	<ul style="list-style-type: none"> HVAC DTCs (see page 21-7) Blown fuse No. 3 (7.5 A) in the driver's under-dash fuse/relay box Poor ground at G401 Cleanliness and tightness of all terminals
The A/C compressor clutch does not engage (but both fans run at high speed with the A/C on)	A/C compressor clutch circuit troubleshooting (see page 21-37)	<ul style="list-style-type: none"> HVAC DTCs (see page 21-7) Blown fuse No. 59 (7.5 A) in the under-hood fuse/relay box, and No. 3 (7.5 A) in the driver's under-dash fuse/relay box Cleanliness and tightness of all terminals
A/C system does not come on (both fans and the A/C compressor do not work); heater is OK	A/C pressure switch circuit troubleshooting (see page 21-40)	<ul style="list-style-type: none"> HVAC DTCs (see page 21-7) Cleanliness and tightness of all terminals
Rear blower motor runs, but one or more speeds do not work	Rear blower motor circuit troubleshooting (see page 21-42)	<ul style="list-style-type: none"> HVAC DTCs (see page 21-7) Poor ground at G501 Cleanliness and tightness of all terminals
Rear blower motor does not run at all	Rear blower motor circuit troubleshooting (see page 21-42)	<ul style="list-style-type: none"> HVAC DTCs (see page 21-7) Poor ground at G501 Cleanliness and tightness of all terminals
Rear mode control doors do not change between ceiling vents (cool) and floor vents (hot)	Rear mode control motor circuit troubleshooting (see page 21-46)	<ul style="list-style-type: none"> HVAC DTCs (see page 21-7) Blown fuse No. 3 (7.5 A) in the driver's under-dash fuse/relay box Poor ground at G501 Cleanliness and tightness of all terminals

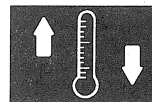
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Heating/Air Conditioning

Symptom Troubleshooting Index (cont'd)

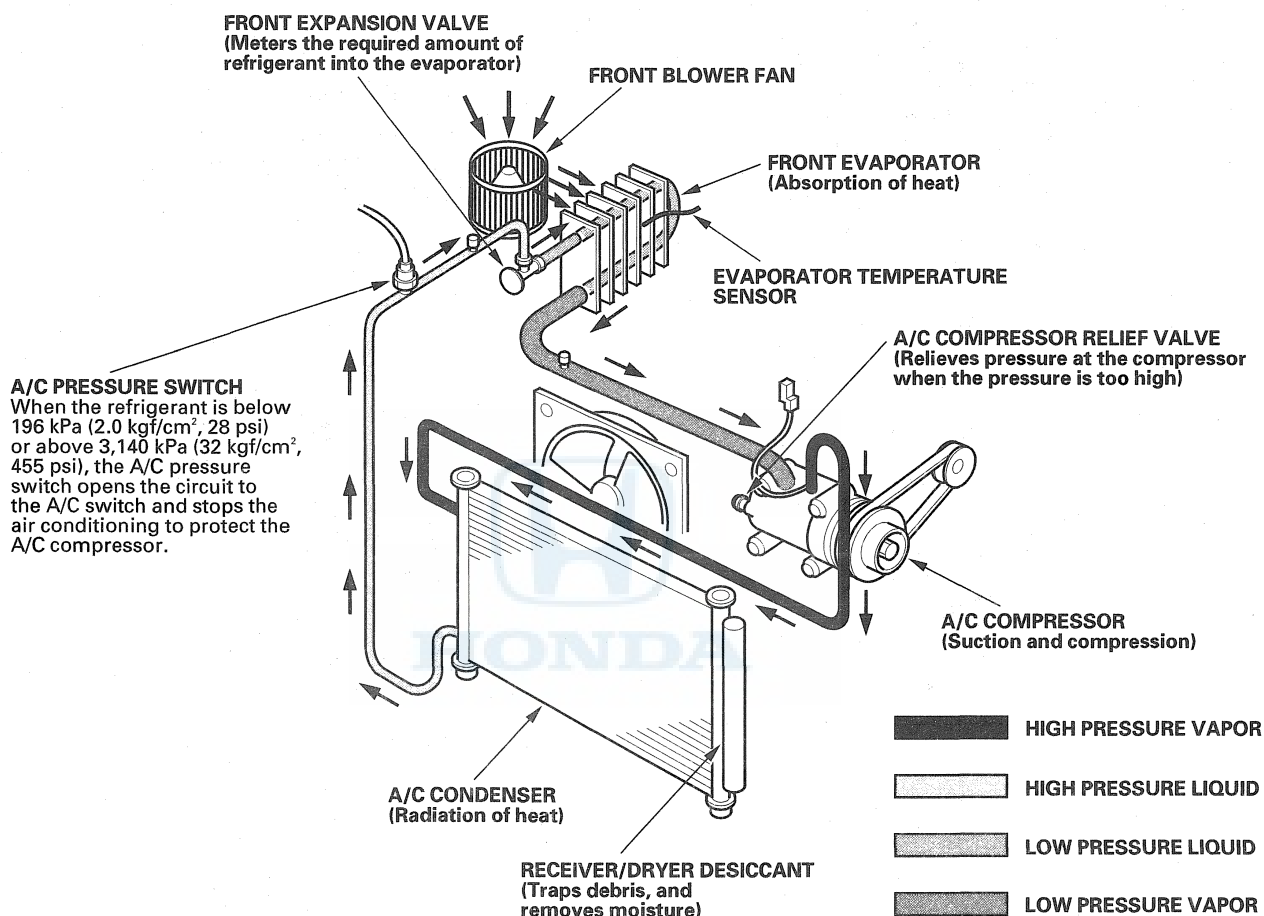
Symptom	Diagnostic procedure	Also check for
Both fans do not run at low speed with the A/C on (but the A/C compressor runs with the A/C on)	Radiator and A/C condenser fan low speed circuit troubleshooting (see page 21-29)	<ul style="list-style-type: none"> • HVAC DTCs (see page 21-7) • Blown fuse No. 58 (30 A) in the under-hood fuse/relay box, and No. 3 (7.5 A) in the driver's under-dash fuse/relay box • Poor ground at G202 • Cleanliness and tightness of all terminals
The A/C condenser fan does not run at high speed (but both fans run at low speed and the A/C compressor operates with the A/C on)	A/C condenser fan high speed circuit troubleshooting (see page 21-33)	<ul style="list-style-type: none"> • HVAC DTCs (see page 21-7) • Blown fuse No. 3 (7.5 A) in the driver's under-dash fuse/relay box • Poor ground at G201 • Cleanliness and tightness of all terminals
Both fans do not run at high speed with the A/C on (but both fans run at low speed and the A/C compressor operates with the A/C on)	Radiator and A/C condenser fan high speed circuit troubleshooting (see page 21-34)	<ul style="list-style-type: none"> • HVAC DTCs (see page 21-7) • Cleanliness and tightness of all terminals
Both fans run at high speed all the time with the A/C on	Radiator and A/C condenser fan high speed circuit troubleshooting (see page 21-34)	<ul style="list-style-type: none"> • HVAC DTCs (see page 21-7) • Cleanliness and tightness of all terminals





System Description

The air conditioning system removes heat from the passenger compartment by transferring heat from the ambient air to the evaporator. The evaporator cools the air with the refrigerant that is circulating through the evaporator. The refrigerant expands in the evaporator, and the evaporator becomes very cold and absorbs the heat from the ambient air. The blower fan pushes air across the evaporator where the heat is absorbed, and then it blows the cool air into the passenger compartment.



This vehicle uses HFC-134a (R-134a) refrigerant which does not contain chlorofluorocarbons. Pay attention to the following service items:

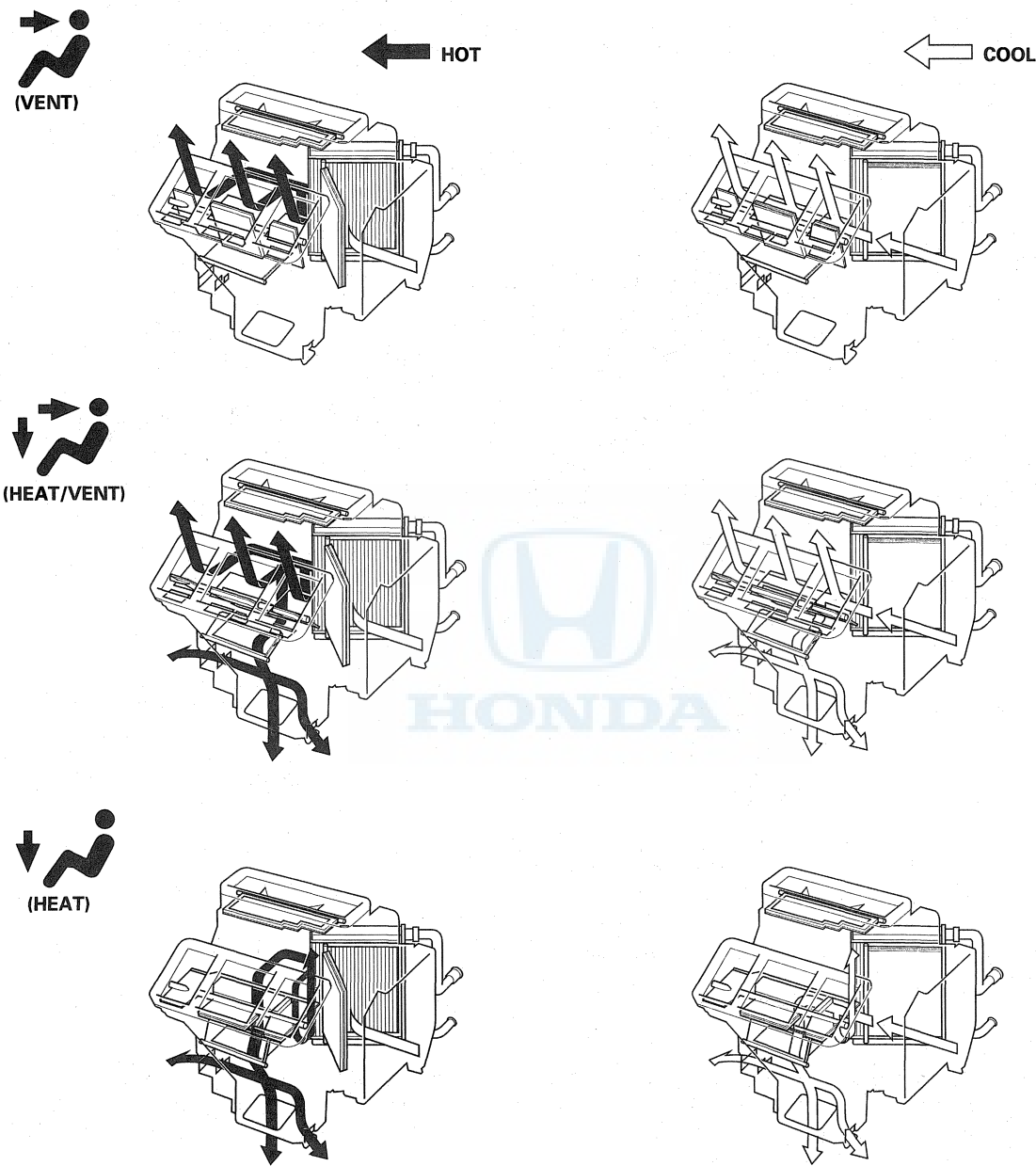
- Do not mix refrigerants CFC-12 (R-12) and HFC-134a (R-134a). They are not compatible.
- Use only the recommended polyalkyleneglycol (PAG) refrigerant oil (DENSO ND-OIL 8) designed for the R-134a A/C compressor. Intermixing the recommended (PAG) refrigerant oil with any other refrigerant oil will result in A/C compressor failure.
- All A/C system parts (A/C compressor, discharge line, suction line, evaporator, A/C condenser, receiver/dryer, expansion valve, O-rings for joints) are designed for refrigerant R-134a. Do not exchange with R-12 parts.
- Use a halogen gas leak detector designed for refrigerant R-134a.
- R-12 and R-134a refrigerant servicing equipment are not interchangeable. Use only a recovery/recycling/charging station that is U.L.-listed and is certified to meet the requirements of SAE J2210 to service the R-134a air conditioning systems.
- Always recover the refrigerant R-134a with an approved recovery/recycling/charging station before disconnecting any A/C fitting.

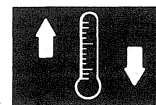
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Heating/Air Conditioning

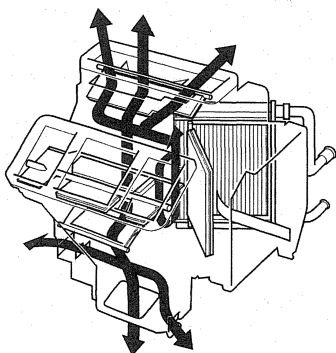
System Description (cont'd)

Heating/Air Conditioning Door Positions

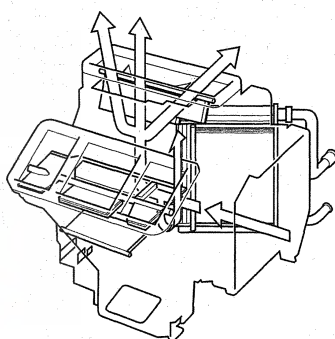
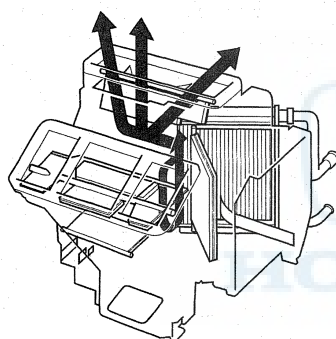
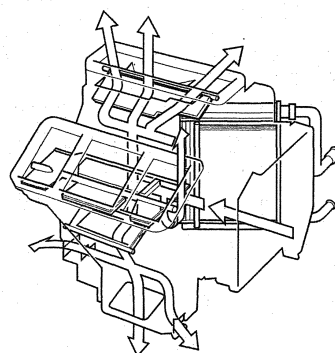




← HOT



← COOL



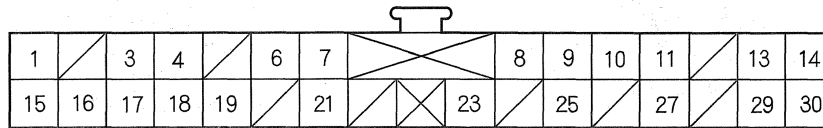
(cont'd)

Heating/Air Conditioning

System Description (cont'd)

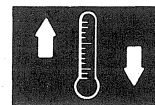
Heater Control Panel Inputs and Outputs

HEATER CONTROL PANEL 30P CONNECTOR



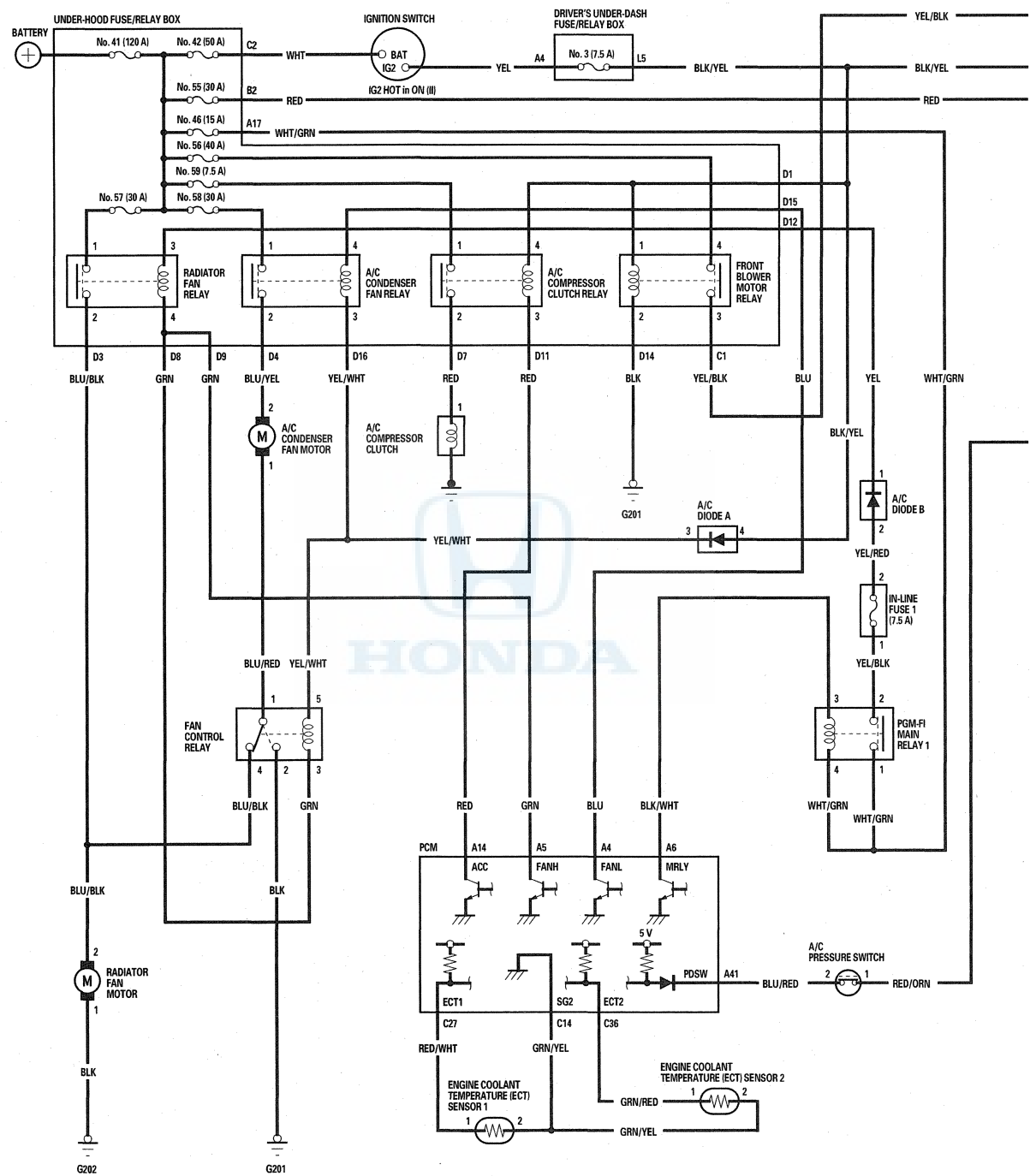
Wire side of female terminals

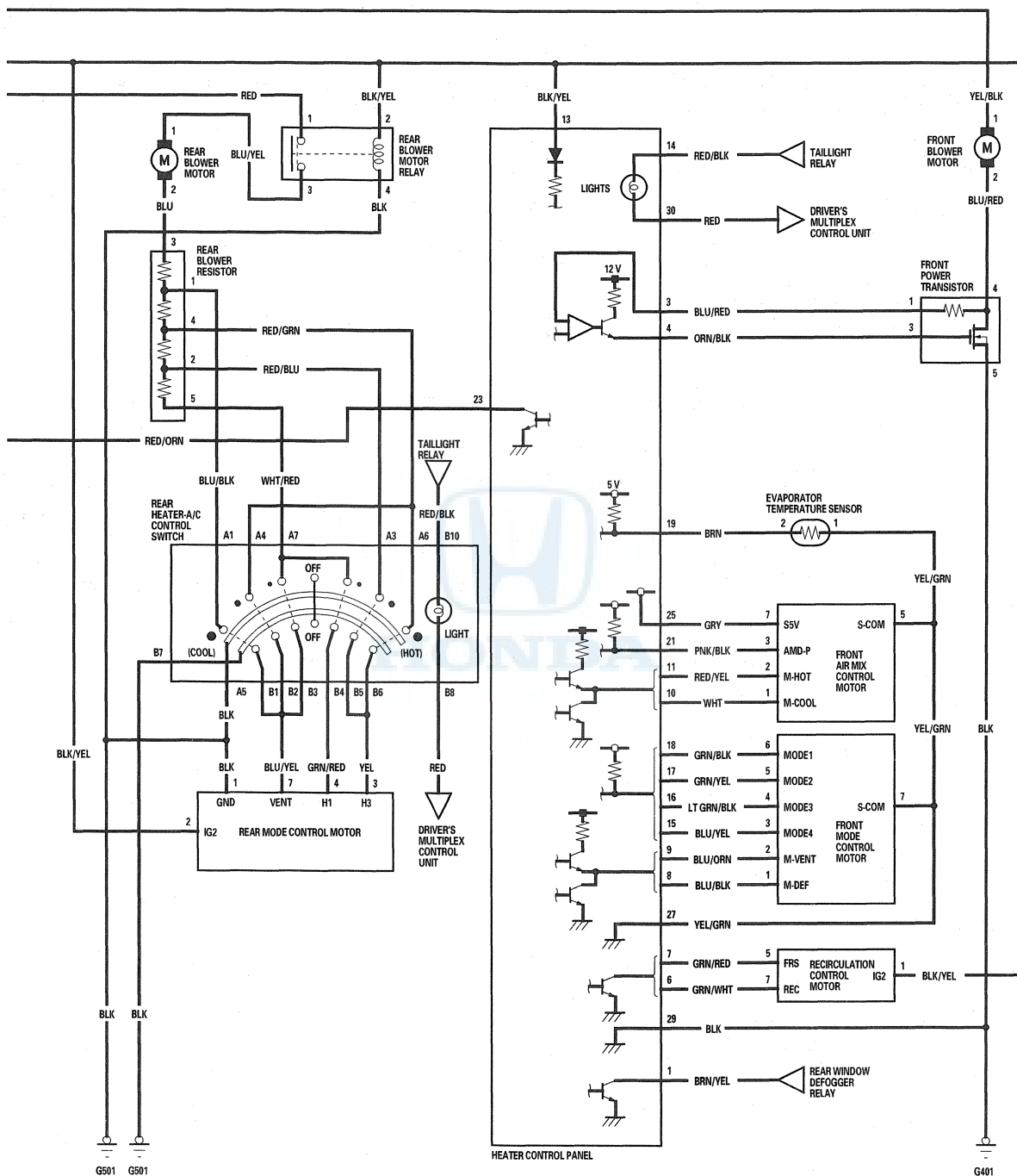
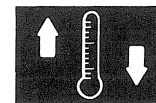
Cavity	Wire color	Signal	
1	BRN/YEL	REAR WINDOW DEFOGGER RELAY	OUTPUT
3	BLU/RED	FRONT BLOWER FEEDBACK	INPUT
4	ORN/BLK	FRONT POWER TRANSISTOR CONTROL	OUTPUT
6	GRN/WHT	RECIRCULATE	OUTPUT
7	GRN/RED	FRESH	OUTPUT
8	BLU/BLK	FRONT MODE DEF	OUTPUT
9	BLU/ORN	FRONT MODE VENT	OUTPUT
10	WHT	FRONT AIR MIX COOL	OUTPUT
11	RED/YEL	FRONT AIR MIX HOT	OUTPUT
13	BLK/YEL	IG2 (Power)	INPUT
14	RED/BLK	TAILLIGHTS RELAY	INPUT
15	BLU/YEL	FRONT MODE4	INPUT
16	LT GRN/BLK	FRONT MODE3	INPUT
17	GRN/YEL	FRONT MODE2	INPUT
18	GRN/BLK	FRONT MODE1	INPUT
19	BRN	EVAPORATOR TEMPERATURE SENSOR	INPUT
21	PNK/BLK	FRONT AIR MIX POTENTIAL	INPUT
23	RED/ORN	A/C PRESSURE SWITCH	OUTPUT
25	GRY	FRONT AIR MIX POTENTIAL +5 V	OUTPUT
27	YEL/GRN	SENSOR COMMON GROUND	OUTPUT
29	BLK	GROUND (G401)	INPUT
30	RED	DRIVER'S MULTIPLEX CONTROL UNIT	INPUT



Heating/Air Conditioning

Circuit Diagram





Heating/Air Conditioning

DTC Troubleshooting

DTC 1: A Problem in the Front Blower Motor Circuit

1. Check the No. 56 (40 A) fuse in the under-hood fuse/relay box, and the No. 3 (7.5 A) fuse in the driver's under-dash fuse/relay box.

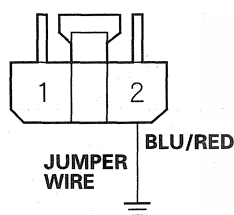
Are the fuses OK?

YES—Go to step 2.

NO—Replace the fuse(s), and recheck. ■

2. Connect the No. 2 terminal of the front blower motor 2P connector to body ground with a jumper wire.

FRONT BLOWER MOTOR 2P CONNECTOR



Wire side of female terminals

3. Turn the ignition switch ON (II).

Does the front blower motor run at high speed?

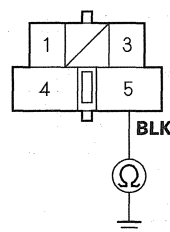
YES—Go to step 4.

NO—Go to step 17.

4. Turn the ignition switch OFF.
5. Disconnect the jumper wire.
6. Disconnect the front power transistor 5P connector.

7. Check for continuity between the No. 5 terminal of the front power transistor 5P connector and body ground.

FRONT POWER TRANSISTOR 5P CONNECTOR



Wire side of female terminals

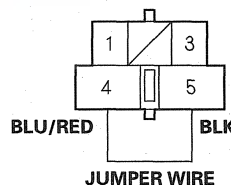
Is there continuity?

YES—Go to step 8.

NO—Check for an open in the wire between the front power transistor and body ground. If the wire is OK, check for poor ground at G401. ■

8. Connect the No. 4 and No. 5 terminals of the front power transistor 5P connector with a jumper wire.

FRONT POWER TRANSISTOR 5P CONNECTOR



Wire side of female terminals

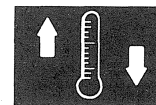
9. Turn the ignition switch ON (II).

Does the front blower motor run at high speed?

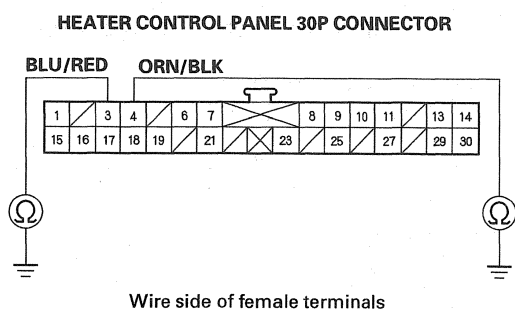
YES—Go to step 10.

NO—Repair open in the wire between the front power transistor and the front blower motor. ■

10. Turn the ignition switch OFF.
11. Disconnect the jumper wire.



12. Disconnect the heater control panel 30P connector.
13. Check for continuity between the No. 3 and No. 4 terminals of the heater control panel 30P connector and body ground individually.

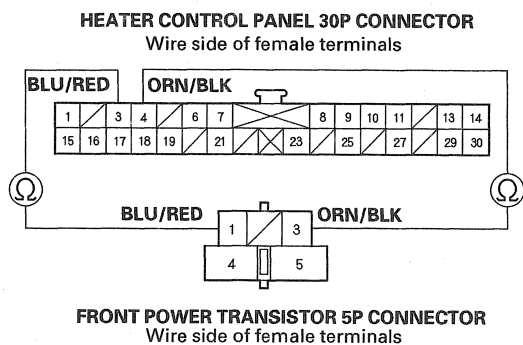


Is there continuity?

YES—Repair short to body ground in the wire(s) between the heater control panel and the front power transistor. ■

NO—Go to step 14.

14. Check for continuity between the following terminals of the heater control panel 30P connector and front power transistor 5P connector.
- | | |
|-------|-------|
| 30P: | 5P: |
| No. 3 | No. 1 |
| No. 4 | No. 3 |



Is there continuity?

YES—Go to step 15.

NO—Repair open in the wire(s) between the heater control panel and the front power transistor. ■

15. Reconnect the heater control panel 30P connector.
16. Test the front power transistor (see page 21-48).

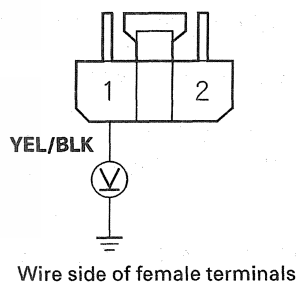
Is the front power transistor OK?

YES—Check for loose wires or poor connections at the heater control panel 30P connector and at the front power transistor 5P connector. If the connections are good, substitute a known-good heater control panel, and recheck. If the symptom/indication goes away, replace the original heater control panel. ■

NO—Replace the front power transistor. ■

17. Measure the voltage between the No. 1 terminal of the front blower motor 2P connector and body ground.

FRONT BLOWER MOTOR 2P CONNECTOR



Is there battery voltage?

YES—Replace the front blower motor. ■

NO—Go to step 18.

18. Turn the ignition switch OFF.
19. Remove the front blower motor relay from the under-hood fuse/relay box, and test it (see page 22-83).

Is the relay OK?

YES—Go to step 20.

NO—Replace the front blower motor relay. ■

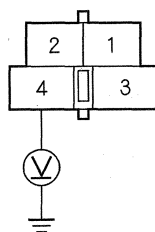
(cont'd)

Heating/Air Conditioning

DTC Troubleshooting (cont'd)

20. Measure the voltage between the No. 4 terminal of the front blower motor relay 4P socket and body ground.

FRONT BLOWER MOTOR RELAY 4P SOCKET



Terminal side of female terminals

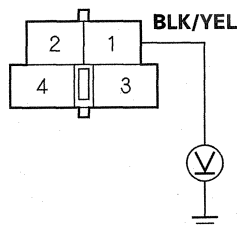
Is there battery voltage?

YES—Go to step 21.

NO—Replace the under-hood fuse/relay box. ■

21. Turn the ignition switch ON (II).
22. Measure the voltage between the No. 1 terminal of the front blower motor relay 4P socket and body ground.

FRONT BLOWER MOTOR RELAY 4P SOCKET



Terminal side of female terminals

Is there battery voltage?

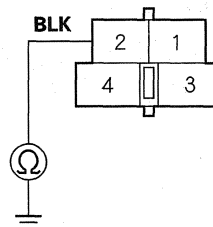
YES—Go to step 23.

NO—Repair open in the wire between the No. 3 (7.5 A) fuse in the driver's under-dash fuse/relay box and the front blower motor relay. ■

23. Turn the ignition switch OFF.

24. Check for continuity between the No. 2 terminal of the front blower motor relay 4P socket and body ground.

FRONT BLOWER MOTOR RELAY 4P SOCKET

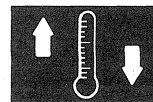


Terminal side of female terminals

Is there continuity?

YES—Repair open in the YEL/BLK wire between the front blower motor relay and the front blower motor. ■

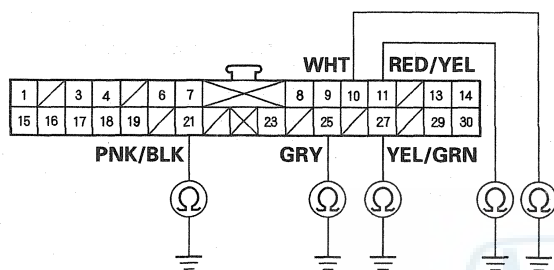
NO—Check for an open in the wire between the front blower motor relay and body ground. If the wire is OK, check for poor ground at G201. ■



DTC 2: A Problem in the Front Air Mix Control Motor Circuit

1. Disconnect the front air mix control motor 7P connector.
2. Disconnect the heater control panel 30P connector.
3. Check for continuity between body ground and the heater control panel 30P connector terminals No. 10, 11, 21, 25, and 27 individually.

HEATER CONTROL PANEL 30P CONNECTOR



Wire side of female terminals

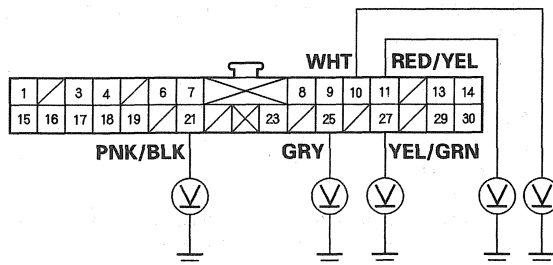
Is there continuity?

YES—Repair short to body ground in the wire(s) between the heater control panel and the front air mix control motor. ■

NO—Go to step 4.

4. Turn the ignition switch ON (II), and check the same terminals for voltage.

HEATER CONTROL PANEL 30P CONNECTOR



Wire side of female terminals

Is there any voltage?

YES—Repair short to power in the wire(s) between the heater control panel and the front air mix control motor. This short may also damage the heater control panel. Repair the short to power before replacing the heater control panel. ■

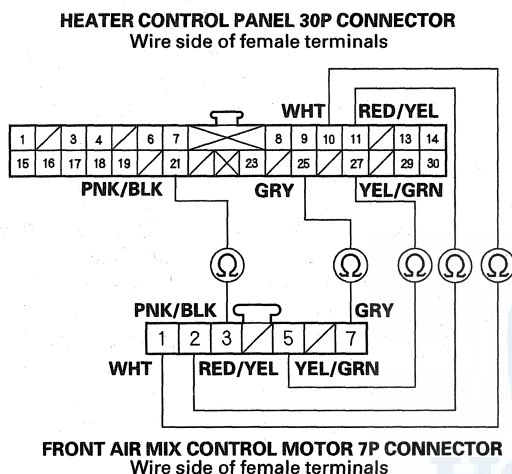
NO—Go to step 5.

(cont'd)

Heating/Air Conditioning

DTC Troubleshooting (cont'd)

5. Turn the ignition switch OFF.
6. Check for continuity between the following terminals of the heater control panel 30P connector and the front air mix control motor 7P connector.
30P: 7P:
No. 10 No. 1
No. 11 No. 2
No. 21 No. 3
No. 25 No. 7
No. 27 No. 5



Is there continuity?

YES—Go to step 7.

NO—Repair open in the wire(s) between the heater control panel and the front air mix control motor. ■

7. Test the front air mix control motor (see page 21-49).

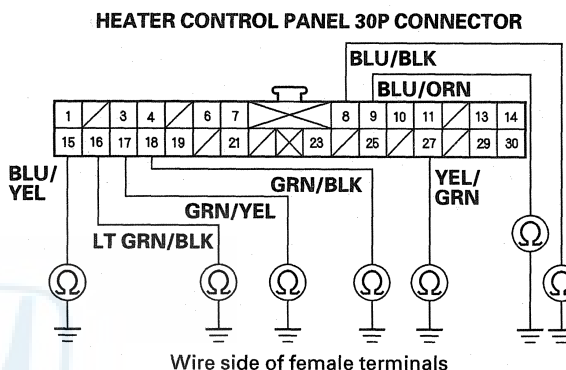
Is the front air mix control motor OK?

YES—Check for loose wires or poor connections at the heater control panel connector (30P) and at front air mix control motor 7P connector. If the connections are good, substitute a known-good front air mix control motor and recheck. If the symptom/indication goes away, replace the original front air mix control motor. If the symptom/indication continues, substitute a known-good heater control panel, and recheck. If the symptom/indication goes away, replace the original heater control panel. ■

NO—Replace the front air mix control motor. ■

DTC 3: A Problem in the Front mode control motor Circuit

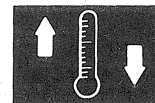
1. Disconnect the front mode control motor 7P connector.
2. Disconnect the heater control panel 30P connector.
3. Check for continuity between body ground and the heater control panel 30P connector terminals No. 8, 9, 15, 16, 17, 18, and 27 individually.



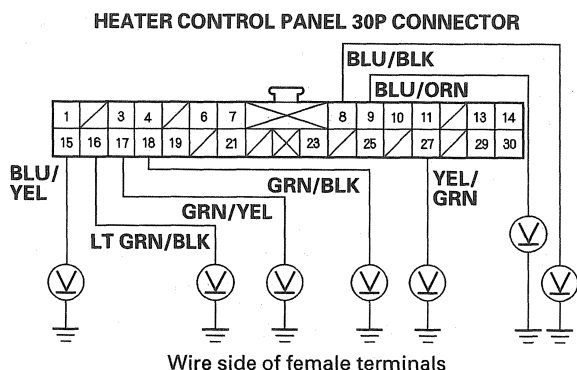
Is there continuity?

YES—Repair short to body ground in the wire(s) between the heater control panel and the front mode control motor. ■

NO—Go to step 4.



4. Turn the ignition switch ON (II), and check the same terminals for voltage.



Is there any voltage?

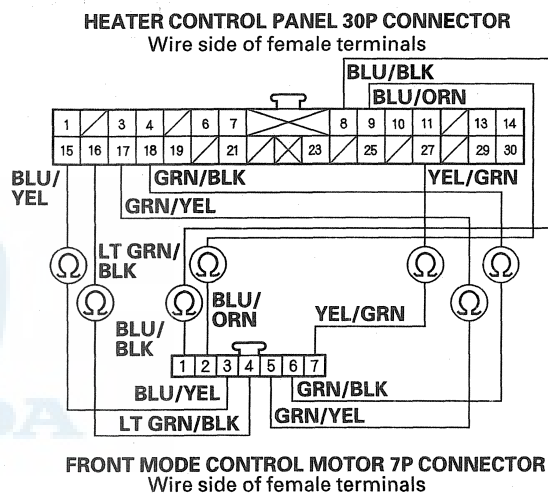
YES—Repair short to power in the wire(s) between the heater control panel and the front mode control motor. This short may also damage the heater control panel. Repair the short to power before replacing the heater control panel. ■

NO—Go to step 5.

5. Turn the ignition switch OFF.

6. Check for continuity between the following terminals of the heater control panel 30P connector and the front mode control motor 7P connector.

30P:	7P:
No. 8	No. 1
No. 9	No. 2
No. 15	No. 3
No. 16	No. 4
No. 17	No. 5
No. 18	No. 6
No. 27	No. 7



Is there continuity?

YES—Go to step 7.

NO—Repair open in the wire(s) between the heater control panel and front mode control motor. ■

(cont'd)

Heating/Air Conditioning

DTC Troubleshooting (cont'd)

7. Test the front mode control motor (see page 21-50).

Is the front mode control motor OK?

YES—Check for loose wires or poor connections at the heater control panel connector (30P) and at front mode control motor 7P connector. If the connections are good, substitute a known-good front mode control motor and recheck. If the symptom/indication goes away, replace the original front mode control motor. If the symptom/indication continues, substitute a known-good heater control panel, and recheck. If the symptom/indication goes away, replace the original heater control panel. ■

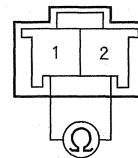
NO—Replace the front mode control motor. ■

DTC 4: A Problem in the Evaporator Temperature Sensor Circuit

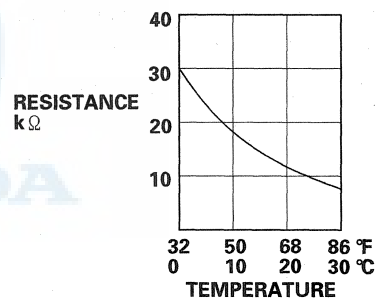
1. Disconnect the evaporator temperature sensor 2P connector.
2. Measure the resistance between the No. 1 and No. 2 terminals of the evaporator temperature sensor.

NOTE: Dip the sensor in ice water, and measure resistance. Then pour warm water on the sensor, and check for a change in resistance.

EVAPORATOR TEMPERATURE SENSOR



Terminal side of male terminals

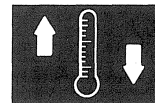


Is the resistance within the specifications shown on the graph?

YES—Go to step 3.

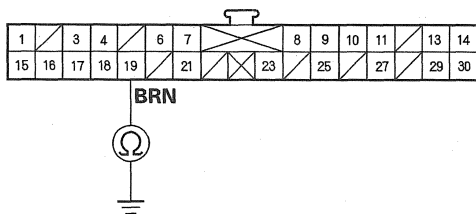
NO—Replace the evaporator temperature sensor. ■

3. Disconnect the heater control panel 30P connector.



4. Check for continuity between the No. 19 terminal of the heater control panel 30P connector and body ground.

HEATER CONTROL PANEL 30P CONNECTOR



Wire side of female terminals

Is there continuity?

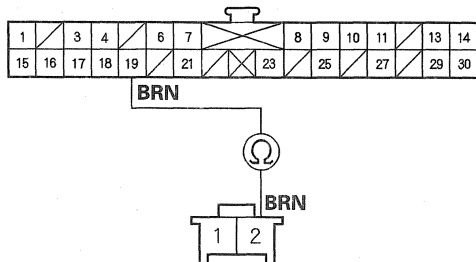
YES—Repair short to body ground in the wire between the heater control panel and the evaporator temperature sensor. ■

NO—Go to step 5.

5. Check for continuity between the No. 19 terminal of the heater control panel 30P connector and the No. 2 terminal of the evaporator temperature sensor 2P connector.

HEATER CONTROL PANEL 30P CONNECTOR

Wire side of female terminals



EVAPORATOR TEMPERATURE SENSOR 2P CONNECTOR
Wire side of female terminals

Is there continuity?

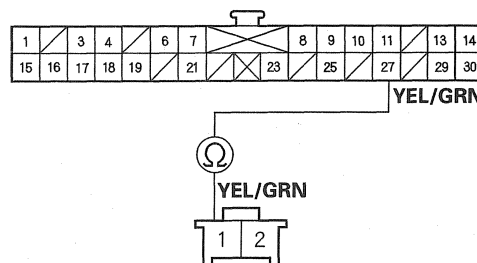
YES—Go to step 6.

NO—Repair open in the wire between the heater control panel and the evaporator temperature sensor. ■

6. Check for continuity between the No. 27 terminal of the heater control panel 30P connector and the No. 1 terminal of the evaporator temperature sensor 2P connector.

HEATER CONTROL PANEL 30P CONNECTOR

Wire side of female terminals



EVAPORATOR TEMPERATURE SENSOR 2P CONNECTOR
Wire side of female terminals

Is there continuity?

YES—Check for loose wires or poor connections at the heater control panel 30P connector and at the evaporator temperature sensor 2P connector. If the connections are good, substitute a known-good heater control panel, and recheck. If the symptom/indication goes away, replace the original heater control panel. ■

NO—Repair open in the wire between the heater control panel and the evaporator temperature sensor. ■

Heating/Air Conditioning

Recirculation Control Motor Circuit Troubleshooting

1. Check the No. 3 (7.5 A) fuse in the driver's under-dash fuse/relay box.

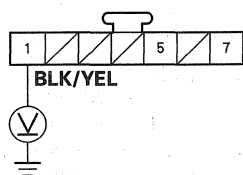
Is the fuse OK?

YES—Go to step 2.

NO—Replace the fuse, and recheck. ■

2. Disconnect the recirculation control motor 7P connector.
3. Turn the ignition switch ON (II).
4. Measure the voltage between the No. 1 terminal of the recirculation control motor 7P connector and body ground.

RECIRCULATION CONTROL MOTOR 7P CONNECTOR



Wire side of female terminals

Is there battery voltage?

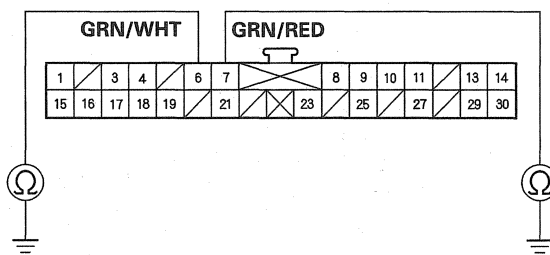
YES—Go to step 5.

NO—Repair open in the wire between the No. 3 (7.5 A) fuse in the driver's under-dash fuse/relay box and the recirculation control motor. ■

5. Turn the ignition switch OFF.
 6. Test the recirculation control motor (see page 21-51).
- Is the recirculation control motor OK?*
- YES**—Go to step 7.
- NO**—Replace the recirculation control motor. ■
7. Disconnect the heater control panel 30P connector.

8. Check for continuity between the No. 6 and No. 7 terminals of the heater control panel 30P connector and body ground individually.

HEATER CONTROL PANEL 30P CONNECTOR



Wire side of female terminals

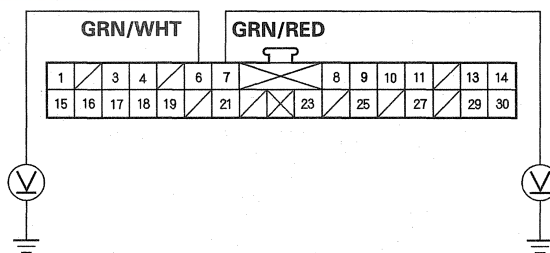
Is there continuity?

YES—Repair short to body ground in the wire(s) between the heater control panel and the recirculation control motor. ■

NO—Go to step 9.

9. Turn the ignition switch ON (II), and check the same terminals for voltage.

HEATER CONTROL PANEL 30P CONNECTOR

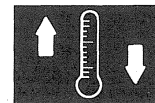


Wire side of female terminals

Is there any voltage?

YES—Repair short to power in the wire(s) between the heater control panel and the recirculation control motor. This short may also damage the heater control panel. Repair the short to power before replacing the heater control panel. ■

NO—Go to step 10.



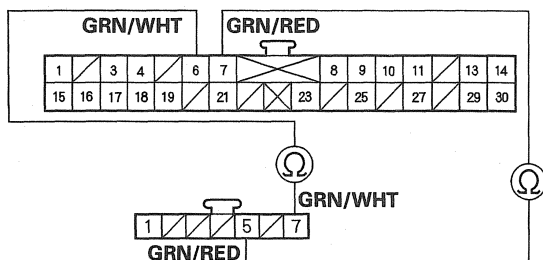
10. Turn the ignition switch OFF.

11. Check for continuity between the following terminals of the heater control panel 30P connector and the recirculation control motor 7P connector.

30P: 7P:
No. 6 No. 7
No. 7 No. 5

HEATER CONTROL PANEL 30P CONNECTOR

Wire side of female terminals



RECIRCULATION CONTROL MOTOR 7P CONNECTOR

Wire side of female terminals

Is there continuity?

YES—Check for loose wires or poor connections at the heater control panel 30P connector and at recirculation control motor 7P connector. If the connections are good, substitute a known-good heater control panel, and recheck. If the symptom/indication goes away, replace the original heater control panel. ■

NO—Repair open in the wire(s) between the heater control panel and the recirculation control motor. ■

Heating/Air Conditioning

Heater Control Power and Ground Circuit Troubleshooting

1. Check the No. 3 (7.5 A) fuse in the driver's under-dash fuse/relay box.

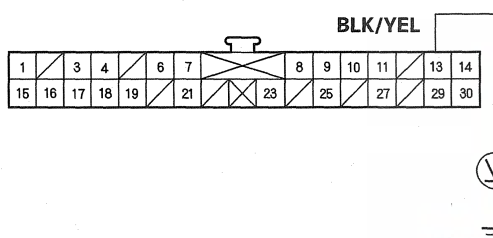
Is the fuse OK?

YES—Go to step 2.

NO—Replace the fuse, and recheck. ■

2. Disconnect the heater control panel 30P connector.
3. Turn the ignition switch ON (II).
4. Measure the voltage between the No. 13 terminal of the heater control panel 30P connector and body ground.

HEATER CONTROL PANEL 30P CONNECTOR



Wire side of female terminals

Is there battery voltage?

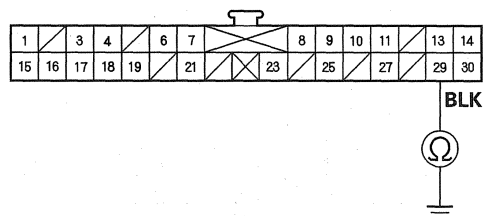
YES—Go to step 5.

NO—Repair open in the wire between the No. 3 (7.5 A) fuse in the driver's under-dash fuse/relay box and the heater control panel. ■

5. Turn the ignition switch OFF.

6. Check for continuity between the No. 29 terminal of the heater control panel 30P connector and body ground.

HEATER CONTROL PANEL 30P CONNECTOR

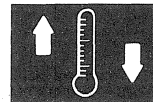


Wire side of female terminals

Is there continuity?

YES—Check for loose wires or poor connections at the heater control panel 30P connector. If the connections are good, substitute a known-good heater control panel, and recheck. If the symptom/indication goes away, replace the original heater control panel. ■

NO—Check for an open in the wire between the heater control panel and body ground. If the wire is OK, check for poor ground at G401. ■



Radiator and A/C Condenser Fan Low Speed Circuit Troubleshooting

NOTE:

- Do not use this troubleshooting procedure if the compressor is inoperative. Refer to the symptom troubleshooting index.
- Before performing symptom troubleshooting, check for powertrain DTCs (see page 11-3).

1. Check the No. 58 (30 A) fuse in the under-hood fuse/relay box, and the No. 3 (7.5 A) fuse in the driver's under-dash fuse/relay box.

Are the fuses OK?

YES—Go to step 2.

NO—Replace the fuse(s), and recheck. ■

2. Remove the A/C condenser fan relay from the under-hood fuse/relay box, and test it (see page 22-82).

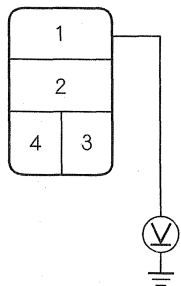
Is the relay OK?

YES—Go to step 3.

NO—Replace the A/C condenser fan relay. ■

3. Measure the voltage between the No. 1 terminal of the A/C condenser fan relay 4P socket and body ground.

A/C CONDENSER FAN RELAY 4P SOCKET



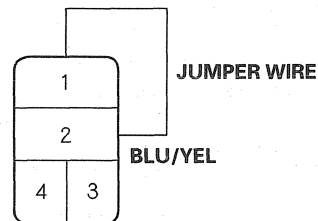
Is there battery voltage?

YES—Go to step 4.

NO—Replace the under-hood fuse/relay box. ■

4. Connect the No. 1 and No. 2 terminals of the A/C condenser fan relay 4P socket with a jumper wire.

A/C CONDENSER FAN RELAY 4P SOCKET



Does the A/C condenser fan run?

YES—Go to step 5.

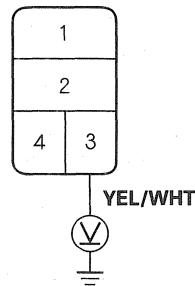
NO—Go to step 13.

5. Disconnect the jumper wire.

6. Turn the ignition switch ON (II).

7. Measure the voltage between the No. 3 terminal of the A/C condenser fan relay 4P socket and body ground.

A/C CONDENSER FAN RELAY 4P SOCKET



Is there battery voltage?

YES—Go to step 8.

NO—Go to step 31.

8. Turn the ignition switch OFF.

(cont'd)

Heating/Air Conditioning

Radiator and A/C Condenser Fan Low Speed Circuit Troubleshooting (cont'd)

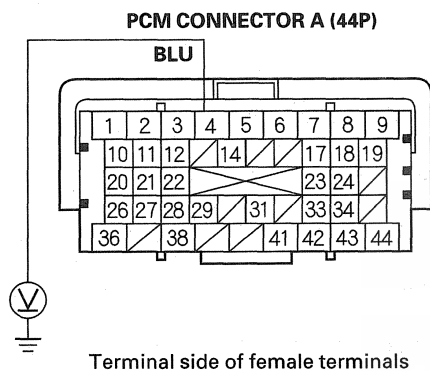
9. Reinstall the A/C condenser fan relay.

10. Jump the SCS line with the HDS.

NOTE: This step must be done to protect the powertrain control module (PCM) from damage.

11. Disconnect PCM connector A (44P), and turn the ignition switch ON (II).

12. Measure the voltage between the No. 4 terminal of PCM connector A (44P) and body ground.



Is there battery voltage?

YES—Check for loose wires or poor connections at No. 4 terminal of PCM connector A (44P). If the connections are good, substitute a known-good PCM, and recheck. If the symptom/indication goes away, replace the original PCM (see page 11-230). ■

NO—Repair open in the wire between the A/C condenser fan relay and the PCM. ■

13. Disconnect the jumper wire.

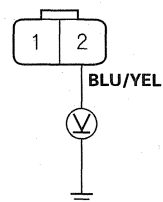
14. Reinstall the A/C condenser fan relay.

15. Disconnect the A/C condenser fan 2P connector.

16. Turn the ignition switch ON (II), then turn the A/C and blower fan switches ON.

17. Measure the voltage between the No. 2 terminal of the A/C condenser fan 2P connector and body ground.

A/C CONDENSER FAN 2P CONNECTOR



Is there battery voltage?

YES—Go to step 18.

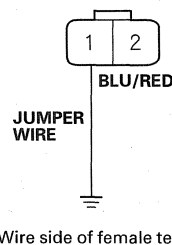
NO—Repair open in the wire between the A/C condenser fan relay and the A/C condenser fan. ■

18. Turn the A/C and fan switches OFF, then turn the ignition switch OFF.

19. Reconnect the A/C condenser fan 2P connector.

20. Connect the No. 1 terminal of the A/C condenser fan 2P connector to body ground with a jumper wire.

A/C CONDENSER FAN 2P CONNECTOR



21. Turn the ignition switch ON (II), then turn the A/C and fan switches ON.

Does the A/C condenser fan run?

YES—Go to step 22.

NO—Replace the A/C condenser fan motor. ■



22. Turn the A/C and fan switches OFF, then turn the ignition switch OFF.
23. Disconnect the jumper wire.
24. Remove the fan control relay from the auxiliary under-hood relay box, and test it (see page 22-82).

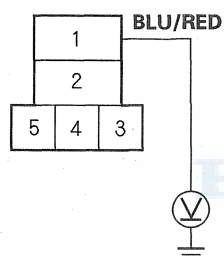
Is the relay OK?

YES—Go to step 25.

NO—Replace the fan control relay. ■

25. Turn the ignition switch ON (II), then turn the A/C and fan switches ON.
26. Measure the voltage between the No. 1 terminal of the fan control relay 5P socket and body ground.

FAN CONTROL RELAY 5P SOCKET



Is there battery voltage?

YES—Go to step 27.

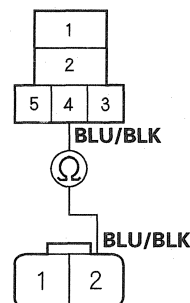
NO—Repair open in the wire between the A/C condenser fan and the fan control relay. ■

27. Turn the A/C and fan switches OFF, then turn the ignition switch OFF.

28. Disconnect the radiator fan 2P connector.

29. Check for continuity between the No. 4 terminal of the fan control relay 5P socket and the No. 2 terminal of the radiator fan 2P connector.

FAN CONTROL RELAY 5P SOCKET



RADIATOR FAN 2P CONNECTOR
Wire side of female terminals

Is there continuity?

YES—Go to step 30.

NO—Repair open in the wire between the radiator fan relay and the radiator fan. ■

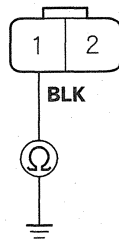
(cont'd)

Heating/Air Conditioning

Radiator and A/C Condenser Fan Low Speed Circuit Troubleshooting (cont'd)

30. Check for continuity between the No. 1 terminal of the radiator fan 2P connector and body ground.

RADIATOR FAN 2P CONNECTOR



Wire side of female terminals

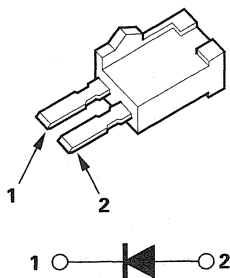
Is there continuity?

YES—Replace the radiator fan motor. ■

NO—Check for an open in the wire between the radiator fan and body ground. If the wire is OK, check for poor ground at G202. ■

31. Remove A/C diode A from under the dashboard.
32. Using the diode setting (⚡) on a DVOM, check for current flow in both directions between the No. 1 and No. 2 terminals of A/C diode A.

A/C DIODE A



Is there current flow in only one direction?

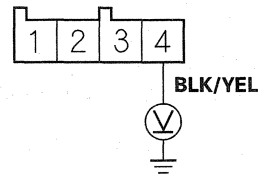
YES—Go to step 33.

NO—Replace A/C diode A. ■

33. Turn the ignition switch ON (II).

34. Measure the voltage between the No. 4 terminal of A/C diode 4P connector and body ground.

A/C DIODE 4P CONNECTOR

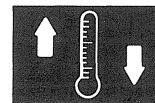


Wire side of female terminals

Is there battery voltage?

YES—Repair open in the wire between A/C diode 4P connector terminal No. 3 and the A/C condenser fan relay. ■

NO—Repair open in the wire between the No. 3 (7.5 A) fuse in the driver's under-dash fuse/relay box and A/C diode 4P connector terminal No. 4. ■



A/C Condenser Fan High Speed Circuit Troubleshooting

NOTE:

- Do not use this troubleshooting procedure if the radiator fan and/or the A/C compressor is inoperative. Refer to the symptom troubleshooting index.
- Before performing symptom troubleshooting, check for powertrain DTCs (see page 11-3).

1. Check the No. 3 (7.5 A) fuse in the driver's under-dash fuse/relay box.

Is the fuse OK?

YES—Go to step 2.

NO—Replace the fuse, and recheck. ■

2. Remove the fan control relay from the auxiliary under-hood relay box, and test it (see page 22-82).

Is the relay OK?

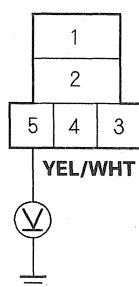
YES—Go to step 3.

NO—Replace the fan control relay. ■

3. Turn the ignition switch ON (II).

4. Measure the voltage between the No. 5 terminal of the fan control relay 5P socket and body ground.

FAN CONTROL RELAY 5P SOCKET



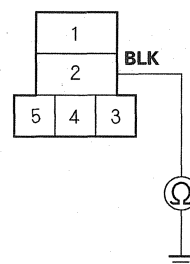
Is there battery voltage?

YES—Go to step 5.

NO—Go to step 8.

5. Check for continuity between the No. 2 terminal of the fan control relay 5P socket and body ground.

FAN CONTROL RELAY 5P SOCKET



Is there continuity?

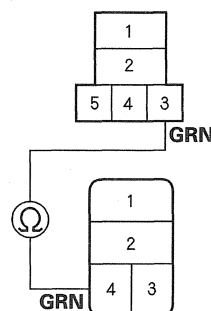
YES—Go to step 6.

NO—Check for an open in the wire between the fan control relay and body ground. If the wire is OK, check for poor ground at G201. ■

6. Remove the radiator fan relay from the under-hood fuse/relay box.

7. Check for continuity between the No. 3 terminal of the fan control relay 5P socket and the No. 4 terminal of the radiator fan relay 4P socket.

FAN CONTROL RELAY 5P SOCKET



RADIATOR FAN RELAY 4P SOCKET

Is there continuity?

YES—Repair open in the wire between the radiator fan relay terminal No. 4 and the PCM terminal A5. ■

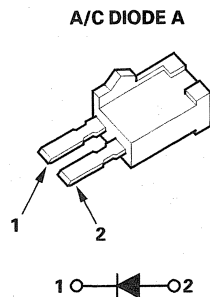
NO—Repair open in the wire between the fan control relay and the radiator fan relay. ■

(cont'd)

Heating/Air Conditioning

A/C Condenser Fan High Speed Circuit Troubleshooting (cont'd)

8. Remove A/C diode A from the right side of the dashboard.
9. Using the diode setting (→|←) on a DVOM, check for current flow in both directions between the No. 1 and No. 2 terminals of A/C diode A.

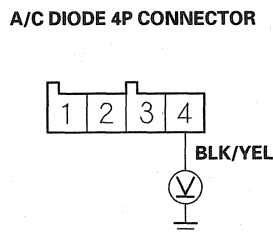


Is there current flow in only one direction?

YES—Go to step 10.

NO—Replace A/C diode A. ■

10. Turn the ignition switch ON (II).
11. Measure the voltage between the No. 4 terminal of A/C diode 4P connector and body ground.



Wire side of female terminals

Is there battery voltage?

YES—Repair open in the wire between A/C diode 4P connector terminal No. 3 and the fan control relay. ■

NO—Repair open in the wire between the No. 3 (7.5 A) fuse in the driver's under-dash fuse/relay box and A/C diode 4P connector terminal No. 4. ■

Radiator and A/C Condenser Fan High Speed Circuit Troubleshooting

NOTE:

- Do not use this troubleshooting procedure if only one fan is inoperative, or if the A/C compressor is inoperative. Refer to the symptom troubleshooting index.
- Before performing symptom troubleshooting, check for powertrain DTCs (see page 11-3).
- The normal operating A/C pressure for the radiator and A/C condenser fans to run at high speed when the A/C is ON or the ECT is above 206 °F with A/C OFF.

1. Check the No. 57 (30 A) fuse and No. 58 (30 A) fuse in the under-hood fuse/relay box, and the No. 3 (7.5 A) fuse in the driver's under-dash fuse/relay box.

Are the fuses OK?

YES—Go to step 2.

NO—Replace the fuse(s), and recheck. ■

2. Using the HDS, confirm the following values in the Data List at idle.

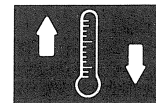
A/C SWITCH	ON
A/C CLUTCH	ON
Fan Low Speed	ON
Fan High Speed	ON

Are all the values OK?

YES—Go to step 3.

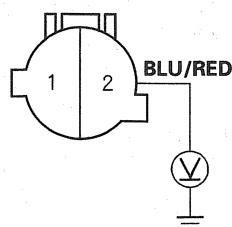
NO—Troubleshoot the value that is not the specifications. ■

3. Turn the ignition switch OFF.



4. Disconnect the A/C pressure switch 2P connector.
5. Turn the ignition switch ON (II).
6. Measure the voltage between the No. 2 terminal of the A/C pressure switch 2P connector and body ground.

A/C PRESSURE SWITCH 2P CONNECTOR



Wire side of female terminals

Is there about 5 V?

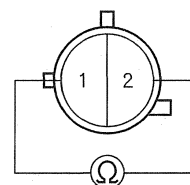
YES—Go to step 7.

NO—Go to step 15.

7. Turn the ignition switch OFF.

8. Check for continuity between the No. 1 and No. 2 terminals of the A/C pressure switch.

A/C PRESSURE SWITCH



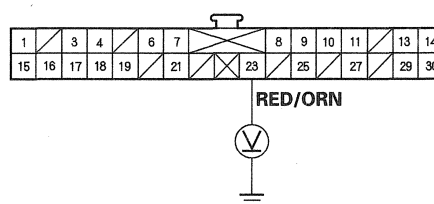
Is there continuity?

YES—Go to step 9.

NO—Go to step 19.

9. Reconnect the A/C pressure switch 2P connector.
10. Disconnect the heater control panel 30P connector.
11. Turn the ignition switch ON (II).
12. Measure the voltage between the No. 23 terminal of the heater control panel 30P connector and body ground.

HEATER CONTROL PANEL 30P CONNECTOR



Wire side of female terminals

Is there about 5 V?

YES—Go to step 13.

NO—Repair open in the wire between the heater control panel and the A/C pressure switch. ■

13. Turn the ignition switch OFF.

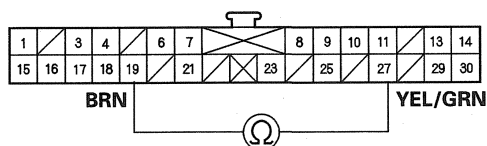
(cont'd)

Heating/Air Conditioning

Radiator and A/C Condenser Fan High Speed Circuit Troubleshooting (cont'd)

14. Measure the resistance between the No. 19 and No. 27 terminals of the heater control panel 30P connector.

HEATER CONTROL PANEL 30P CONNECTOR



Wire side of female terminals

Is the resistance less than 24 kΩ ?

YES—Check for loose wires or poor connections at the heater control panel 30P connector and at the A/C pressure switch 2P connector. If the connections are good, substitute a known-good heater control panel, and recheck. If the symptom/indication goes away, replace the original heater control panel. ■

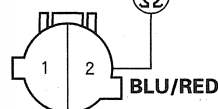
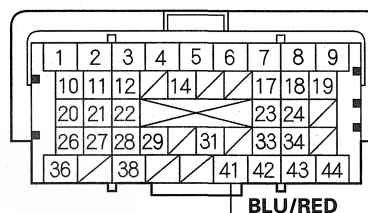
NO—Test the evaporator temperature sensor (see page 21-48). ■

15. Turn the ignition switch OFF.
16. Jump the SCS line with the HDS.

NOTE: This step must be done to protect the powertrain control module (PCM) from damage.

17. Disconnect the PCM connector A (44P).
18. Check for continuity between the No. 41 terminal of PCM connector A (44P) and No. 2 terminal of the A/C pressure switch 2P connector.

PCM CONNECTOR A (44P)
Terminal side of female terminals



A/C PRESSURE SWITCH 2P CONNECTOR
Wire side of female terminals

Is there continuity?

YES—Check for loose wires or poor connections at the PCM connector A (44P). If the connections are good, substitute a known-good PCM, and recheck. If the symptom/indication goes away, replace the original PCM (see page 11-230). ■

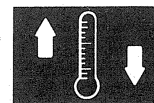
NO—Repair open in the wire between the PCM and the A/C pressure switch. ■

19. Check for proper A/C system pressure (see page 21-71).

Is the pressure within specifications?

YES—Replace the A/C pressure switch. ■

NO—Repair the A/C pressure problem. ■



A/C Compressor Clutch Circuit Troubleshooting

NOTE:

- Do not use this troubleshooting procedure if the fans are also inoperative with the A/C on. Refer to the symptom troubleshooting index.
- Before performing symptom troubleshooting, check for powertrain DTCs (see page 11-3).

1. Check the No. 59 (7.5 A) fuse in the under-hood fuse/relay box, and the No. 3 (7.5 A) fuse in the driver's under-dash fuse/relay box.

Are the fuses OK?

YES—Go to step 2.

NO—Replace the fuse(s), and recheck. ■

2. Using the HDS, confirm the following values in the PGM-FI Data List at idle.

ECT sensor 1	144—169 °F (76—90 °C)
TP Sensor	About 0.5 V
RPM	More than 730
A/C SWITCH	ON
A/C CLUTCH	ON

Are all the values within specifications?

YES—Go to step 3.

NO—Troubleshoot the value that is not within the specifications. ■

3. Turn the ignition switch OFF.
4. Remove the A/C compressor clutch relay from the under-hood fuse/relay box, and test it (see page 22-82).

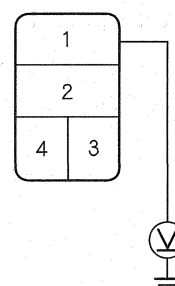
Is the relay OK?

YES—Go to step 5.

NO—Replace the A/C compressor clutch relay. ■

5. Measure the voltage between the No. 1 terminal of the A/C compressor clutch relay 4P socket and body ground.

A/C COMPRESSOR CLUTCH RELAY 4P SOCKET



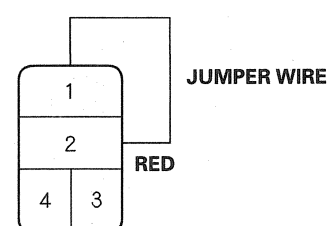
Is there battery voltage?

YES—Go to step 6.

NO—Replace the under-hood fuse/relay box. ■

6. Connect the No. 1 and No. 2 terminals of the A/C compressor clutch relay 4P socket with a jumper wire.

A/C COMPRESSOR CLUTCH RELAY 4P SOCKET



Does the A/C compressor clutch click?

YES—Go to step 7.

NO—Go to step 21.

7. Disconnect the jumper wire.

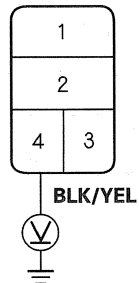
(cont'd)

Heating/Air Conditioning

A/C Compressor Clutch Circuit Troubleshooting (cont'd)

8. Turn the ignition switch ON (II).
9. Measure the voltage between the No. 4 terminal of the A/C compressor clutch relay 4P socket and body ground.

A/C COMPRESSOR CLUTCH RELAY 4P SOCKET



Is there battery voltage?

YES—Go to step 10.

NO—Repair open in the wire between the No. 3 (7.5 A) fuse in the driver's under-dash fuse/relay box and the A/C compressor clutch relay. ■

10. Turn the ignition switch OFF.

11. Reinstall the A/C compressor clutch relay.

12. Make sure the A/C switch is OFF.

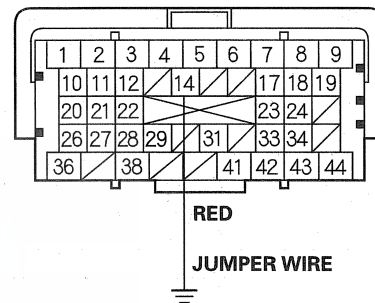
13. Jump the SCS line with the HDS.

NOTE: This step must be done to protect the powertrain control module (PCM) from damage.

14. Disconnect PCM connector A (44P).

15. Connect PCM connector A (44P) terminal No. 14 to body ground with a jumper wire.

PCM CONNECTOR A (44P)



16. Turn the ignition switch ON (II).

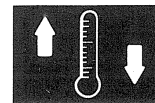
Does the A/C compressor click?

YES—Go to step 17.

NO—Repair open in the wire between the A/C compressor clutch relay and the PCM. ■

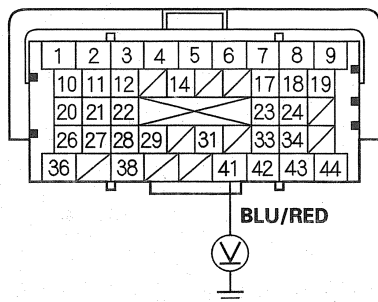
17. Turn the ignition switch OFF.

18. Disconnect the jumper wire.



19. Reconnect PCM connector A (44P), and turn the ignition switch ON (II).
20. Measure the voltage between the No. 41 terminal of PCM connector A (44P) and body ground.

PCM CONNECTOR A (44P)



Terminal side of female terminals

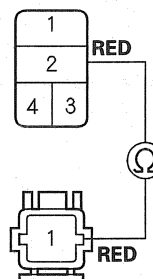
Is there about 5 V?

YES—Repair open in the wire between the PCM and the heater control panel. ■

NO—Check for loose wires or poor connections at PCM connector A (44P). If the connections are good, check the PCM grounds. If the grounds are good, substitute a known-good PCM, and recheck. If the symptom/indication goes away, replace the original PCM (see page 11-230). ■

21. Disconnect the jumper wire.
22. Disconnect the A/C compressor clutch 1P connector.
23. Check for continuity between the A/C compressor clutch relay 4P socket terminal No. 2 and the A/C compressor clutch 1P connector terminal No. 1.

A/C COMPRESSOR CLUTCH RELAY 4P SOCKET



A/C COMPRESSOR CLUTCH 1P CONNECTOR

Terminal side of male terminals

Is there continuity?

YES—Check the A/C compressor clutch clearance, and the compressor clutch field coil (see page 21-62). Repair as needed. ■

NO—Repair open in the wire between the A/C compressor clutch relay and the A/C compressor clutch. ■

Heating/Air Conditioning

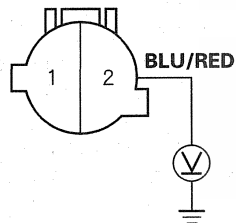
A/C Pressure Switch Circuit Troubleshooting

NOTE:

- If the blower motor does not run at all speeds, the A/C compressor will be inoperative. Before doing this troubleshooting, check the DTC and repair the cause of the inoperative blower motor.
- Do not use this troubleshooting procedure if any of the following items are operative; condenser fan, radiator fan, A/C compressor, or if the heater is inoperative. Refer to the symptom troubleshooting index.
- Before doing symptom troubleshooting, check for powertrain DTCs (see page 11-3).

1. Disconnect the A/C pressure switch 2P connector.
2. Turn the ignition switch ON (II).
3. Measure the voltage between the No. 2 terminal of the A/C pressure switch 2P connector and body ground.

A/C PRESSURE SWITCH 2P CONNECTOR



Wire side of female terminals

Is there about 5 V?

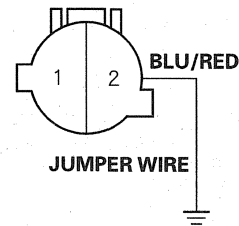
YES—Go to step 4.

NO—Go to step 12.

4. Turn the ignition switch OFF.

5. Connect A/C pressure switch 2P connector terminal No. 2 to body ground with a jumper wire.

A/C PRESSURE SWITCH 2P CONNECTOR



Wire side of female terminals

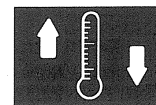
6. Using the HDS, confirm the A/C switch value in the PGM-FI Data List at idle.

Does the HDS Data List show the A/C switch ON?

YES—Go to step 7.

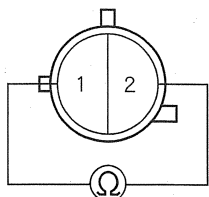
NO—Substitute a known-good PCM, and recheck. If the symptom/indication goes away, replace the original PCM (see page 11-230). ■

7. Turn the ignition switch OFF.
8. Disconnect the jumper wire.



9. Check for continuity between the No. 1 and No. 2 terminals of the A/C pressure switch.

A/C PRESSURE SWITCH



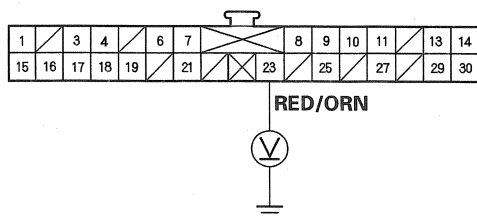
Is there continuity?

YES—Go to step 10.

NO—Go to step 20.

10. Reconnect the A/C pressure switch 2P connector.
11. Disconnect the heater control panel 30P connector.
12. Turn the ignition switch ON (II).
13. Measure the voltage between the No. 23 terminal of the heater control panel 30P connector and body ground.

HEATER CONTROL PANEL 30P CONNECTOR



Wire side of female terminals

Is there about 5 V?

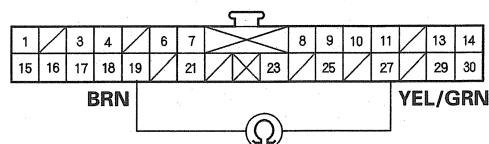
YES—Go to step 14.

NO—Repair open in the wire between the heater control panel and the A/C pressure switch. ■

14. Turn the ignition switch OFF.

15. Measure the resistance between the No. 19 and No. 27 terminals of the heater control panel 30P connector.

HEATER CONTROL PANEL 30P CONNECTOR



Wire side of female terminals

Is the resistance less than 24 k Ω ?

YES—Check for loose wires or poor connections at the heater control panel 30P connector and at the A/C pressure switch 2P connector. If the connections are good, substitute a known-good heater control panel, and recheck. If the symptom/indication goes away, replace the original heater control panel. ■

NO—Repair cause of high resistance in the evaporator temperature circuit. ■

16. Turn the ignition switch OFF.
17. Jump the SCS line with the HDS.

NOTE: This step must be done to protect the powertrain control module (PCM) from damage.

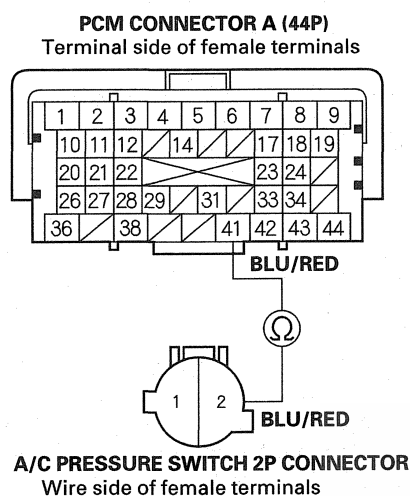
18. Disconnect the PCM connector A (44P).

(cont'd)

Heating/Air Conditioning

A/C Pressure Switch Circuit Troubleshooting (cont'd)

19. Check for continuity between the No. 41 terminal of PCM connector A (44P) and No. 2 terminal of the A/C pressure switch 2P connector.



Is there continuity?

YES—Check for loose wires or poor connections at the PCM connector A (44P). If the connections are good, substitute a known-good PCM, and recheck. If the symptom/indication goes away, replace the original PCM (see page 11-230). ■

NO—Repair open in the wire between the PCM and the A/C pressure switch. ■

20. Check for proper A/C system pressure (see page 21-71).

Is the pressure within specifications?

YES—Replace the A/C pressure switch. ■

NO—Repair the A/C pressure problem. ■

Rear Blower Motor Circuit Troubleshooting

1. Check the No. 55 (30 A) fuse in the under-hood fuse/relay box, and the No. 3 (7.5 A) fuse in the driver's under-dash fuse/relay box.

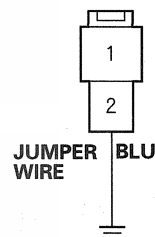
Are the fuses OK?

YES—Go to step 2.

NO—Replace the fuse(s), and recheck. ■

2. Turn the ignition switch ON (II).
3. Connect the No. 2 terminal of the rear blower motor 2P connector to body ground with a jumper wire.

REAR BLOWER MOTOR 2P CONNECTOR



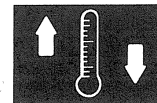
Wire side of female terminals

Does the rear blower motor run?

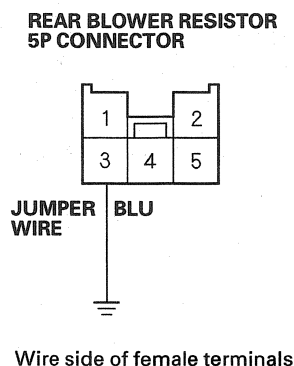
YES—Go to step 4.

NO—Go to step 16.

4. Disconnect the jumper wire.
5. Disconnect the rear blower resistor 5P connector.



6. Connect the No. 3 terminal of the rear blower resistor 5P connector to body ground with a jumper wire.

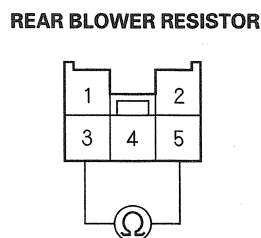


Does the rear blower motor run?

YES—Go to step 7.

NO—Repair open in the wire between the rear blower motor and the rear blower resistor. ■

7. Disconnect the jumper wire.
8. Turn the ignition switch OFF.
9. Measure the resistance between the No. 3 and No. 5 terminals of the rear blower resistor.



Is there about 4–5 Ω?

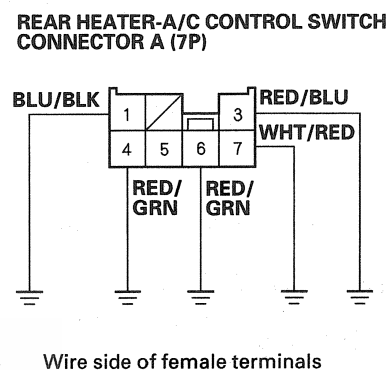
YES—Go to step 10.

NO—Replace the rear blower resistor. ■

10. Disconnect rear heater-A/C control switch connector A (7P).

11. Reconnect the blower resistor 5P connector.

12. Ground each of the rear heater-A/C control switch connector A (7P) terminals individually in the following order: No. 1, 3, 4, 6, and 7.



Does the rear blower motor run at progressively higher speeds?

YES—Go to step 13.

NO—Repair open or cause of excessive resistance in the appropriate wire(s) between the blower resistor and the rear heater-A/C control switch. ■

13. Disconnect rear heater-A/C control switch connector B (10P).

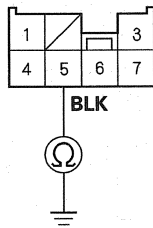
(cont'd)

Heating/Air Conditioning

Rear Blower Motor Circuit Troubleshooting (cont'd)

14. Check for continuity between the No. 5 terminal of rear heater-A/C control switch connector A (7P) and body ground.

REAR HEATER-A/C CONTROL SWITCH CONNECTOR A (7P)



Wire side of female terminals

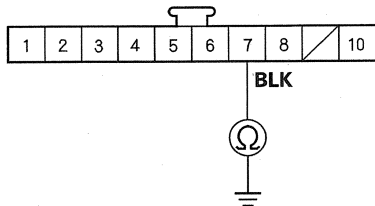
Is there continuity?

YES—Go to step 15.

NO—Check for an open in the wire between the rear heater-A/C control switch and body ground. If the wire is OK, check for poor ground at G501. ■

15. Check for continuity between the No. 7 terminal of rear heater-A/C control switch connector B (10P) and body ground.

REAR HEATER-A/C CONTROL SWITCH CONNECTOR B (10P)



Wire side of female terminals

Is there continuity?

YES—Test the rear heater-A/C control switch (see page 21-130). ■

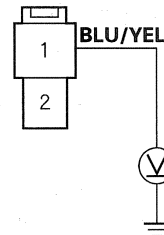
NO—Check for an open in the wire between the rear heater-A/C control switch and body ground. If the wire is OK, check for poor ground at G501. ■

16. Disconnect the jumper wire.

17. Disconnect the rear blower motor 2P connector.

18. Measure the voltage between the No. 1 terminal of the rear blower motor 2P connector and body ground.

REAR BLOWER MOTOR 2P CONNECTOR

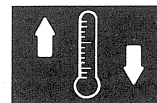


Wire side of female terminals

Is there battery voltage?

YES—Replace the rear blower motor (see page 21-131). ■

NO—Go to step 19.



19. Turn the ignition switch OFF.

20. Remove the rear blower motor relay from the left side of rear heater-A/C unit, and test it (see page 22-83).

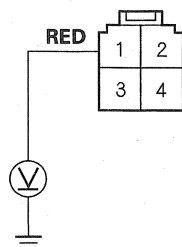
Is the relay OK?

YES—Go to step 21.

NO—Replace the rear blower motor relay. ■

21. Measure the voltage between the No. 1 terminal of the rear blower motor relay 4P connector and body ground.

REAR BLOWER MOTOR RELAY 4P CONNECTOR



Wire side of female terminals

Is there battery voltage?

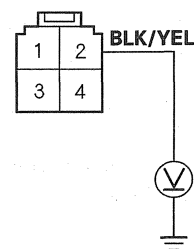
YES—Go to step 22.

NO—Repair open in the wire between the No. 55 (30 A) fuse in the under-hood fuse/relay box and the rear blower motor relay. ■

22. Turn the ignition switch ON (II).

23. Measure the voltage between the No. 2 terminal of the rear blower motor relay 4P connector and body ground.

REAR BLOWER MOTOR RELAY 4P CONNECTOR



Wire side of female terminals

Is there battery voltage?

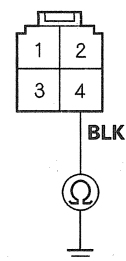
YES—Go to step 24.

NO—Repair open in the wire between the No. 3 (7.5 A) fuse in the driver's under-dash fuse/relay box and the rear blower motor relay. ■

24. Turn the ignition switch OFF.

25. Check for continuity between the No. 4 terminal of the rear blower motor relay 4P connector and body ground.

REAR BLOWER MOTOR RELAY 4P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair open in the wire between the rear blower motor relay and the rear blower motor. ■

NO—Check for an open in the wire between the rear blower motor relay and body ground. If the wire is OK, check for poor ground at G501. ■

Heating/Air Conditioning

Rear Mode Control Motor Circuit Troubleshooting

1. Check the No. 3 (7.5 A) fuse in the driver's under-dash fuse/relay box.

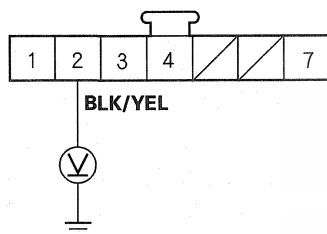
Is the fuse OK?

YES—Go to step 2.

NO—Replace the fuse and recheck. ■

2. Turn the ignition switch ON (II).
3. Measure the voltage between the No. 2 terminal of the rear mode control motor 7P connector and body ground.

REAR MODE CONTROL MOTOR 7P CONNECTOR



Wire side of female terminals

Is there battery voltage?

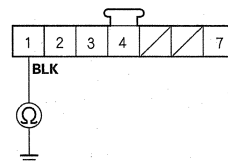
YES—Go to step 4.

NO—Repair open in the wire between the No. 3 (7.5 A) fuse in the driver's under-dash fuse/relay box and the rear mode control motor. ■

4. Turn the ignition switch OFF.
5. Disconnect the rear mode control motor 7P connector.
6. Disconnect rear heater-A/C control switch connectors A (7P) and B (10P).

7. Check for continuity between the No. 1 terminal of the rear mode control motor 7P connector and body ground.

REAR MODE CONTROL MOTOR 7P CONNECTOR



Wire side of female terminals

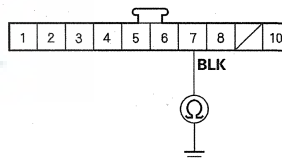
Is there continuity?

YES—Go to step 8.

NO—Check for an open in the wire between the rear mode control motor and body ground. If the wire is OK, check for ground at G501. ■

8. Check for continuity between the No. 7 terminal of the rear heater-A/C control switch connector B (10P) and body ground.

REAR HEATER-A/C CONTROL SWITCH CONNECTOR B (10P)



Wire side of female terminals

Is there continuity?

YES—Go to step 9.

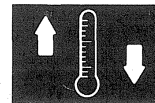
NO—Check for an open in the wire between the rear heater-A/C control switch connector and body ground. If the wire is OK, check for ground at G501. ■

9. Test the rear mode control motor (see page 21-127).

Is the rear mode control motor OK?

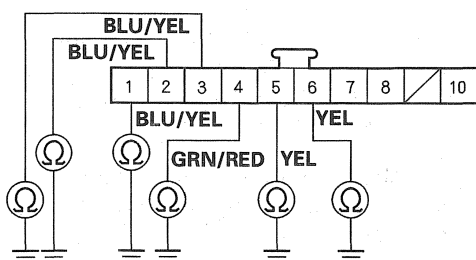
YES—Go to step 10.

NO—Replace the rear mode control motor (see page 21-128). ■



10. Check for continuity between body ground and rear heater-A/C control switch connector B (10P) terminals No. 1, 2, 3, 4, 5, and 6 individually.

REAR HEATER-A/C CONTROL SWITCH CONNECTOR B (10P)



Wire side of female terminals

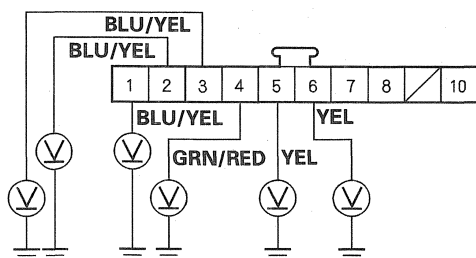
Is there continuity?

YES—Repair short to body ground in the wire(s) between the rear heater-A/C control switch and the rear mode control motor. ■

NO—Go to step 11.

11. Turn the ignition switch ON (II), and check the same terminals for voltage.

REAR HEATER-A/C CONTROL SWITCH CONNECTOR B (10P)



Wire side of female terminals

Is there any voltage?

YES—Repair short to power in the wire(s) between the rear heater-A/C control switch and the rear mode control motor. This short may also damage the rear heater-A/C control switch. Repair the short to power before replacing the rear heater-A/C control switch. ■

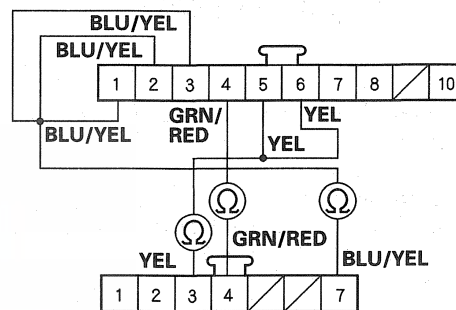
NO—Go to step 12.

12. Turn the ignition switch OFF.

13. Check for continuity between the following terminals of rear heater-A/C control switch connector B (10P) and the rear mode control motor 7P connector.

10P:	7P:
No. 1	No. 7
No. 2	No. 7
No. 3	No. 7
No. 4	No. 4
No. 5	No. 3
No. 6	No. 3

REAR HEATER-A/C CONTROL SWITCH CONNECTOR B (10P)
Wire side of female terminals



REAR MODE CONTROL MOTOR 7P CONNECTOR
Wire side of female terminals

Is there continuity?

YES—Check for loose wires or poor connections at rear heater-A/C control switch connector B (10P) and at the rear mode control motor 7P connector. If the connections are good, substitute a known-good rear heater-A/C control switch, and recheck. If the symptom/indication goes away, replace the original rear heater-A/C control switch. ■

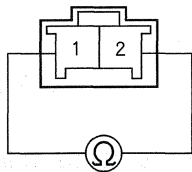
NO—Repair open in the wire(s) between the rear heater-A/C control switch and rear mode control motor. ■

Heating/Air Conditioning

Evaporator Temperature Sensor Test

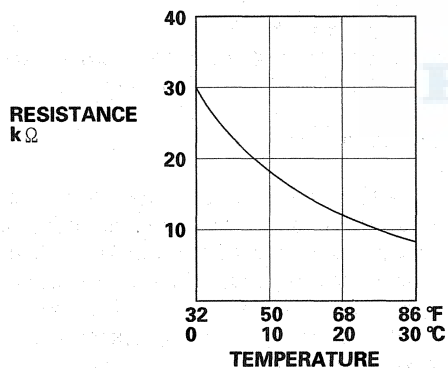
1. Dip the sensor in ice water, and measure the resistance between its terminals.

EVAPORATOR TEMPERATURE SENSOR



Terminal side of male terminals

2. Then pour warm water on the sensor, and check for a change in resistance.
3. Compare the resistance readings with the specifications shown in the graph; the resistance should be within the specifications.



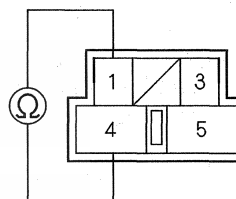
Front Power Transistor Test

1. Disconnect the 5P connector from the front power transistor.
2. Measure the resistance between the No. 1 and No. 4 terminals of the front power transistor. It should be about 1.4 — 1.5 kΩ.

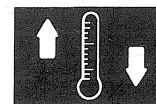
- If the resistance is within the specifications, go to step 3.
- If the resistance is not within the specifications, replace the front power transistor.

NOTE: Also check the front blower motor. Front power transistor failure can be caused by a defective front blower motor.

FRONT POWER TRANSISTOR

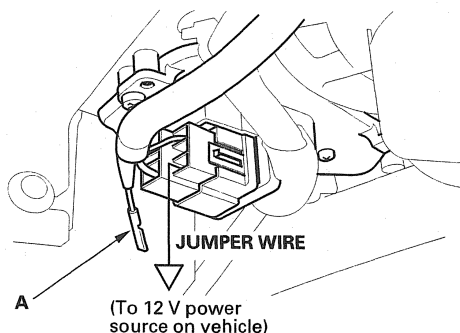


Terminal side of male terminals



Front Air Mix Control Motor Test

3. Carefully release the lock tab on the No. 3 terminal (ORN/BLK) (A) in the 5P connector, then remove the terminal and insulate it from body ground.



4. Reconnect the 5P connector to the front power transistor.
5. Supply 12 V to the No. 3 cavity with a jumper wire.
6. Turn the ignition switch ON (II), and check that the front blower motor runs.
 - If the front blower motor does not run, replace the front power transistor.
 - If the front blower motor runs, the front power transistor is OK.

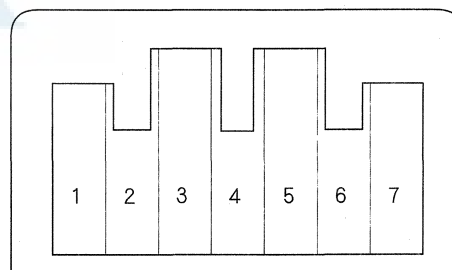
1. Disconnect the 7P connector from the front air mix control motor.

NOTICE

Incorrectly applying power and ground to the front air mix control motor will damage it. Follow the instructions carefully.

2. Connect battery power to the No. 1 terminal of the front air mix control motor, and ground the No. 2 terminal; the front air mix control motor should run, and stop at Max Cool. If it doesn't, reverse the connections; the front air mix control motor should run, and stop at Max Hot.
3. If the front air mix control motor does not run in step 2, remove it, then check the front air mix control linkage and door for smooth movement.
 - If the linkage and door move smoothly, replace the front air mix control motor.
 - If the linkage or door sticks or binds, repair them as needed.
 - If the front air mix control motor runs smoothly, go to step 4.

FRONT AIR MIX CONTROL MOTOR



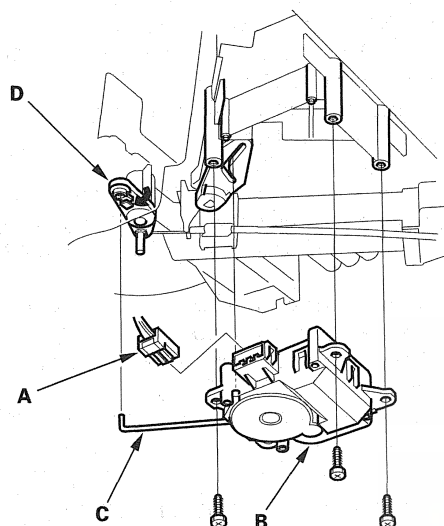
4. Measure the resistance between the No. 5 and No. 7 terminals. It should be between 4.2 to 7.8 k Ω .
5. Reconnect the front air mix control motor 7P connector, then turn the ignition switch ON (II).
6. Using the backprobe set, measure the voltage between the No. 3 and No. 5 terminals.

Max Cool: About 0.7 V
Max Hot: About 4.2 V
7. If either the resistance or voltage readings are not as specified, replace the front air mix control motor.

Heating/Air Conditioning

Front Air Mix Control Motor Replacement

1. Disconnect the 7P connector (A) from the front air mix control motor (B). Remove the rod (C) of the front air mix control motor from the front air mix control linkage (D). Remove the self-tapping screws and the front air mix control motor from the heater unit.



2. Install the motor in the reverse order of removal. Make sure the pin on the motor is properly engaged with the linkage. After installation, make sure the motor runs smoothly.

Front Mode Control Motor Test

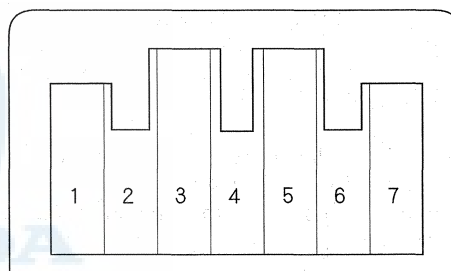
1. Disconnect the 7P connector from the front mode control motor.

NOTICE

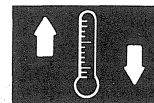
Incorrectly applying power and ground to the front mode control motor will damage it. Follow the instructions carefully.

2. Connect battery power to the No. 1 terminal of the front mode control motor, and ground the No. 2 terminal; the front mode control motor should run smoothly, and stop at Defrost. If it doesn't, reverse the connections; the front mode control motor should run smoothly, and stop at Vent. When the front mode control motor stops running, disconnect battery power immediately.

FRONT MODE CONTROL MOTOR

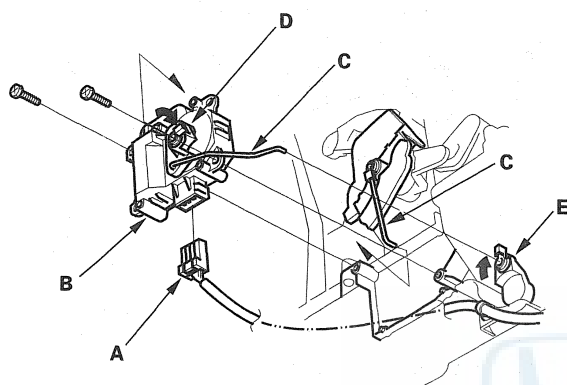


3. If the front mode control motor does not run in step 2, remove it, then check the front mode control linkage and doors for smooth movement.
 - If the linkage and doors move smoothly, replace the front mode control motor.
 - If the linkage or doors stick or bind, repair them as needed.
 - If the front mode control motor runs smoothly, go to step 4.
4. Use a digital multimeter with an output of 1 mA or less at the 20 k Ω range. With the front mode control motor running as in step 2, check for continuity between the No. 3, 4, 5, and 6 terminals and the No. 7 terminal individually. There should be continuity for a moment as the motor moves past each switch terminal.
5. If there is no continuity for a moment at each terminal, replace the front mode control motor.



Front Mode Control Motor Replacement

1. Disconnect the 7P connector (A) from the front mode control motor (B). Remove the rods (C) of the front mode control motor from the front mode control motor linkage (D) and the front mode control linkage (E). Remove the self-tapping screws and the front mode control motor from the heater unit.



2. Install the motor in the reverse order of removal. After installation, make sure the motor runs smoothly.

Recirculation Control Motor Test

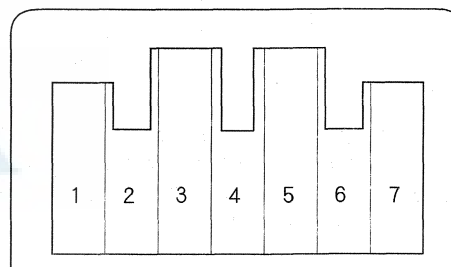
1. Disconnect the 7P connector from the recirculation control motor.

NOTICE

Incorrectly applying power and ground to the recirculation control motor will damage it. Follow the instructions carefully.

2. Connect battery power to the No. 1 terminal of the recirculation control motor, and ground the No. 5 or No. 7 terminals; the recirculation control motor should run smoothly. To avoid damaging the recirculation control motor, do not reverse power and ground. Disconnect the No. 5 or No. 7 terminals from ground; the recirculation control motor should stop at Fresh (when the No. 7 terminal is disconnected) or Recirculate (when the No. 5 terminal is disconnected). Don't cycle the recirculation control motor for a long time.

RECIRCULATION CONTROL MOTOR



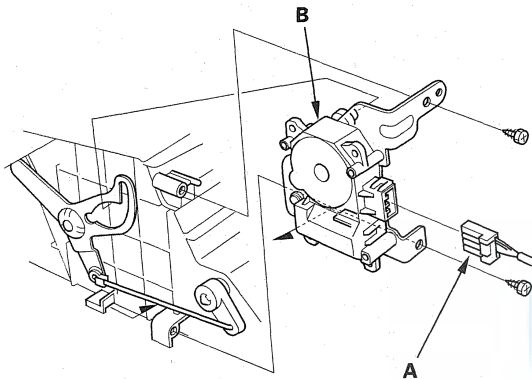
3. If the recirculation control motor does not run in step 2, remove it, then check the recirculation control linkage and doors for smooth movement.

- If the linkage and doors move smoothly, replace the recirculation control motor.
- If the linkage or doors stick or bind, repair them as needed.

Heating/Air Conditioning

Recirculation Control Motor Replacement

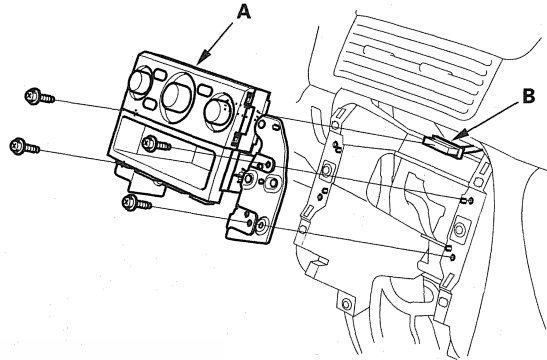
1. Remove both glove box stops, then let the glove box hang down (see page 20-95).
2. Remove the wire harness connectors from the evaporator.
3. Disconnect the 7P connector (A) from the recirculation control motor (B). Remove the self-tapping screws and the recirculation control motor from the blower unit.



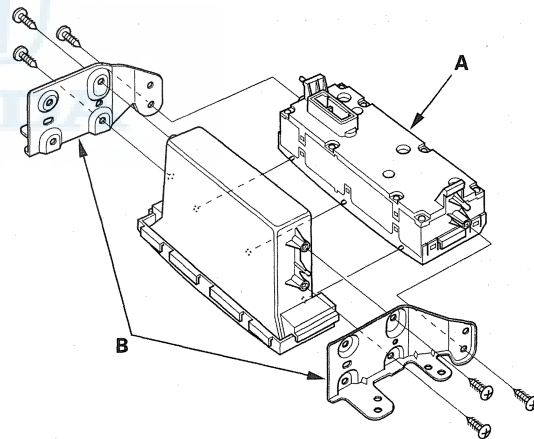
4. Install the motor in the reverse order of removal. Make sure the pin on the motor is properly engaged with the linkage. After installation, make sure the motor runs smoothly.

Heater Control Panel Removal/Installation

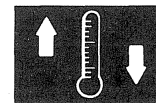
1. Remove the center panel (see page 20-93).
2. Remove the screws, and remove the heater control panel (A) with the brackets from the dashboard, then disconnect the connector (B).



3. Remove the screws and the heater control panel (A) from the brackets (B).

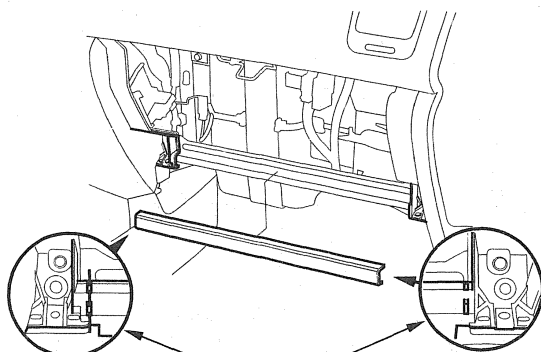


4. Install the control panel in the reverse order of removal. After installation, operate the control panel controls to see whether it works properly.
5. Run the self-diagnostic function to confirm that there are no problems in the system (see page 21-7).



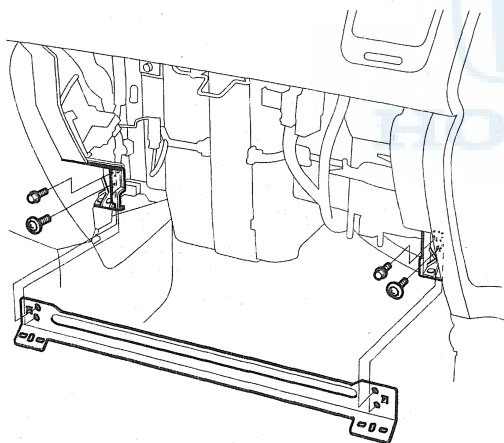
Dust and Pollen Filter Replacement

1. Remove the glove box (see page 20-95).
2. Cut the plastic cross brace in the glove box opening with diagonal cutters in the area shown, and discard it.

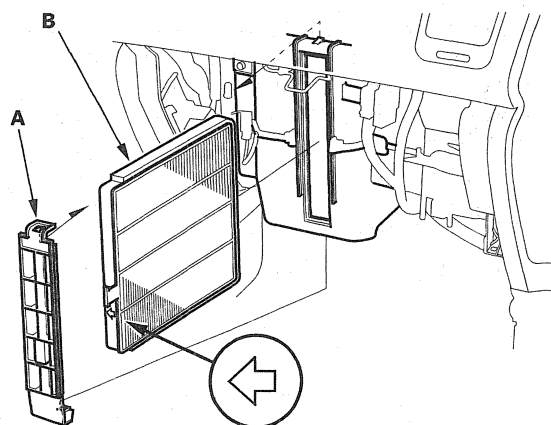


Cut here.

3. Remove the bolts, the screws, and the glove box frame.



4. Remove the filter lid (A) from the evaporator, then pull out the dust and pollen filter (B).

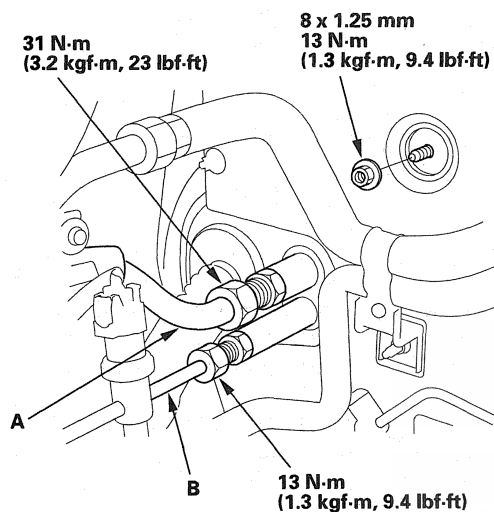


5. Install the filter in the reverse order of removal. Note the direction of the arrow. Make sure that there is no air leaking out of the evaporator.
6. Install the glove box frame and glove box in the reverse order of removal.

Heating/Air Conditioning

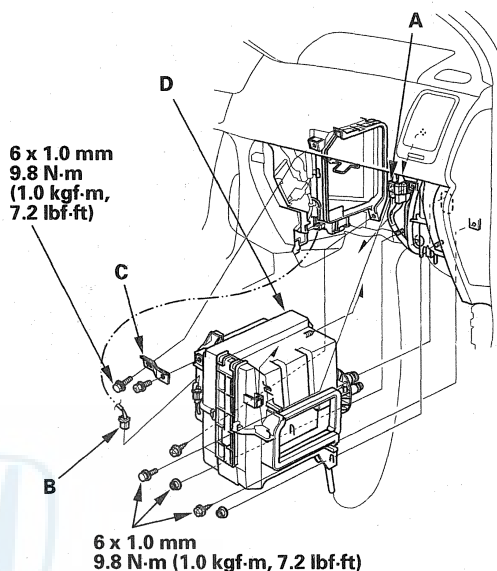
Evaporator Removal/Installation

1. Recover the refrigerant with a recovery/recycling/charging station (see page 21-67).
2. Disconnect the suction line (A) and receiver line (B) from the evaporator. Remove the mounting nut. Plug or cap the lines immediately after disconnecting them to avoid moisture and dust contamination.



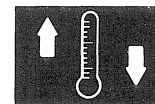
3. Remove the glove box (see page 21-95).
4. Remove the plastic cross brace, then remove the glove box frame (see page 21-53).

5. Remove the wire harness connectors (A). Disconnect the evaporator temperature sensor connector (B). Remove the self-tapping screws, the mounting nuts, the mounting bolts, the bracket (C), and the evaporator (D).



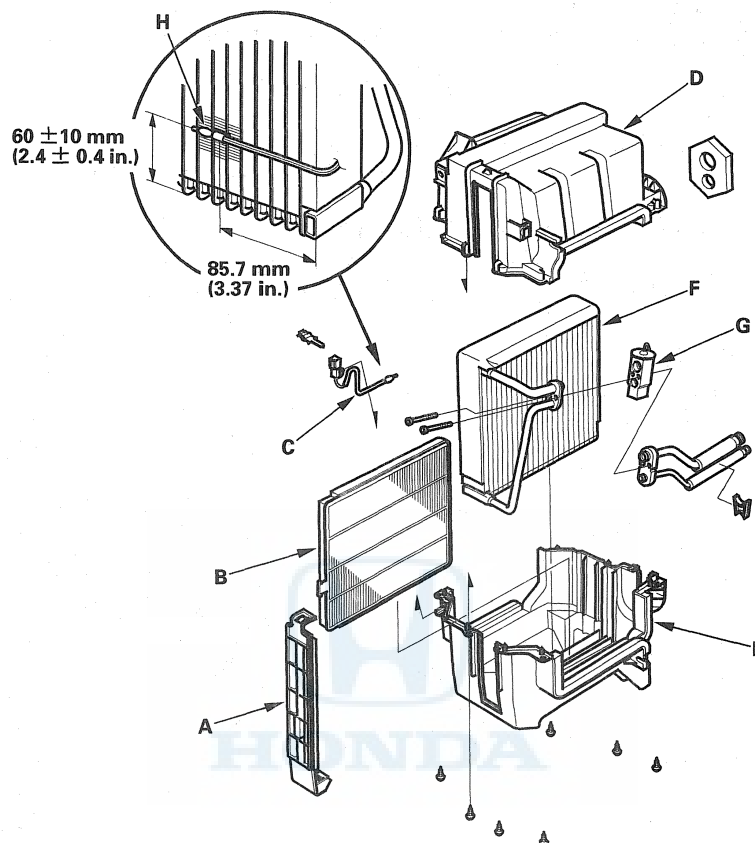
6. Install the evaporator in the reverse order of removal, and note these items:

- If you're installing a new evaporator, add refrigerant oil (DENSO ND-OIL 8) (see page 21-5).
- Replace the O-rings with new ones at each fitting, and apply a thin coat of refrigerant oil before installing them. Be sure to use the correct O-rings for HFC-134a (R-134a) to avoid leakage.
- Immediately after using the oil, reinstall the cap on the container, and seal it to avoid moisture absorption.
- Do not spill the refrigerant oil on the vehicle; it may damage the paint; if the refrigerant oil contacts the paint, wash it off immediately.
- Make sure that there is no air leakage.
- Charge the system (see page 21-69).



Evaporator Component Replacement

1. Remove the filter lid (A), then pull out the dust and pollen filter (B).



2. Pull out the front evaporator temperature sensor (C) from the front evaporator fins.
3. Remove the screws, carefully separate the upper housing (D) from the lower housing (E), then remove the front evaporator core (F).
4. If necessary, remove the front expansion valve (G).
5. Reassemble the evaporator in the reverse order of disassembly, and note these items:
 - Replace all O-rings with new ones at each fitting and apply a thin coat of refrigerant oil before installing them. Be sure to use the correct O-rings for HFC-134a (R-134a) to avoid leakage.
 - Immediately after using the oil, reinstall the cap on the container, and seal it to avoid moisture absorption.
 - Reinstall the evaporator temperature sensor bulb (H) and clip in their original location.
 - Make sure no air is leaking from the upper housing and the lower housing fitting.

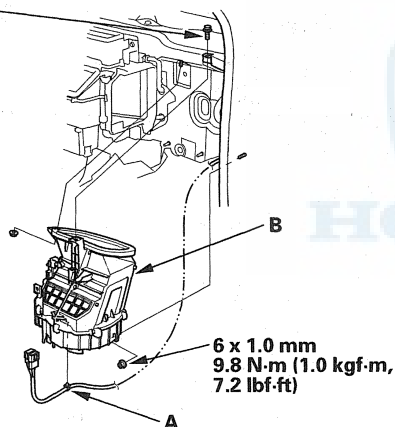
Heating/Air Conditioning

Blower Unit Removal/Installation

SRS components are located in this area. Review the SRS component locations (see page 23-17) and the precautions and procedures (see page 23-19) before doing repairs or service.

1. Make sure you have the anti-theft codes for the audio and the navigation system, then write down the audio presets.
2. Disconnect the negative cable from the battery.
3. Remove the dashboard (see page 20-96).
4. Remove the front evaporator (see page 21-54).
5. Remove the wire harness clip (A). Remove the mounting nuts, the mounting bolt, and the blower unit (B).

6 x 1.0 mm
9.8 N·m (1.0 kgf-m, 7.2 lbf-ft)



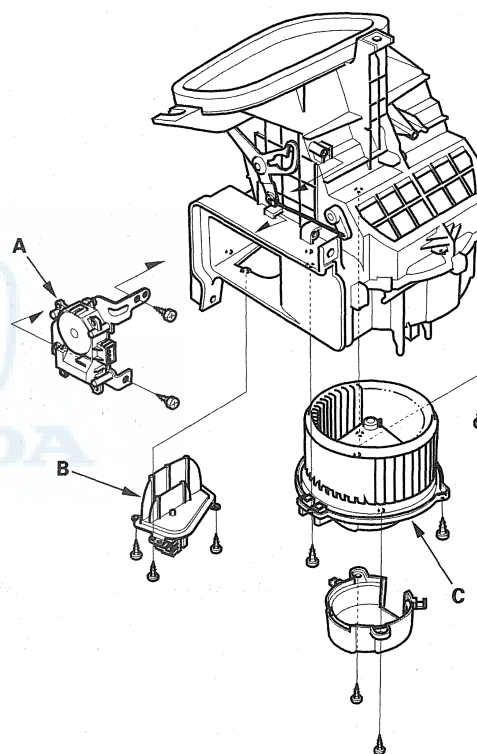
6. Install the unit in the reverse order of removal, and note these items:

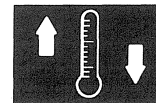
- For front evaporator and A/C-related information, refer to front evaporator removal/installation (see page 21-54).
- Do the power window control unit resetting procedure (see page 22-255).
- Enter the anti-theft codes for the audio and the navigation system, then enter the audio presets.

Blower Unit Component Replacement

Note these items when overhauling the blower unit:

- The recirculation control motor (A), the front power transistor (B), and the front blower motor (C) can be replaced without removing the blower unit.
- Before reassembly, make sure that the recirculation control linkage and doors move smoothly without binding.
- After reassembly, make sure the recirculation control motor runs smoothly (see page 21-52).

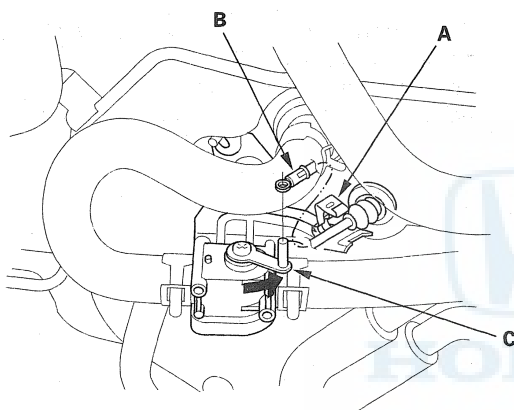




Heater Unit/Core Replacement

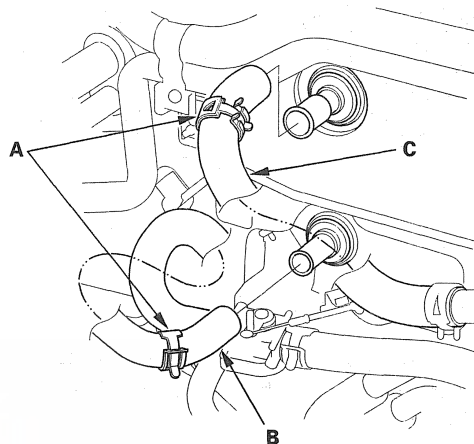
SRS components are located in this area. Review the SRS component locations (see page 23-17) and the precautions and procedures (see page 23-19) before doing repairs or service.

1. Make sure you have the anti-theft codes for the audio and the navigation system, then write down the audio presets.
2. Disconnect the negative cable from the battery.
3. From under the hood, open the cable clamp (A), then disconnect the heater valve cable (B) from the heater valve arm (C). Turn the heater valve arm to the fully opened position as shown.

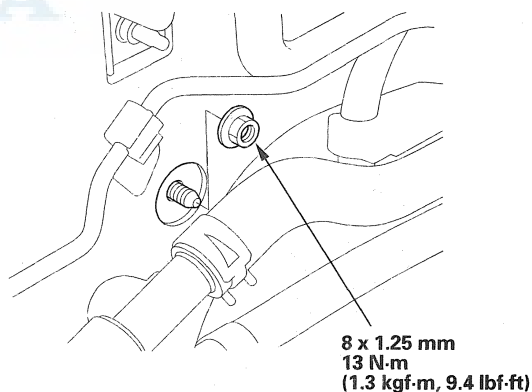


4. When the engine is cool, drain the engine coolant from the radiator (see page 10-6).

5. Slide the hose clamps (A) back, then disconnect the inlet heater hose (B) and the outlet heater hose (C) from the heater unit. Engine coolant will run out when the hoses are disconnected; drain it into a clean drip pan. Be sure not to let coolant spill on the electrical parts or the painted surfaces. If any coolant spills, rinse it off immediately.



6. Remove the mounting nut from the heater unit. Take care not to damage or bend the fuel lines, the brake lines, and related parts.

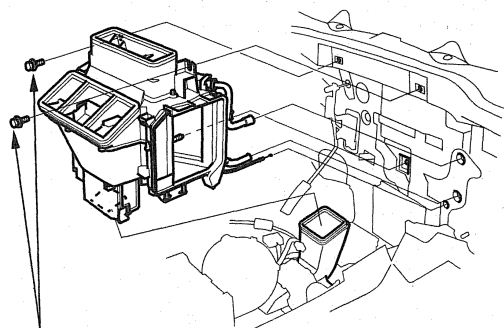


(cont'd)

Heating/Air Conditioning

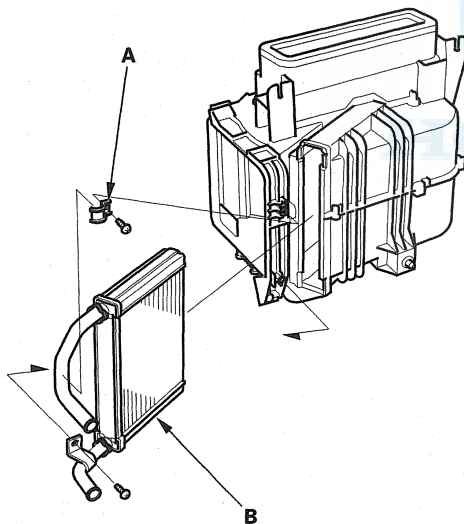
Heater Unit/Core Replacement (cont'd)

7. Remove the dashboard (see page 20-96).
8. Remove the evaporator (see page 21-54).
9. Remove the mounting bolts and the heater unit.



6 x 1.0 mm
9.8 N·m (1.0 kgf-m, 7.2 lbf-ft)

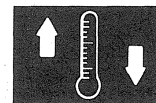
10. Remove the self-tapping screws and the clamp (A), then carefully pull out the heater core (B) so you don't bend the inlet and outlet pipes.



11. Install the heater core in the reverse order of removal.

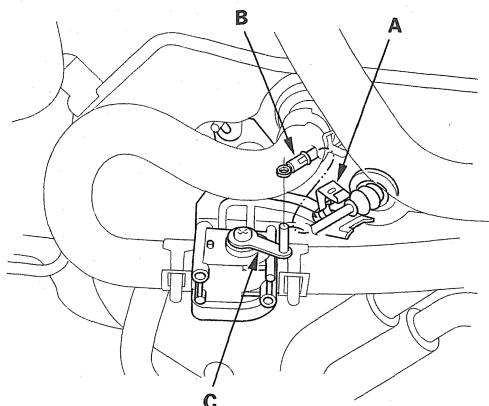
12. Install the heater unit in the reverse order of removal, and note these items:

- Do not interchange the inlet and outlet heater hoses, and install the hose clamps securely.
- Refill the cooling system with engine coolant (see page 10-6).
- Adjust the heater valve cable (see page 21-59).
- Make sure that there is no coolant leakage.
- Make sure that there is no air leakage.
- For evaporator and A/C-related information, refer to evaporator removal/installation (see page 21-54).
- Do the power window control unit resetting procedure (see page 22-255).
- Enter the anti-theft codes for the audio and the navigation system, then enter the audio presets.

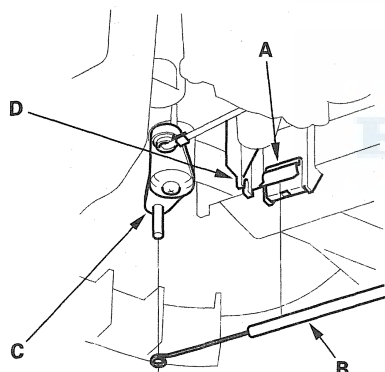


Heater Valve Cable Adjustment

1. From under the hood, open the cable clamp (A), then disconnect the heater valve cable (B) from the heater valve arm (C).

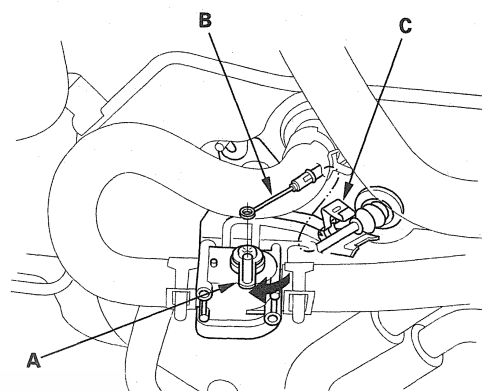


2. From under the dash, disconnect the heater valve cable housing from the cable clamp (A), and disconnect the heater valve cable (B) from the front air mix control linkage (C).



3. Set the temperature control dial to Max Cool with the ignition switch ON (II).
4. Attach the heater valve cable to the front air mix control linkage as shown in step 2. Hold the end of the heater valve cable housing against the stop (D), then snap the heater valve cable housing into the cable clamp.

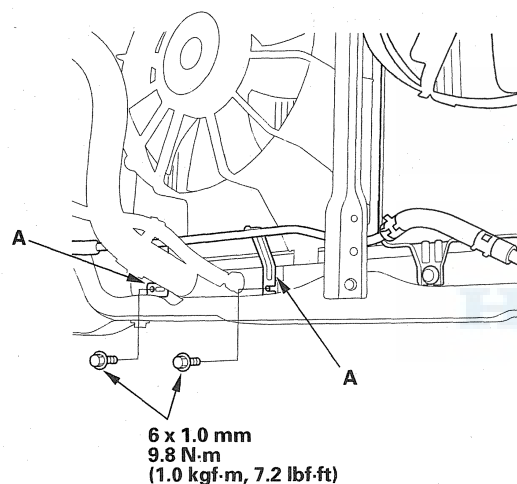
5. From under the hood, turn the heater valve arm (A) to the fully closed position as shown, and hold it. Attach the heater valve cable (B) to the heater valve arm, and gently pull on the heater valve cable housing to take up any slack, then install the heater valve cable housing into the cable clamp (C).



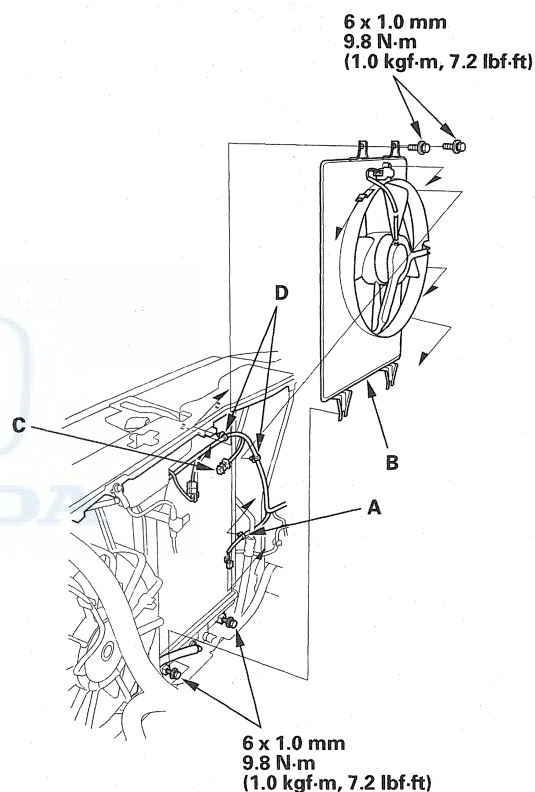
Heating/Air Conditioning

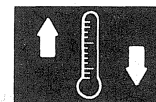
A/C Compressor Replacement

1. If the A/C compressor is marginally operable, run the engine at idle speed, and let the air conditioning work for a few minutes, then shut the engine off.
2. Make sure you have the anti-theft codes for the audio and the navigation system, then write down the audio presets.
3. Disconnect the negative cable from the battery.
4. Recover the refrigerant with a recovery/recycling/charging station (see page 21-67).
5. Remove the alternator (see page 4-36).
6. Remove the bolts from the cooler line brackets (A).

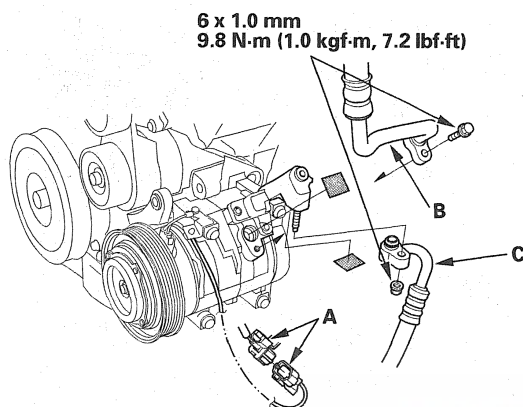


7. Remove the A/C compressor clutch harness clip (A) from the A/C condenser fan shroud (B), then disconnect the connector. Disconnect the A/C condenser fan connector (C), then remove the wire harness clips (D) from the A/C condenser fan shroud. Loosen the lower mounting bolts, then remove the upper mounting bolts and the A/C condenser fan shroud. Be careful not to damage the radiator fins when removing the A/C condenser fan shroud.

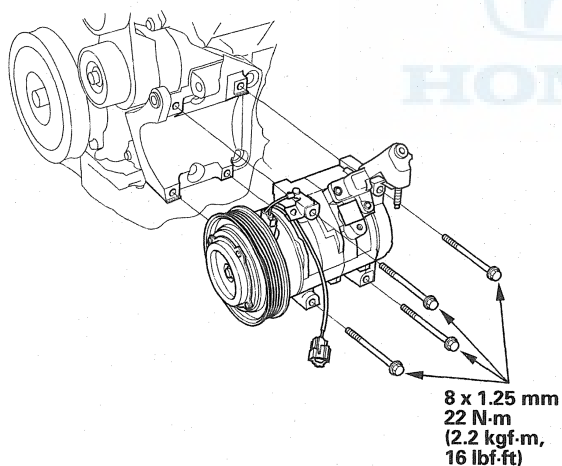




8. Disconnect the A/C compressor clutch connector (A) remove the bolt and the nut, then disconnect the suction line (B) and discharge line (C) from the A/C compressor. Plug or cap the lines immediately after disconnecting them to avoid moisture and dust contamination.



9. Remove the mounting bolts and the A/C compressor. Be careful not to damage the radiator fins when removing the A/C compressor.



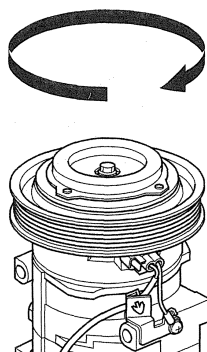
10. Install the A/C compressor in the reverse order of removal, and note these items:

- If you're installing a new A/C compressor, you must calculate the amount of refrigerant oil to be removed from it (see page 21-5).
- Replace the O-rings with new ones at each fitting, and apply a thin coat of refrigerant oil before installing them. Be sure to use the correct O-rings for HFC-134a (R-134a) to avoid leakage.
- Use refrigerant oil (DENSO ND-OIL 8) for HFC-134a DENSO piston type A/C compressor only.
- To avoid contamination, do not return the oil to the container once dispensed, and never mix it with other refrigerant oils.
- Immediately after using the oil, reinstall the cap on the container, and seal it to avoid moisture absorption.
- Do not spill the refrigerant oil on the vehicle; it may damage the paint; if the refrigerant oil contacts the paint, wash it off immediately.
- Be careful not to damage the radiator fins when installing the A/C compressor or the A/C condenser fan shroud.
- Charge the system (see page 21-69).
- Reset the power window control unit (see page 22-255).
- Enter the anti-theft codes for the audio and the navigation system, then enter the audio presets.

Heating/Air Conditioning

A/C Compressor Clutch Check

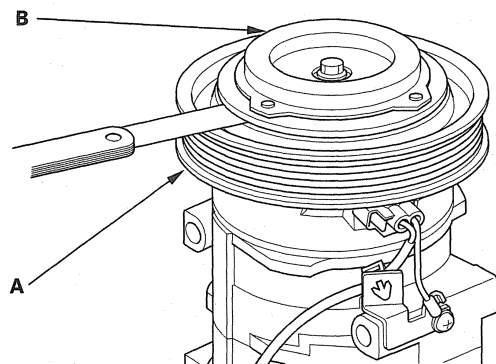
1. Check the pressure plate for discoloration, peeling, or other damage. If there is damage, replace the clutch set (see page 21-63).
2. Check the pulley bearing play and drag by rotating the pulley by hand. Replace the clutch set with a new one if it is noisy or has excessive play/drag (see page 21-63).



3. Measure the clearance between the pulley (A) and the pressure plate (B) all the way around. If the clearance is not within specifies limits, remove the pressure plate (see page 21-63) and add or remove shims as needed to increase or decrease clearance.

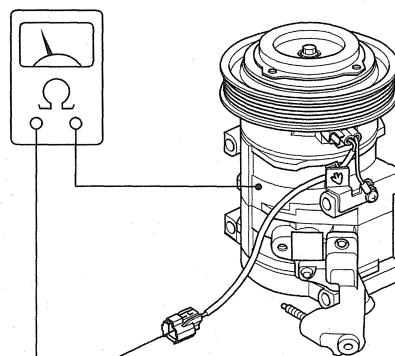
Clearance: 0.35—0.60 mm (0.014—0.024 in.)

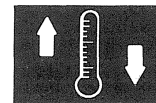
NOTE: The shims are available in three thicknesses: 0.1 mm, 0.3 mm, and 0.5 mm.



4. Check resistance of the field coil. If resistance is not within specifications, replace the field coil (see page 21-63).

Field Coil Resistance: 3.9—4.3 Ω at 68 °F (20 °C)



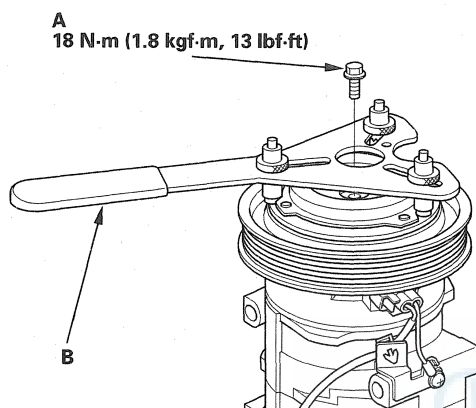


A/C Compressor Clutch Overhaul

Special Tools Required

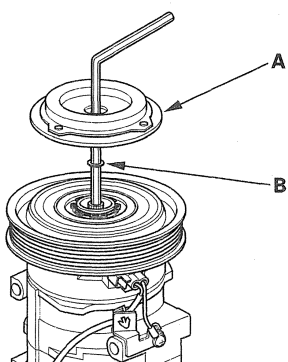
A/C clutch holder, Robinair 10204 or Kent-Moore J37872, or Honda Tool and Equipment KMT-J33939, commercially available

1. Remove the center bolt (A) while holding the pressure plate with a commercially available A/C clutch holder (B).

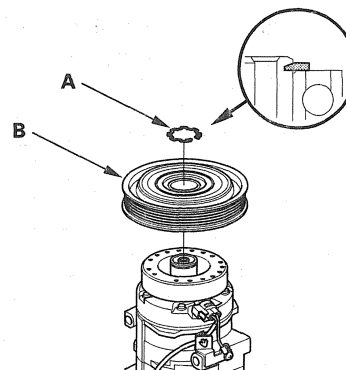


2. Remove the pressure plate (A) and shim(s) (B), taking care not to lose the shim(s). If the clutch needs adjustment, increase or decrease the number and thickness of shims as necessary, then reinstall the pressure plate, and recheck its clearance (see page 21-62).

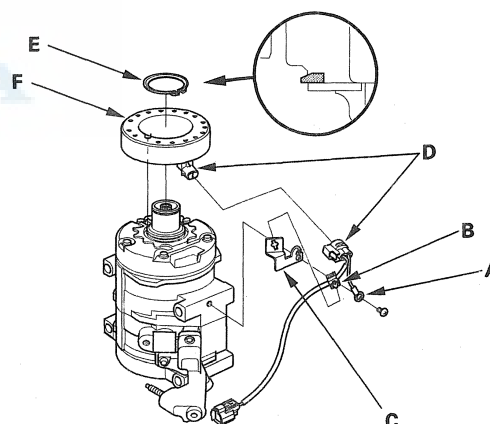
NOTE: The shims are available in three thicknesses: 0.1 mm, 0.3 mm, and 0.5 mm.



3. If you are replacing the field coil, remove the snap ring (A) with snap ring pliers, then remove the pulley (B). Be careful not to damage the pulley or the A/C compressor.



4. Remove the screw from the field coil ground terminal (A). Remove the wire harness clip (B) from the holder (C), then disconnect the field coil connector (D). Remove the snap ring (E) with snap ring pliers, then remove the field coil (F). Be careful not to damage the field coil or the A/C compressor.



(cont'd)

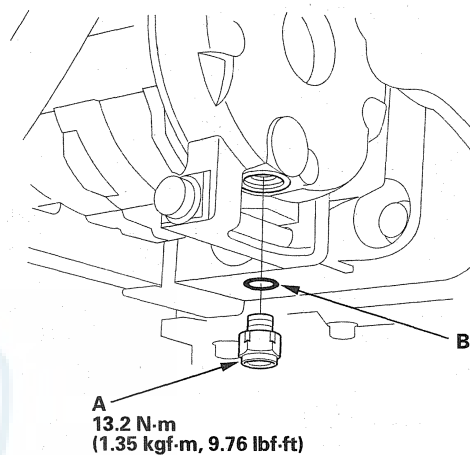
Heating/Air Conditioning

A/C Compressor Clutch Overhaul (cont'd)

5. Reassemble the clutch in the reverse order of disassembly, and note these items:
 - Install the field coil with the wire side facing down, and align the boss on the field coil with the hole in the A/C compressor.
 - Clean the pulley and A/C compressor sliding surfaces with contact cleaner or other non-petroleum solvent.
 - Install new snap rings, note the installation direction, and make sure they are fully seated in the groove.
 - Make sure that the pulley turns smoothly after it's reassembled.
 - Route and clamp the wires properly or they can be damaged by the pulley.

A/C Compressor Relief Valve Replacement

1. Recover the refrigerant with a recovery/recycling/charging station (see page 21-67).
2. Remove the relief valve (A) and the O-ring (B). Plug the opening to keep foreign matter from entering the system and the A/C compressor oil from running out.

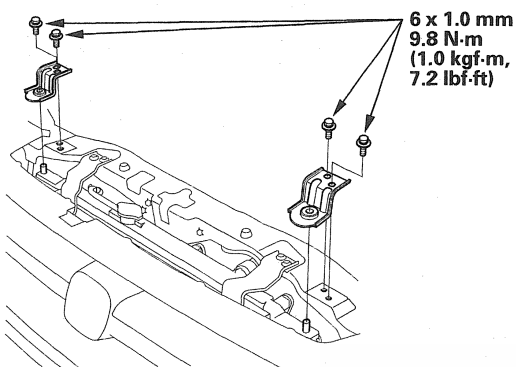


3. Clean the mating surfaces.
4. Replace the O-ring with a new one at the relief valve, and apply a thin coat of refrigerant oil before installing it.
5. Remove the plug, and install and tighten the relief valve.
6. Charge the system (see page 21-69).

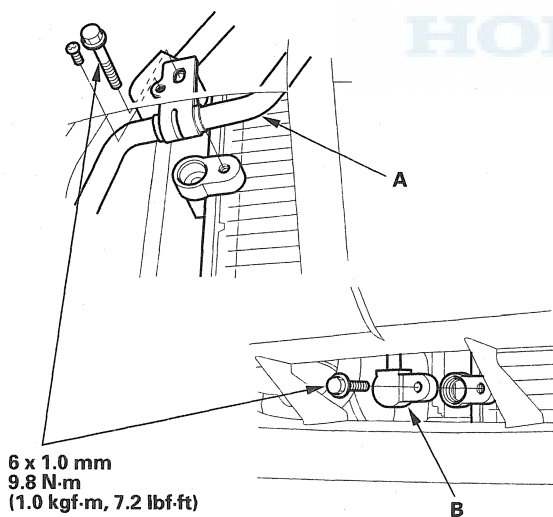


A/C Condenser Replacement

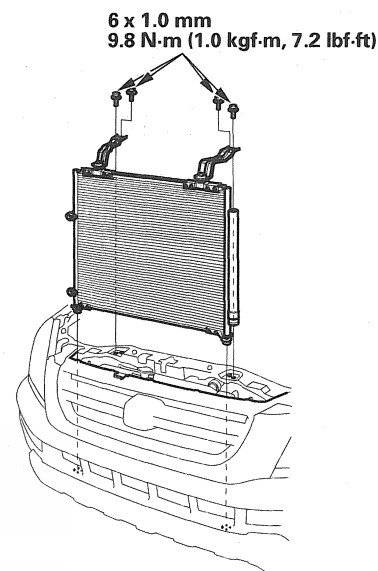
1. Recover the refrigerant with a recovery/recycling/charging station (see page 21-67).
2. Remove the front bulkhead cover, and the hood latch (see page 20-169).
3. Remove the bolts and the radiator upper brackets.



4. Remove the bolts and screw, then disconnect the discharge line (A) and receiver line (B) from the A/C condenser. Plug or cap the lines immediately after disconnecting them to avoid moisture and dust contamination.



5. Remove the bolts, then remove the A/C condenser by lifting it up. Be careful not to damage the radiator or the A/C condenser fins when removing the A/C condenser.



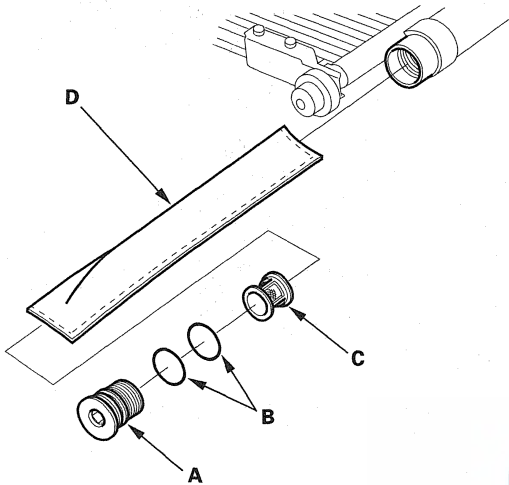
6. Install the A/C condenser in the reverse order of removal, and note these items:

- If you're installing a new A/C condenser, add refrigerant oil (DENSO ND-OIL 8) (see page 21-5).
- Replace the O-rings with new ones at each fitting, and apply a thin coat of refrigerant oil before installing them. Be sure to use the correct O-rings for HFC-134a (R-134a) to avoid leakage.
- Immediately after using the oil, reinstall the cap on the container, and seal it to avoid moisture absorption.
- Do not spill the refrigerant oil on the vehicle; it may damage the paint; if the refrigerant oil contacts the paint, wash it off immediately.
- Be careful not to damage the radiator or the A/C condenser fins when installing the A/C condenser.
- Charge the system (see page 21-69).

Heating/Air Conditioning

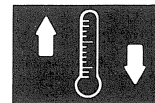
Receiver/Dryer Desiccant Replacement

1. Remove the A/C condenser (see page 21-65).
2. Remove the cap (A) from the bottom of the A/C condenser, then remove the O-rings (B), the filter (C) and the desiccant (D).



3. Install the desiccant in the reverse order of removal, and note these items:

Replace the O-rings with new ones, and apply a thin coat of refrigerant oil (DENSO ND-OIL 8) before installing them. Be sure to use the correct O-rings for HFC-134a (R-134a) to avoid leakage.



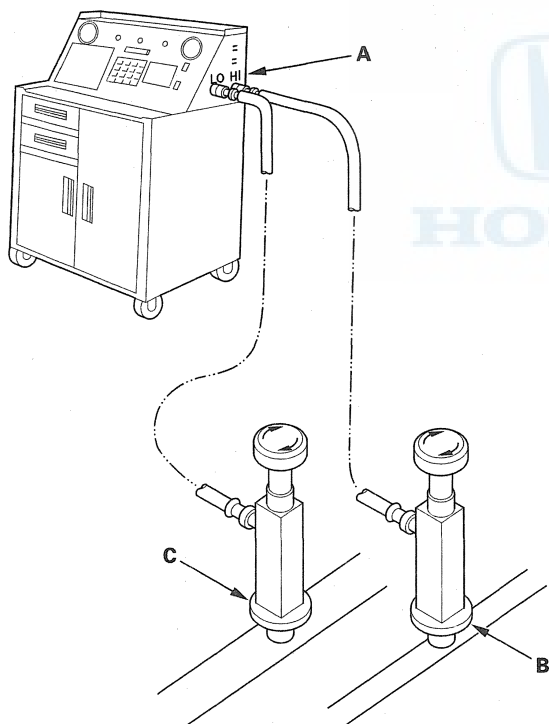
Refrigerant Recovery

⚠ CAUTION

- Air conditioning refrigerant or lubricant vapor can irritate your eyes, nose, or throat.
- Be careful when connecting service equipment.
- Do not breathe refrigerant or vapor.

NOTE:

- If accidental system discharge occurs, ventilate the work area before resuming service.
 - Additional health and safety information may be obtained from the refrigerant and lubricant manufacturers.
1. Connect an R-134a refrigerant recovery/recycling/charging station (A) to the high-pressure service port (B) and the low-pressure service port (C), as shown, following the equipment manufacturer's instructions.
 2. Measure the amount of refrigerant oil removed from the A/C system after the recovery process is completed. Be sure to put the same amount of new refrigerant oil back into the A/C system before charging.



Heating/Air Conditioning

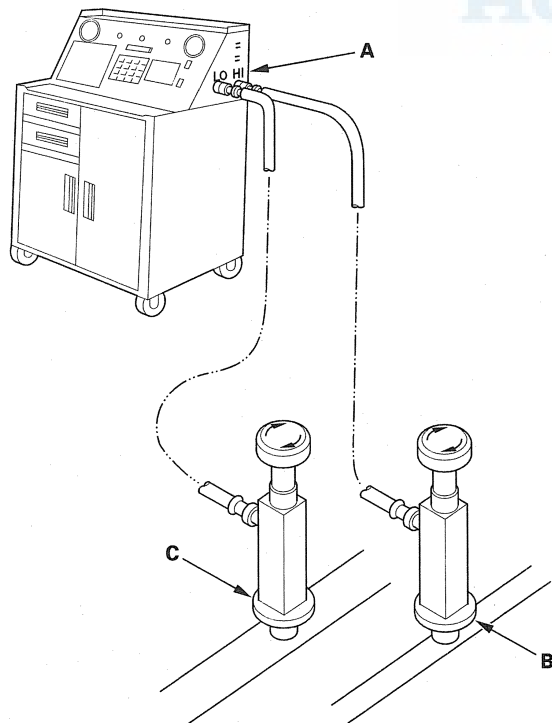
System Evacuation

CAUTION

- Air conditioning refrigerant or lubricant vapor can irritate your eyes, nose, or throat.
- Be careful when connecting service equipment.
- Do not breathe refrigerant or vapor.

NOTE:

- If accidental system discharge occurs, ventilate the work area before resuming service.
 - Additional health and safety information may be obtained from the refrigerant and lubricant manufacturers.
1. When an A/C system has been opened to the atmosphere, such as during installation or repair, it must be evacuated using an R-134a refrigerant recovery/recycling/charging station. If the system has been open for several days, the receiver/dryer should be replaced, and the system should be evacuated for several hours.
 2. Connect an R-134a refrigerant recovery/recycling/charging station (A) to the high-pressure service port (B) and the low-pressure service port (C), as shown, following the equipment manufacturer's instructions. Evacuate the system.
 3. If the low-pressure does not reach more than 93.3 kPa (700 mmHg, 27.6 in.Hg) in 15 minutes, there is probably a leak in the system. Partially charge the system, and check for leaks (see step 3 on page 21-70).





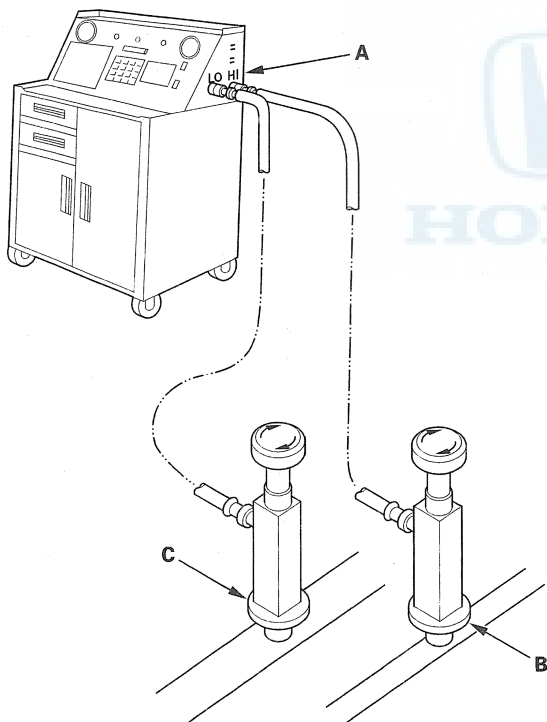
System Charging

⚠ CAUTION

- Air conditioning refrigerant or lubricant vapor can irritate your eyes, nose, or throat.
- Be careful when connecting service equipment.
- Do not breathe refrigerant or vapor.

NOTE:

- If accidental system discharge occurs, ventilate the work area before resuming service.
 - Additional health and safety information may be obtained from the refrigerant and lubricant manufacturers.
1. Connect an R-134a refrigerant recovery/recycling/charging station (A) to the high-pressure service port (B) and the low-pressure service port (C), as shown, following the equipment manufacturer's instructions.



2. Evacuate the system (see page 21-68).

3. Add the same amount of new refrigerant oil to the system that was removed during recovery. Use only DENSO ND-OIL 8 refrigerant oil.

4. Charge the system with the specified amount of R-134a refrigerant. Do not overcharge the system; the compressor will be damaged.

Select the appropriate units of measure for your refrigerant charging station.

Refrigerant Capacity:

700 to 750 g
0.70 to 0.75 kg
1.5 to 1.7 lbs
24.7 to 26.5 oz

5. Check for refrigerant leaks (see page 21-70).

6. Check for system performance (see page 21-71).

Heating/Air Conditioning

Refrigerant Leak Test

Special Tools Required

Leak detector, Honda Tool and Equipment YGK-H-10PM commercially available

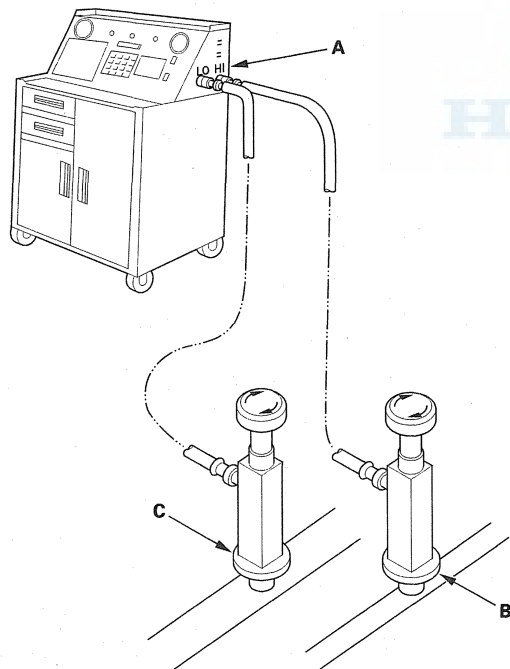
⚠ CAUTION

- Air conditioning refrigerant or lubricant vapor can irritate your eyes, nose, or throat.
- Be careful when connecting service equipment.
- Do not breathe refrigerant or vapor.

NOTE:

- If accidental system discharge occurs, ventilate the work area before resuming service.
- Additional health and safety information may be obtained from the refrigerant and lubricant manufacturers.

1. Connect an R-134a refrigerant recovery/recycling/charging station (A) to the high-pressure service port (B) and the low-pressure service port (C), as shown, following the equipment manufacturer's instructions.



2. Open high pressure valve to charge the system to the specified capacity, then close the supply valve, and disconnect the charging station fittings.

Select the appropriate units of measurement for your refrigerant charging station.

Refrigerant Capacity:

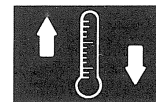
700 to 750 g

0.70 to 0.75 kg

1.5 to 1.7 lbs

24.7 to 26.5 oz

3. Check the system for leaks using an R-134a refrigerant leak detector with an accuracy of 14 g (0.5 oz) per year or better.
4. If you find leaks that require the system to be opened (to repair or replace hoses, fittings, etc.), do the refrigerant recovery procedure (see page 21-67).
5. After checking and repairing leaks, the system must be evacuated.



A/C System Test

Performance Test

⚠ CAUTION

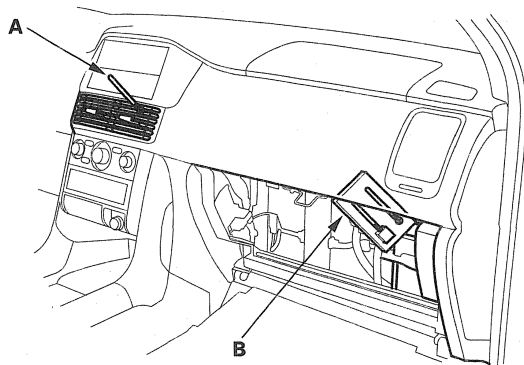
- Air conditioning refrigerant or lubricant vapor can irritate your eyes, nose, or throat.
- Be careful when connecting service equipment.
- Do not breathe refrigerant or vapor.

The performance test will help determine if the air conditioner system is operating within specifications.

NOTE:

- If accidental system discharge occurs, ventilate the work area before resuming service.
- Additional health and safety information may be obtained from the refrigerant and lubricant manufacturers.

1. Connect an R-134a refrigerant recovery/recycling/charging station to the high-pressure service port and the low-pressure service port, following the equipment manufacturer's instructions.
2. Determine the relative humidity and air temperature.
3. Remove the glove box stops (see page 20-95), and let the glove box hang down.
4. Insert a thermometer (A) in the center vent.



5. Place a thermometer (B) near the blower unit.

6. Test conditions:

- Avoid direct sunlight.
- Open hood.
- Open front doors.
- Set the temperature control dial to Max Cool, the mode control switch to Vent, and the recirculation control switch to Recirculate.
- Turn the A/C switch on and the fan switch to Max.
- Run the engine speed at 1,500 rpm.
- No driver or passenger's in vehicle.

7. After running the air conditioning for 10 minutes under the above test conditions, read the delivery temperature from the thermometer in the center vent, the intake temperature near the blower unit, and the high and low system pressure from the A/C gauges.

(cont'd)

Heating/Air Conditioning

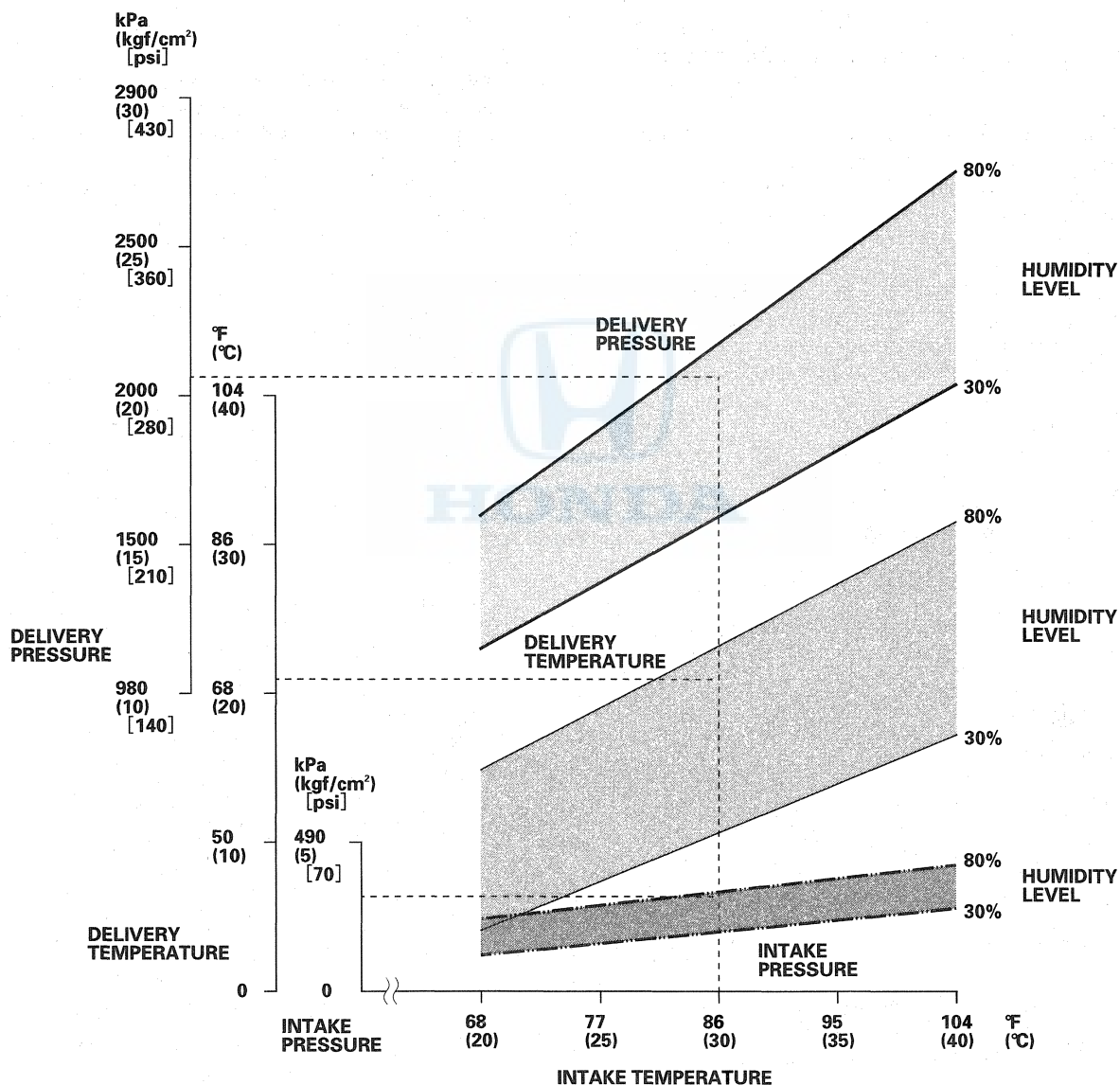
A/C System Test (cont'd)

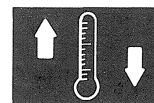
8. Refer to the inspection data.

Inspection data

Example Intake temperature (dry): 86 °F (30 °C) Humidity level 70 %
Intake temperature (wet): 77.9 °F (25.5 °C)
Intake pressure: 294 kPa (3.0 kgf/cm²) [42.7 psi]
Delivery temperature: 68.9 °F (20.5 °C)
Delivery pressure: 2010 kPa (20.5 kgf/cm²) [291.6 psi]

Results: Within normal range



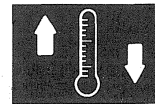


Pressure Test

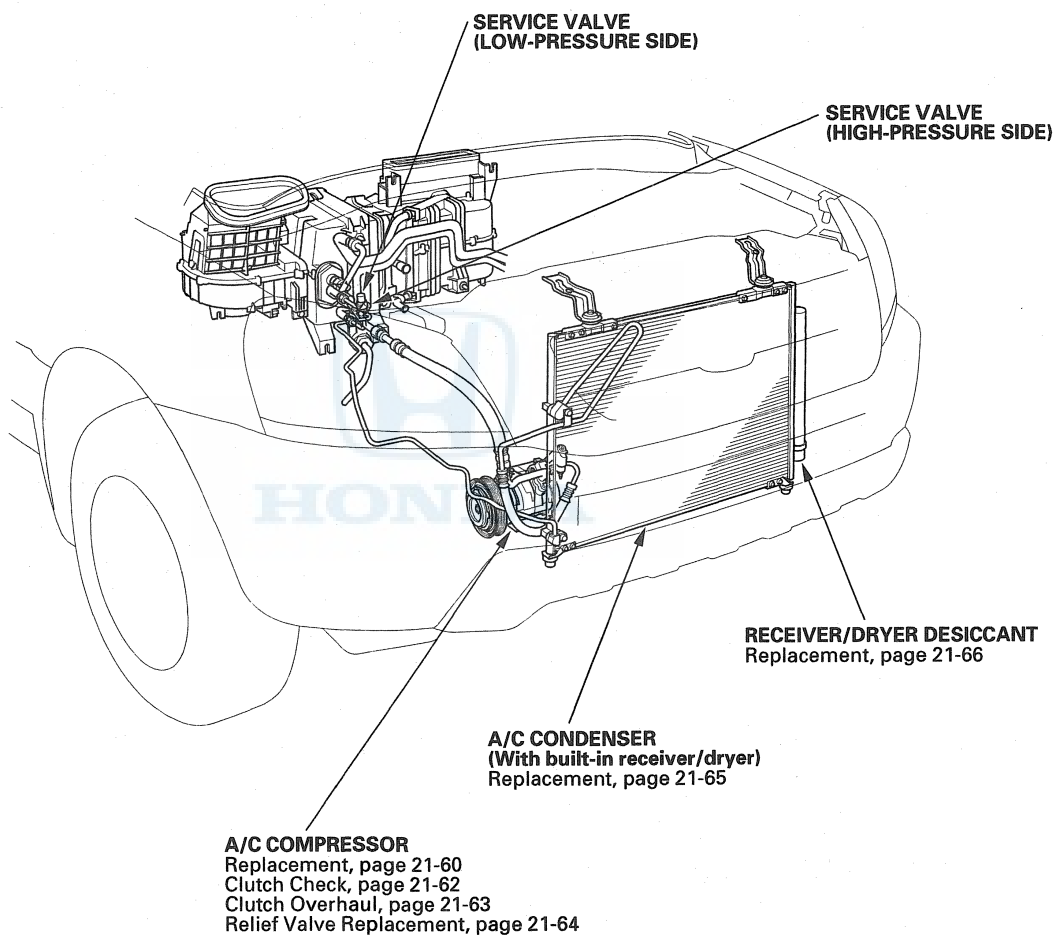
Test results	Related symptoms	Probable cause	Remedy
Discharge (high) pressure abnormally high	After stopping A/C compressor, pressure drops about 196 kPa (2.0 kgf/cm ² , 28 psi) quickly, and then falls gradually	Air in system	Recover, evacuate (see page 21-68), and recharge with specified amount (see page 21-69)
	Reduced or no airflow through A/C condenser	<ul style="list-style-type: none"> • Clogged condenser or radiator fins • Condenser or radiator fan not working properly 	<ul style="list-style-type: none"> • Clean • Check voltage and fan rpm • Check fan direction
	Line to A/C condenser is excessively hot	Restricted flow of refrigerant in system	Restricted lines
Discharge pressure abnormally low	<ul style="list-style-type: none"> • High and low-pressure are balanced soon after stopping A/C compressor • Low side is higher than normal 	<ul style="list-style-type: none"> • Faulty A/C compressor discharge valve • Faulty A/C compressor seal 	Replace the A/C compressor
	Outlet of expansion valve is not frosted, low-pressure gauge indicates vacuum	<ul style="list-style-type: none"> • Faulty expansion valve • Moisture in system 	<ul style="list-style-type: none"> • Replace • Recover, evacuate, and recharge with specified amount
Suction (low) pressure abnormally low	Expansion valve is not frosted, and low-pressure line is not cold. Low-pressure gauge indicates vacuum	<ul style="list-style-type: none"> • Frozen expansion valve (Moisture in system) • Faulty expansion valve 	<ul style="list-style-type: none"> • Recover, evacuate, and recharge with specified amount • Replace the expansion valve
	Discharge temperature is low, and the airflow from vents is restricted	Frozen evaporator	Run the fan with A/C compressor off, then check evaporator temperature sensor
	Expansion valve is frosted	Clogged expansion valve	Clean or replace
Suction pressure abnormally high	Low-pressure hose and check joint are cooler than the temperature around evaporator	Expansion valve open too long	Repair or replace
	Suction pressure is lowered when A/C condenser is cooled by water	Excessive refrigerant in system	Recover, evacuate, and recharge with specified amount
	High and low-pressure are equalized as soon as the A/C compressor is stopped, and both gauges fluctuate while running	<ul style="list-style-type: none"> • Faulty gasket • Faulty high-pressure valve • Foreign particle stuck in high-pressure valve 	Replace the A/C compressor
Suction and discharge pressures abnormally high	Reduced airflow through A/C condenser	<ul style="list-style-type: none"> • Clogged A/C condenser or radiator fins • A/C condenser or radiator fan not working properly 	<ul style="list-style-type: none"> • Clean • Check voltage and fan rpm • Check fan direction
Suction and discharge pressures abnormally low	Low-pressure hose and metal end areas are cooler than evaporator	Clogged or kinked low-pressure hose parts	Repair or replace
	Temperature around expansion valve is too low compared with that around receiver/dryer	Clogged high-pressure line	Repair or replace
Refrigerant leaks	A/C compressor clutch is dirty	A/C compressor shaft seal leaking	Replace the A/C compressor
	A/C compressor bolt(s) are dirty	Leaking around bolt(s)	Tighten bolt(s) or replace A/C compressor
	A/C compressor gasket is wet with oil	Gasket leaking	Replace the A/C compressor
	A/C fitting is dirty	Leaking O-ring	Clean the A/C fitting and replace the O-ring



Climate Control



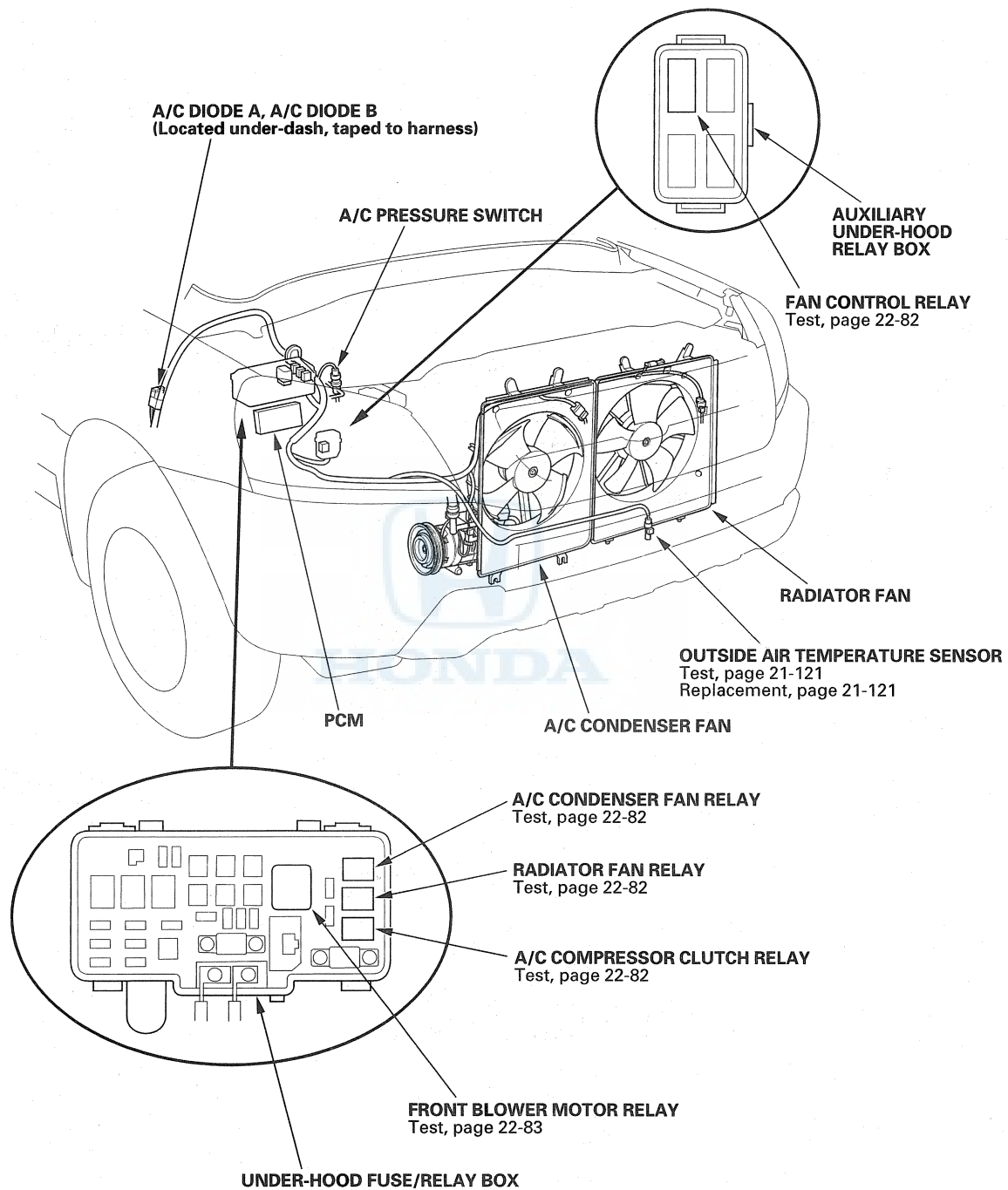
Component Location Index

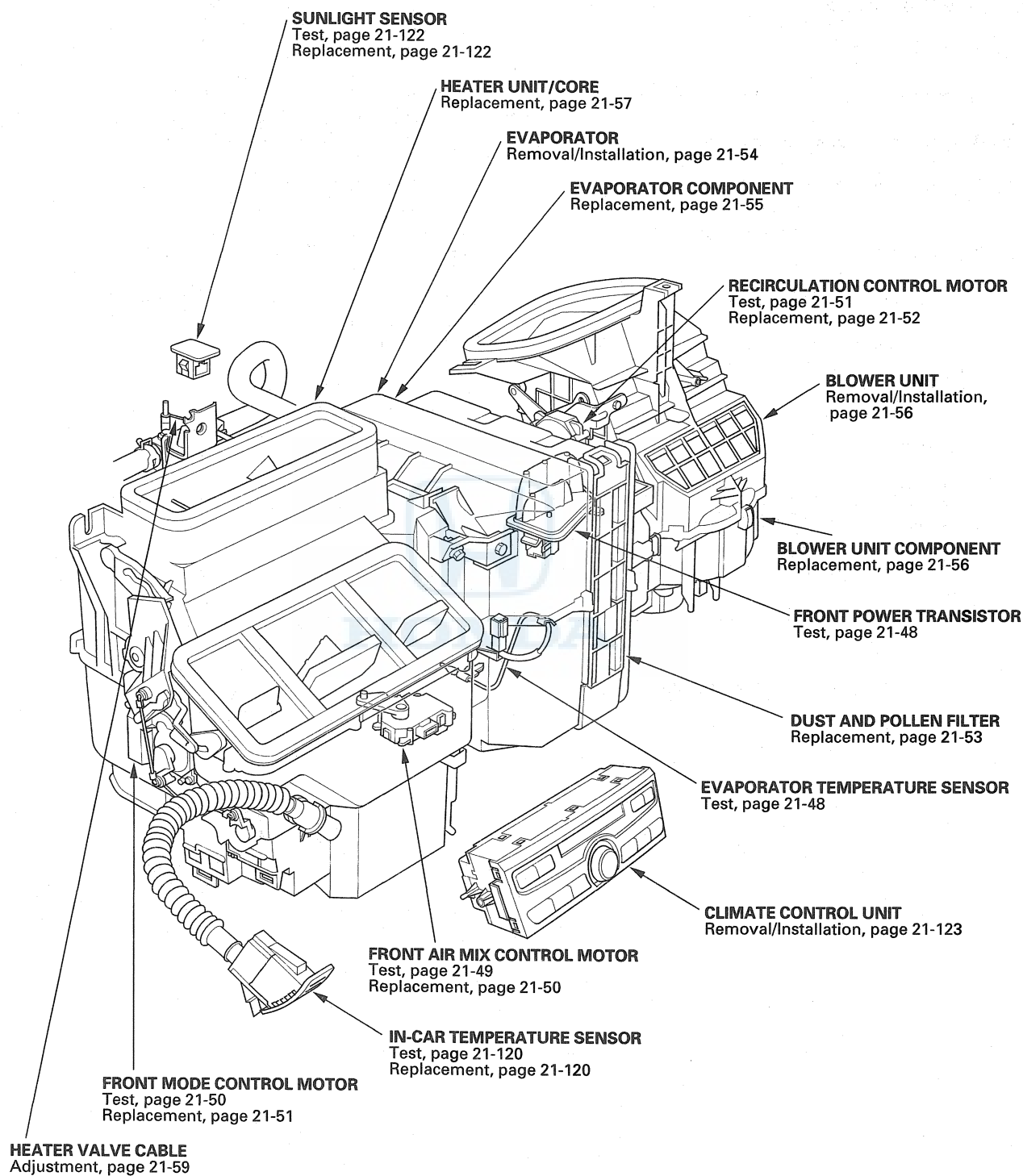
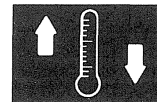


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Climate Control

Component Location Index (cont'd)





Climate Control

General Troubleshooting Information

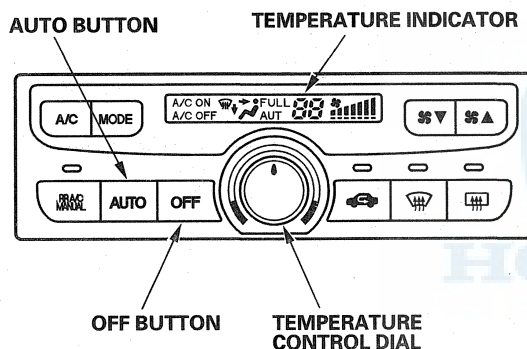
Climate Control System

How to Retrieve a DTC

The climate control unit has a self-diagnostic function.

Running the Self-diagnostic Function

1. Turn the ignition switch ON (II).
2. Set the driver's temperature control dial on MAX Cool.
3. Press and hold the OFF button.
4. While holding the OFF button, press the AUTO button five times within 10 seconds. The self-diagnosis begins.



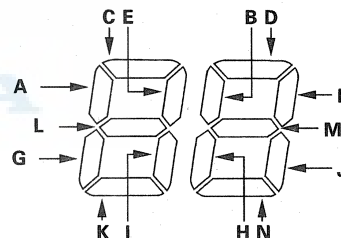
If there is any abnormality in the system, the temperature indicator will light up the segment (A through N) corresponding to the error. If no DTCs are found, go to symptom troubleshooting index. The temperature indicator will then alternate every second between displaying "88" (all segments lit) and the error code segment (A through N).

NOTE: The system will only display the DTC when the AUTO and OFF buttons are pressed. If you release the buttons, the display will go blank. To return the display, simply press the AUTO then the OFF buttons again.

To determine the meaning of the DTC, refer to the DTC troubleshooting index. If there is no abnormality, the segments will not light up.

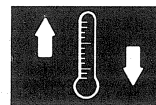
NOTE: If there are no DTC's detected (no opens or shorts in the climate control circuits or sensors), and the system is still not operating properly, check the sensor input to the climate control unit.

TEMPERATURE INDICATOR



Canceling the Self-diagnostic Function

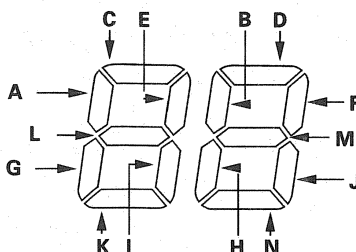
5. Turn the ignition switch OFF to cancel the self-diagnostic function. After completing repair work, run the self-diagnostic function again to make sure that there are no other malfunctions.



Climate Control System

To retrieve the DTC, you must run the self-diagnostic function. In the case of multiple problems, the respective indicator segments will come on. If indicator segments A, C, E, G, I, and L come on at the same time, there may be an open in the common ground wire of the sensors.

TEMPERATURE INDICATOR



DTC (Temperature Indicator Segment)	Detection Item	Page
A	An open in the in-car temperature sensor circuit	(see page 21-92)
B	A short in the in-car temperature sensor circuit	(see page 21-93)
C	An open in the outside air temperature sensor circuit	(see page 21-93)
D	A short in the outside air temperature sensor circuit	(see page 21-95)
E	An open in the sunlight sensor circuit	(see page 21-95)
F	A short in the sunlight sensor circuit	(see page 21-96)
G	An open in the evaporator temperature sensor circuit	(see page 21-97)
H	A short in the evaporator temperature sensor circuit	(see page 21-98)
I	An open in the front air mix control motor circuit	(see page 21-99)
J	A short in the front air mix control motor circuit	(see page 21-99)
K	A problem in the front air mix control linkage, door, or motor	(see page 21-100)
L	An open or short in the front mode control motor circuit	(see page 21-101)
M	A problem in the mode control linkage, doors, or motor	(see page 21-103)
N	A problem in the front blower motor circuit	(see page 21-104)

(cont'd)

Climate Control

General Troubleshooting Information (cont'd)

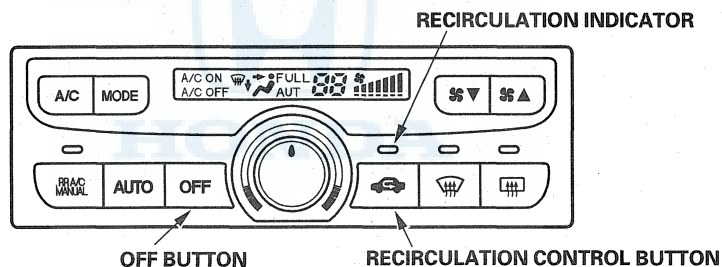
Rear Heater-A/C Control System

How to Retrieve a DTC

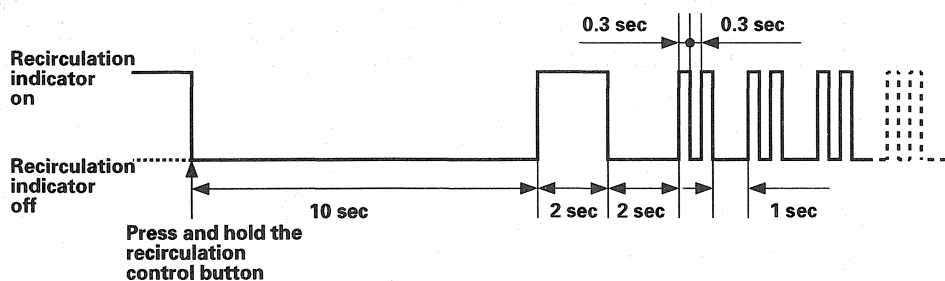
The climate control unit has a self-diagnostic function. To run the self-diagnostic function, do the following:

1. Turn the ignition switch ON (II).
2. Turn the temperature control knob to LO for about 20 seconds, then HI for about 20 seconds.
3. Press the OFF button, then press the recirculation control button to select Recirculation (recirculation indicator comes on).
4. Press and hold the recirculation control button to select Fresh (recirculation indicator goes off). Continue to hold the button for 10 seconds. The recirculation indicator comes on for 2 seconds, and the self-diagnosis begins.
 - If the system is OK, the recirculation indicator stays off.
 - If any trouble is found, the recirculation indicator blinks the diagnostic trouble code (DTC) to indicate a faulty circuit or component.
5. After recording the DTC, release the recirculation control button.

To determine the meaning of the DTC, refer to the DTC troubleshooting index for rear heater-A/C control system.

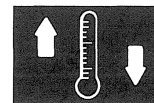


Example of DTC Indicator Pattern (DTC 2):



Canceling the Self-diagnostic Function

6. Turn the ignition switch OFF to cancel the self-diagnostic function. After completing repair work, run the self-diagnostic function again to make sure that there are no other malfunctions.



Rear Heater-A/C Control System

DTC (Recirculation Indicator Blinks)	Detection Item	Page
1	A problem in the rear blower motor circuit	(see page 21-107)
2	A problem in the rear air mix control linkage, door, or motor	(see page 21-112)
3	A short in the rear air mix control motor circuit	(see page 21-113)
4	An open in the rear air mix control motor circuit	(see page 21-114)

In case of multiple problems, the recirculation indicator will indicate only the DTC with the least number of blinks.
In case of an intermittent failure, the climate control unit will store the DTC until the ignition switch is turned off.



(cont'd)

Climate Control

General Troubleshooting Information (cont'd)

Displaying Sensor Inputs at the Climate Control Unit

The climate control unit has a mode that displays sensor inputs it receives. This mode shows you what the climate control unit is receiving from each of the sensors, one at a time, and it can help you determine if a sensor is faulty.

Check these items before using the sensor input display mode:

1. Turn the ignition switch ON (II), and check the recirculation door function; press the recirculation button to switch from FRESH to RECIRC. The air volume and sound should change slightly.
2. Set the temperature control knob to the desired test temperature. When selecting the test temperatures, note these items:
 - "Lo" temperature setting will default to MAX COOL, VENT, and RECIRC.
 - "Hi" temperature setting will default to MAX HOT, FLOOR, and FRESH.
 - 58 through 86 °F settings will use the automatic climate control logic.
3. Turn the ignition switch OFF.

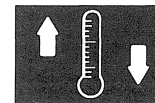
To run the sensor input display mode, follow these steps:

1. Turn the ignition switch OFF.
2. Press and hold both the AUTO and RECIRC buttons, then start the engine.
3. After the engine starts, release the buttons. The climate control display will flash the sensor number and then the value for that sensor. Record the value displayed.
4. To advance to the next sensor, press the rear window defogger button.

Sensor	Item	Displayed Value
1	In-car Temperature Sensor	°C
2	Outside Air Temperature Sensor	°C
3	Solar Radiation Sensor Value: Dark = 00, Flashlight = 04, Cloudy = 10, Sunny = 65	10 kcal/m ² .h
4	Engine Coolant Temperature	°C
5	Evaporator Outlet Air Temperature	°C
6	Front Air Mix Opening (Low value indicates cooler air distribution, higher value indicates warmer air distribution)	% of opening
7	Vent Temperature Air Out (TAO)	°C
8	Vehicle Speed (Vehicle must be driven to display speed)	km/h

NOTE:

- The sensor values will be displayed in degrees Celsius (°C) or an alphanumeric code. Use the chart to convert the value to degrees Fahrenheit (°F).
- If the sensor value displays "Er," this indicates there is an open or short in the circuit or sensor. Run the self-diagnostic function to check for a DTC.
- If necessary, compare the sensor input display to an alike, known-good vehicle under the same test conditions.
- If the sensor is out of the normal range, refer to the sensor test, or substitute the sensor with a known-good sensor, and recheck.



5. To cancel the sensor input display mode, press the AUTO button, or turn the ignition OFF.

Celsius to Fahrenheit Conversion Table

°C	°F	°C	°F	°C	°F	°C	°F	°C	°F
0	32	10	50	20	68	30	86	40	104
1	34	11	52	21	70	31	88	41	106
2	36	12	54	22	72	32	90	42	108
3	37	13	55	23	73	33	91	43	109
4	39	14	57	24	75	34	93	44	111
5	41	15	59	25	77	35	95	45	113
6	43	16	61	26	79	36	97	46	115
7	45	17	63	27	81	37	99	47	117
8	46	18	64	28	82	38	100	48	118
9	48	19	66	29	84	39	102	49	120

Celsius to Fahrenheit Conversion Table

°C	°F	°C	°F	°C	°F	°C	°F	°C	°F
50	122	60	140	70	158	80	176	90	194
51	124	61	142	71	160	81	178	91	196
52	126	62	144	72	162	82	180	92	198
53	127	63	145	73	163	83	181	93	199
54	128	64	147	74	165	84	183	94	201
55	131	65	149	75	167	85	185	95	203
56	133	66	151	76	169	86	187	96	205
57	135	67	152	77	170	87	188	97	207
58	136	68	154	78	172	88	190	98	208
59	139	69	158	79	174	89	192	99	210

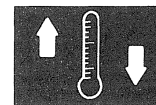
Alphanumeric Conversion Table

Display Reading (Alphanumeric)	°C	°F	%
A1 thru A9	—1 thru —9	30 thru 16	—1 thru —9
B0 thru B9	—10 thru —19	14 thru —2	—10 thru —19
C0 thru C9	—20 thru —29	—4 thru —20	—20 thru —29
D0 thru D9	—30 thru —39	—22 thru —38	—30 thru —39
E0 thru E9	—40 thru —49	—40 thru —58	—
F0 thru F9	—50 thru —59	—58 thru —74	+100 thru +109

Climate Control

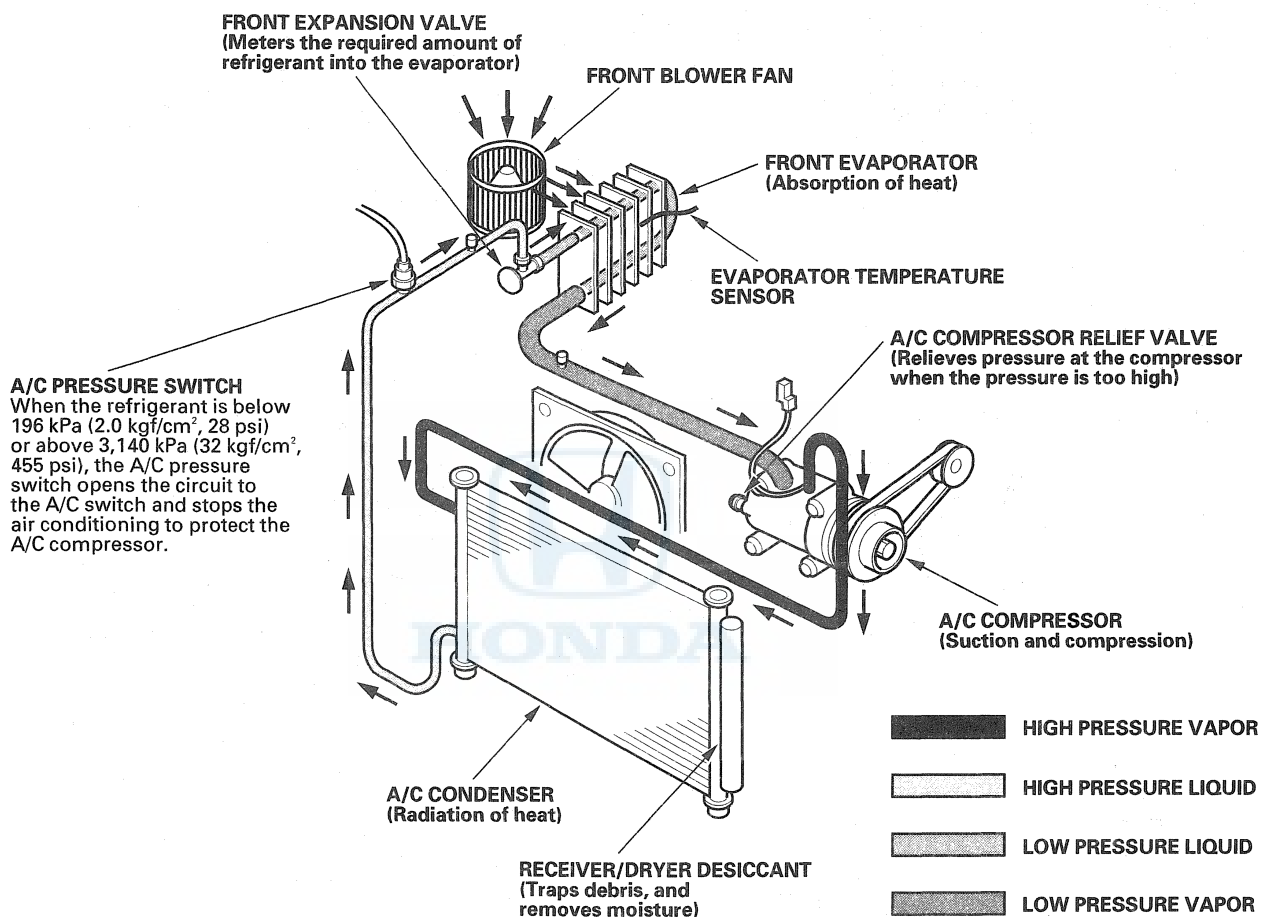
Symptom Troubleshooting Index

Symptom	Diagnostic procedure	Also check for
Recirculation control doors do not change between Fresh and Recirculate	Recirculation control motor circuit troubleshooting (see page 21-114)	<ul style="list-style-type: none"> HVAC DTCs (see page 21-78) Blown fuse No. 3 (7.5 A) in the driver's under-dash fuse/relay box Cleanliness and tightness of all terminals
The blower motor does not run immediately even though the engine is fully warmed up	NOTE: The temperature control dial or button must be set between 57 °F (24 °C) and 87 °F (31 °C) and the engine coolant temperature is above 104 °F (40 °C) ECT Sensor 1 circuit troubleshooting (see page 21-116)	Cleanliness and tightness of all terminals
Blower, heater controls, and A/C do not work	Climate control power and ground circuit troubleshooting (see page 21-116)	<ul style="list-style-type: none"> HVAC DTCs (see page 21-78) Blown fuse No. 3 (7.5 A) in the driver's under-dash fuse/relay box Poor ground at G401 Cleanliness and tightness of all terminals
Voice communication does not work	Navigation communication line circuit troubleshooting (see page 21-117)	<ul style="list-style-type: none"> HVAC DTCs (see page 21-78) Cleanliness and tightness of all terminals
Both fans do not run at low speed with the A/C on (but the A/C compressor runs with the A/C on)	Radiator and A/C condenser fan low speed circuit troubleshooting (see page 21-29)	<ul style="list-style-type: none"> HVAC DTCs (see page 21-78) Blown fuse No. 58 (30 A) in the under-hood fuse/relay box, and No. 3 (7.5 A) in the driver's under-dash fuse/relay box Poor ground at G202 Cleanliness and tightness of all terminals
The A/C condenser fan does not run at high speed (but both fans run at low speed and the A/C compressor operates with the A/C on)	A/C condenser fan high speed circuit troubleshooting (see page 21-33)	<ul style="list-style-type: none"> HVAC DTCs (see page 21-78) Blown fuse No. 3 (7.5 A) in the driver's under-dash fuse/relay box Poor ground at G201 Cleanliness and tightness of all terminals
Both fans do not run at high speed with the A/C on (but both fans run at low speed and the A/C compressor operates with the A/C on)	Radiator and A/C condenser fan high speed circuit troubleshooting (see page 21-34)	<ul style="list-style-type: none"> HVAC DTCs (see page 21-78) Cleanliness and tightness of all terminals
Both fans run at high speed all the time with the A/C on	Radiator and A/C condenser fan high speed circuit troubleshooting (see page 21-34)	<ul style="list-style-type: none"> HVAC DTCs (see page 21-78) Cleanliness and tightness of all terminals
The A/C compressor clutch does not engage (but both fans run at high speed with the A/C on)	A/C compressor clutch circuit troubleshooting (see page 21-37)	<ul style="list-style-type: none"> HVAC DTCs (see page 21-78) Blown fuse No. 59 (7.5 A) in the under-hood fuse/relay box, and No. 3 (7.5 A) in the driver's under-dash fuse/relay box Cleanliness and tightness of all terminals
A/C system does not come on (both fans and the A/C compressor do not work); heater is OK	A/C pressure switch circuit troubleshooting (see page 21-40)	<ul style="list-style-type: none"> HVAC DTCs (see page 21-78) Cleanliness and tightness of all terminals
Rear mode control doors do not change between ceiling vents (cool) and floor vents (hot)	Rear mode control motor circuit troubleshooting (see page 21-118)	<ul style="list-style-type: none"> HVAC DTCs (see page 21-78) Blown fuse No. 3 (7.5 A) in the driver's under-dash fuse/relay box Cleanliness and tightness of all terminals
Blower fan runs slower than expected in cold weather	ECT Troubleshooting: ECT sensor 1 circuit low voltage (see page 11-84), ECT sensor 1 circuit high voltage (see page 11-86) NOTE: It is normal for the blower to run slowly until the engine coolant temperature begins to rise. If the blower continues to run slowly for an abnormal length of time, continue to troubleshoot the problem.	<ul style="list-style-type: none"> Powertrain DTCs (see page 11-3)



System Description

The air conditioning system removes heat from the passenger compartment by transferring heat from the ambient air to the evaporator. The evaporator cools the air with the refrigerant that is circulating through the evaporator. The refrigerant expands in the evaporator, and the evaporator becomes very cold and absorbs the heat from the ambient air. The blower fan pushes air across the evaporator where the heat is absorbed, and then it blows the cool air into the passenger compartment.



This vehicle uses HFC-134a (R-134a) refrigerant which does not contain chlorofluorocarbons. Pay attention to the following service items:

- Do not mix refrigerants CFC-12 (R-12) and HFC-134a (R-134a). They are not compatible.
- Use only the recommended polyalkyleneglycol (PAG) refrigerant oil (DENSO ND-OIL 8) designed for the R-134a A/C compressor. Intermixing the recommended (PAG) refrigerant oil with any other refrigerant oil will result in A/C compressor failure.
- All A/C system parts (A/C compressor, discharge line, suction line, evaporator, A/C condenser, receiver/dryer, expansion valve, O-rings for joints) are designed for refrigerant R-134a. Do not exchange with R-12 parts.
- Use a halogen gas leak detector designed for refrigerant R-134a.
- R-12 and R-134a refrigerant servicing equipment are not interchangeable. Use only a recovery/recycling/charging station that is U.L.-listed and is certified to meet the requirements of SAE J2210 to service the R-134a air conditioning systems.
- Always recover the refrigerant R-134a with an approved recovery/recycling/charging station before disconnecting any A/C fitting.

(cont'd)

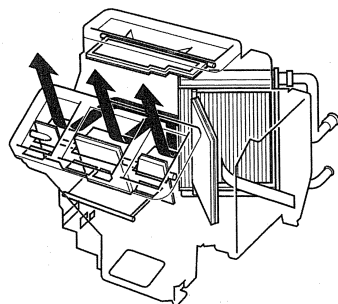
Climate Control

System Description (cont'd)

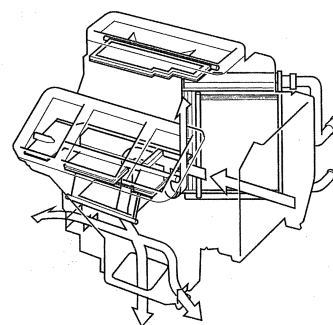
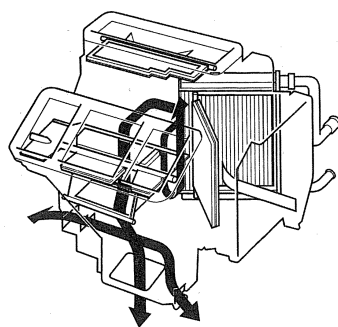
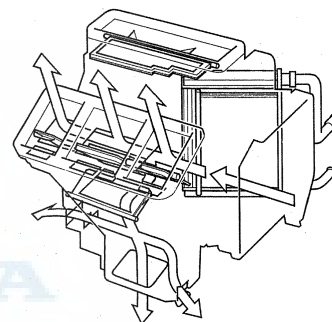
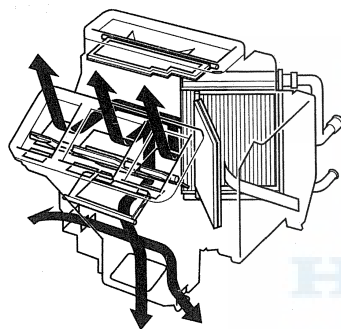
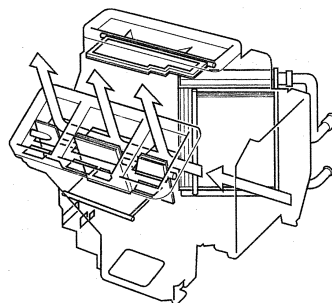
Climate Control Door Positions

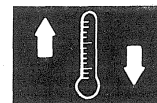


← HOT



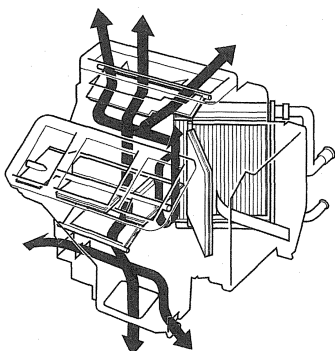
← COOL



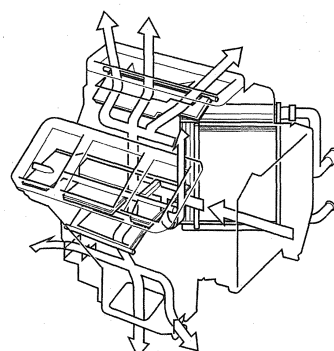


(HEAT/DEF)

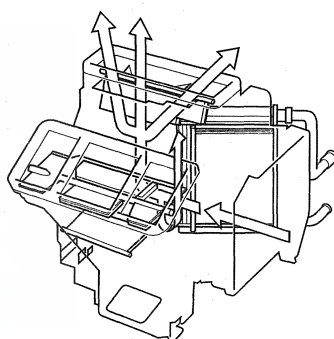
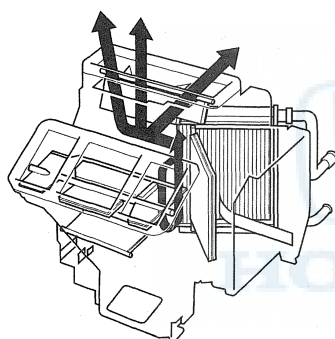
HOT



COOL



(DEF)






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Climate Control

System Description (cont'd)

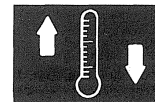
Climate Control Unit Connector A (20P) Inputs and Outputs

1	2	3	4		6	7	8	9	10
11	12		14		16	17	18	19	20







Wire side of female terminals

CONNECTOR A

Cavity	Wire color	Signal	
1	GRN/ORN	REAR AIR MIX HOT	OUTPUT
2	PNK	REAR AIR MIX COOL	OUTPUT
3	GRN	REAR POWER TRANSISTOR CONTROL	OUTPUT
4	RED/GRN	REAR BLOWER FEEDBACK	INPUT
6	YEL	REAR H3	INPUT
7	YEL/WHT	REAR H2	INPUT
8	GRN/RED	REAR H1	INPUT
9	LT BLU	REAR C1	INPUT
10	LT GRN	REAR C2	INPUT
11	GRN/WHT	REAR MODE VENT	OUTPUT
12	BLU/ORN	REAR MODE HEAT	OUTPUT
14	BRN/YEL	REAR AIR MIX POTENTIAL	INPUT
16	RED/YEL	REAR INDICATOR	OUTPUT
17	GRN/ORN	NAVIGATION UNIT	INPUT
18	YEL/BLU	NAVIGATION UNIT	OUTPUT
19	RED/GRN	NAVIGATION UNIT	OUTPUT
20	YEL/BLU	REAR C3	INPUT



Climate Control Unit Connector B (30P) Inputs and Outputs

																													
1		3	4	5	6	7			8	9	10	11		13	14														
15	16	17	18	19	20	21	22		23		25	26	27	28	29	30													

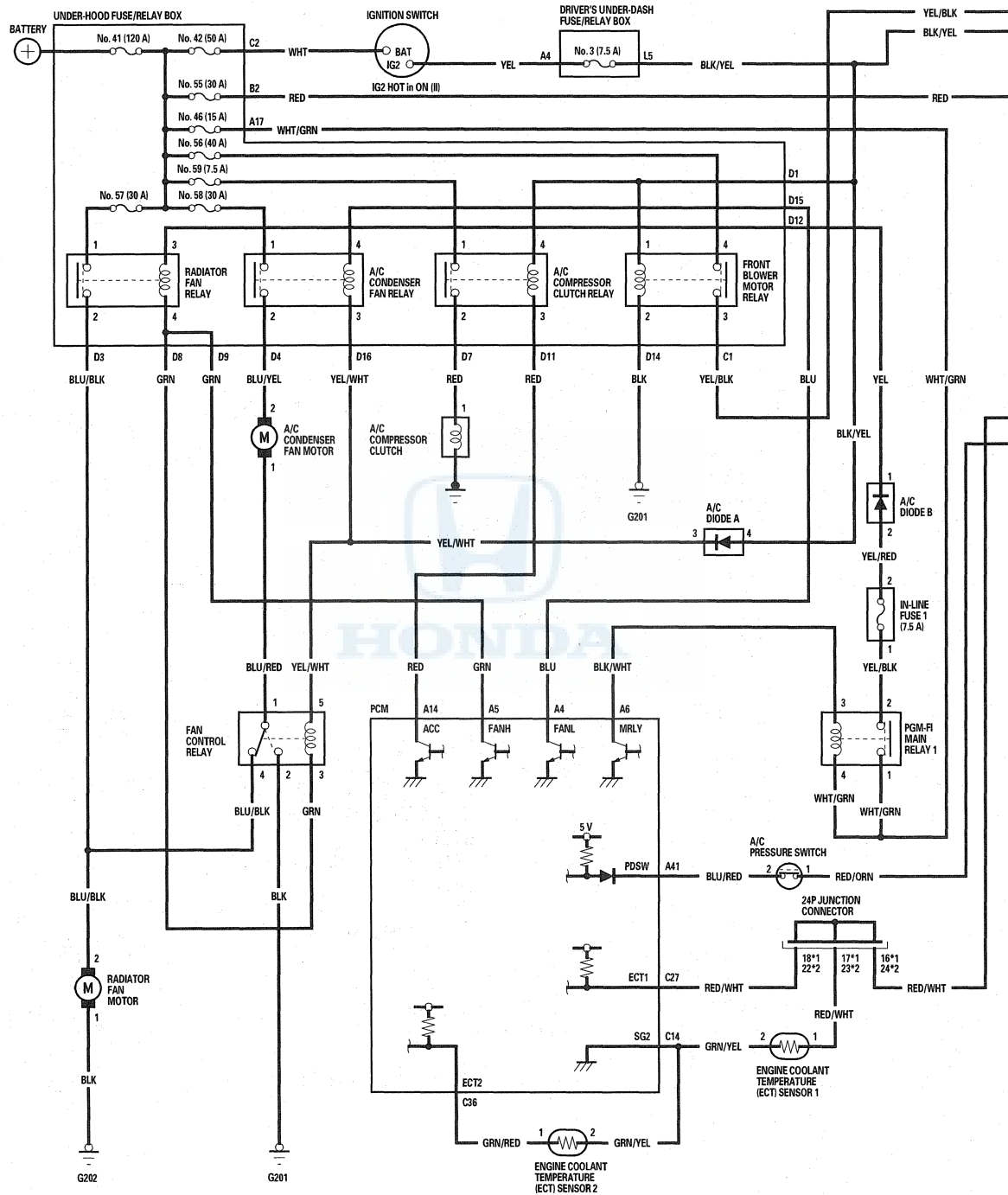
Wire side of female terminals

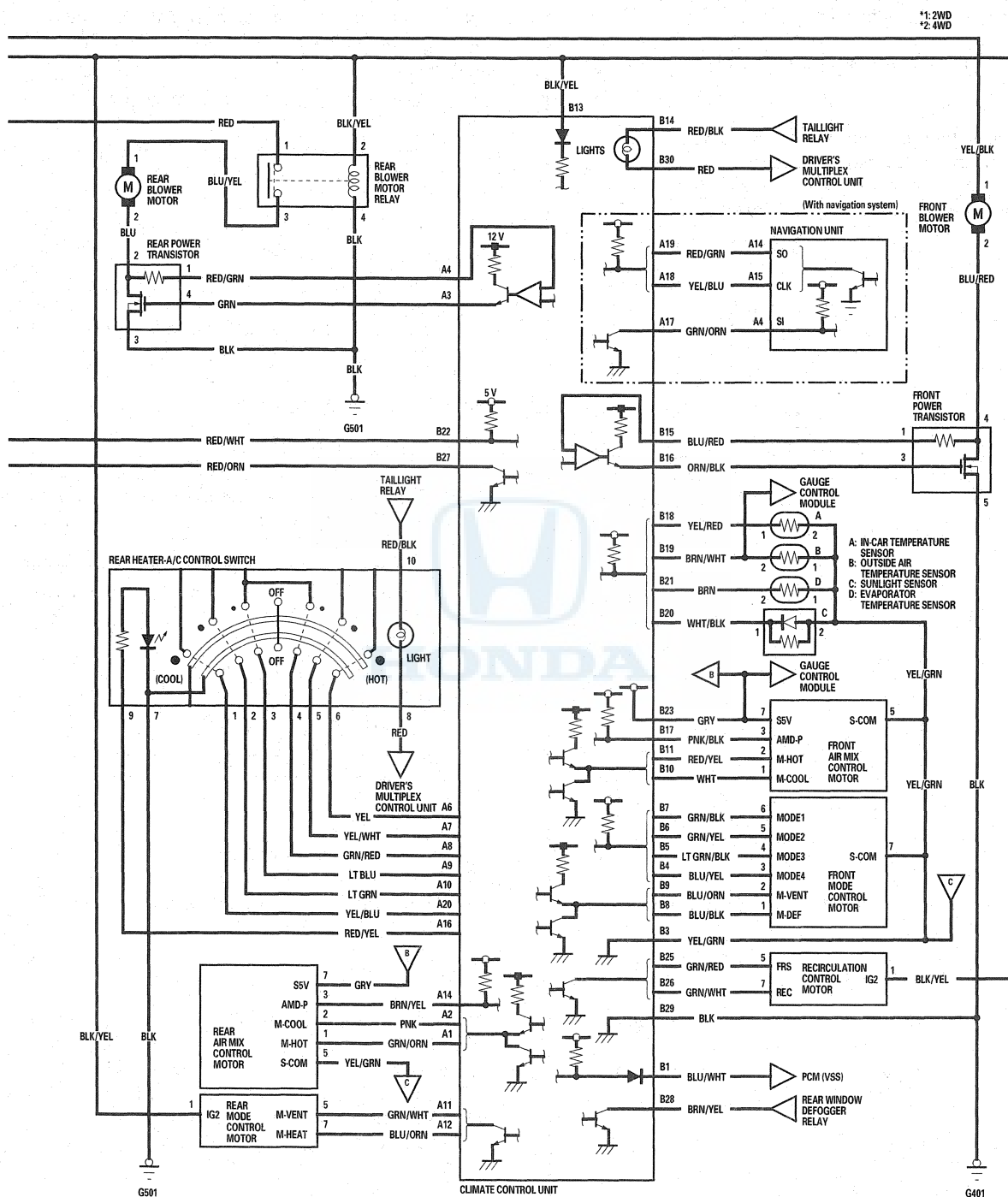
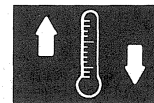
CONNECTOR B

Cavity	Wire color	Signal	
1	BLU/WHT	PCM (VSS)	INPUT
3	YEL/GRN	SENSOR COMMON GROUND	OUTPUT
4	BLU/YEL	FRONT MODE4	INPUT
5	LT GRN/BLK	FRONT MODE3	INPUT
6	GRN/YEL	FRONT MODE2	INPUT
7	GRN/BLK	FRONT MODE1	INPUT
8	BLU/BLK	FRONT MODE DEF	OUTPUT
9	BLU/ORN	FRONT MODE VENT	OUTPUT
10	WHT	FRONT AIR MIX COOL	OUTPUT
11	RED/YEL	FRONT AIR MIX HOT	OUTPUT
13	BLK/YEL	IG2 (Power)	INPUT
14	RED/BLK	TAILLIGHT RELAY	INPUT
15	BLU/RED	BLOWER FEEDBACK	INPUT
16	ORN/BLK	POWER TRANSISTOR CONTROL	OUTPUT
17	PNK/BLK	FRONT AIR MIX POTENTIAL	INPUT
18	YEL/RED	IN-CAR TEMPERATURE SENSOR	INPUT
19	BRN/WHT	OUTSIDE AIR TEMPERATURE SENSOR	INPUT
20	WHT/BLK	SUNLIGHT SENSOR	INPUT
21	BRN	EVAPORATOR TEMPERATURE SENSOR	INPUT
22	RED/WHT	ENGINE COOLANT TEMPERATURE (ECT) SENSOR 1	INPUT
23	GRY	FRONT AIR MIX POTENTIAL +5 V	OUTPUT
25	GRN/RED	FRESH	OUTPUT
26	GRN/WHT	RECIRCULATE	OUTPUT
27	RED/ORN	A/C PRESSURE SWITCH	OUTPUT
28	BRN/YEL	REAR WINDOW DEFOGGER RELAY	OUTPUT
29	BLK	GROUND (G401)	INPUT
30	RED	DRIVER'S MULTIPLEX CONTROL UNIT	INPUT

Climate Control

Circuit Diagram





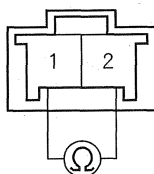
Climate Control

DTC Troubleshooting

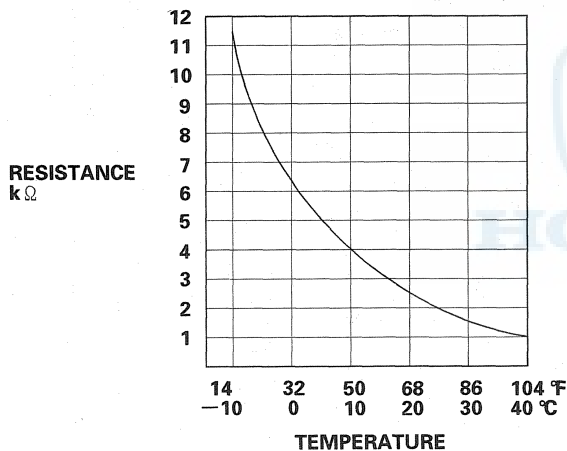
DTC indicator A: An Open in the In-car Temperature Sensor Circuit

1. Remove the in-car temperature sensor (see page 21-120).
2. Measure the resistance between the No. 1 and No. 2 terminals of the in-car temperature sensor. Check for a change in resistance by heating or cooling the sensor with a hair dryer.

IN-CAR TEMPERATURE SENSOR



Terminal side of male terminals



Is the resistance within the specifications shown on the graph?

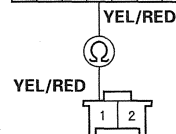
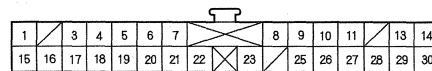
YES—Go to step 3.

NO—Replace the in-car temperature sensor. ■

3. Disconnect climate control unit connector B (30P).

4. Check for continuity between the No. 18 terminal of climate control unit connector B (30P) and the No. 1 terminal of the in-car temperature sensor 2P connector.

CLIMATE CONTROL UNIT CONNECTOR B (30P)
Wire side of female terminals



IN-CAR TEMPERATURE SENSOR 2P CONNECTOR
Wire side of female terminals

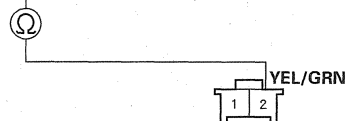
Is there continuity?

YES—Go to step 5.

NO—Repair open in the wire between the climate control unit and the in-car temperature sensor. ■

5. Check for continuity between the No. 3 terminal of climate control unit connector B (30P) and the No. 2 terminal of the in-car temperature sensor 2P connector.

CLIMATE CONTROL UNIT CONNECTOR B (30P)
Wire side of female terminals

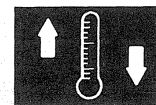


IN-CAR TEMPERATURE SENSOR 2P CONNECTOR
Wire side of female terminals

Is there continuity?

YES—Check for loose wires or poor connections at climate control unit connector B (30P) and at the in-car temperature sensor 2P connector. If the connections are good, substitute a known-good climate control unit, and recheck. If the symptom/indication goes away, replace the original climate control unit. ■

NO—Repair open in the wire between the climate control unit and the in-car temperature sensor. ■



DTC indicator B: A Short in the In-car Temperature Sensor Circuit

1. Remove the in-car temperature sensor (see page 21-120).
2. Test the in-car temperature sensor (see page 21-120).

Is the in-car temperature sensor OK?

YES—Go to step 3.

NO—Replace the in-car temperature sensor. ■

3. Disconnect climate control unit connector B (30P).
4. Check for continuity between the No. 18 terminal of climate control unit connector B (30P) and body ground.

CLIMATE CONTROL UNIT CONNECTOR B (30P)



YEL/RED



Wire side of female terminals

Is there continuity?

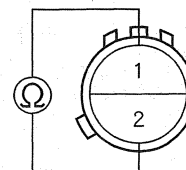
YES—Repair short to body ground in the wire between the climate control unit and the in-car temperature sensor. ■

NO—Substitute a known-good climate control unit, and recheck. If the symptom/indication goes away, replace the original climate control unit. ■

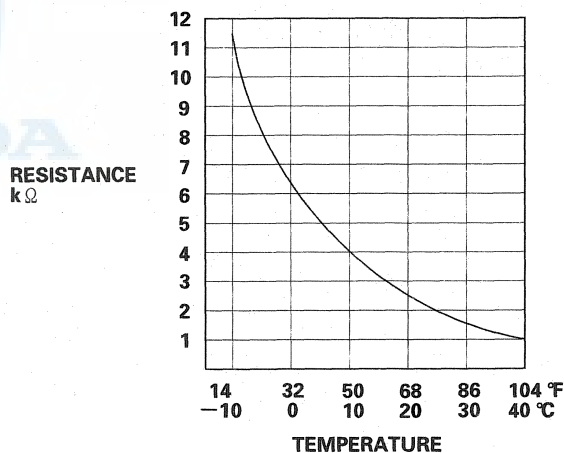
DTC indicator C: An Open in the Outside Air Temperature Sensor Circuit

1. Remove the outside air temperature sensor (see page 21-121).
2. Measure the resistance between the No. 1 and No. 2 terminals of the outside air temperature sensor. Dip the sensor in ice water, and measure the resistance. Then pour warm water on the sensor, and check for a change in resistance.

OUTSIDE AIR TEMPERATURE SENSOR



Terminal side of male terminals



Is the resistance within the specifications shown on the graph?

YES—Go to step 3.

NO—Replace the outside air temperature sensor. ■

3. Disconnect climate control unit connector B (30P).

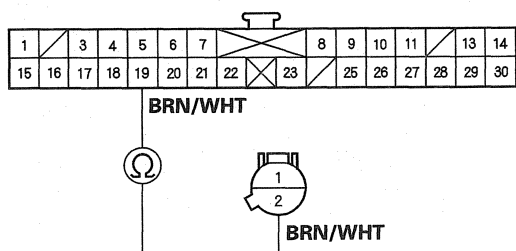
(cont'd)

Climate Control

DTC Troubleshooting (cont'd)

4. Check for continuity between the No. 19 terminal of climate control unit connector B (30P) and the No. 2 terminal of the outside air temperature sensor 2P connector.

CLIMATE CONTROL UNIT CONNECTOR B (30P)
Wire side of female terminals



OUTSIDE AIR TEMPERATURE SENSOR 2P CONNECTOR
Wire side of female terminals

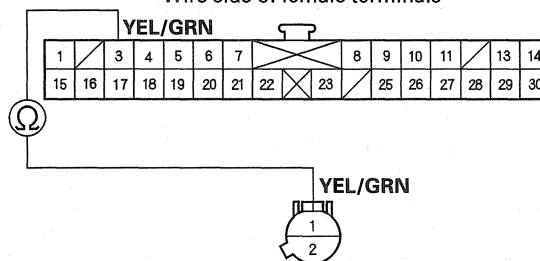
Is there continuity?

YES—Go to step 5.

NO—Repair open in the wire between the climate control unit and the outside air temperature sensor. ■

5. Check for continuity between the No. 3 terminal of climate control unit connector B (30P) and the No. 1 terminal of the outside air temperature sensor 2P connector.

CLIMATE CONTROL UNIT CONNECTOR B (30P)
Wire side of female terminals

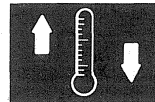


OUTSIDE AIR TEMPERATURE SENSOR 2P CONNECTOR
Wire side of female terminals

Is there continuity?

YES—Check for loose wires or poor connections at climate control unit connector B (30P) and at the outside air temperature sensor 2P connector. If the connections are good, substitute a known-good climate control unit, and recheck. If the symptom/indication goes away, replace the original climate control unit. ■

NO—Repair open in the wire between the climate control unit and the outside air temperature sensor. ■



DTC indicator D: A Short in the Outside Air Temperature Sensor Circuit

1. Remove the outside air temperature sensor (see page 21-121).
2. Test the outside air temperature sensor (see page 21-121).

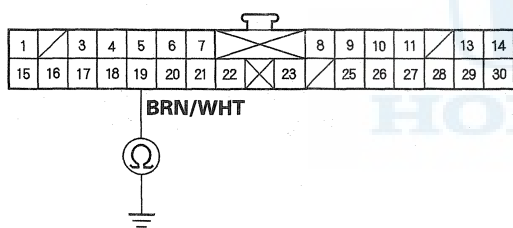
Is the rear outside air temperature sensor OK?

YES—Go to step 3.

NO—Replace the outside air temperature sensor. ■

3. Disconnect climate control unit connector B (30P), and gauge control module connector B (36P).
4. Check for continuity between the No. 19 terminal of climate control unit connector B (30P) and body ground.

CLIMATE CONTROL UNIT CONNECTOR B (30P)



Wire side of female terminals

Is there continuity?

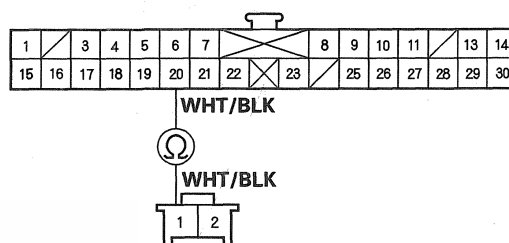
YES—Repair short to body ground in the wire between the climate control unit, the gauge control module, and the outside air temperature sensor. ■

NO—Substitute a known-good climate control unit, and recheck. If the symptom/indication goes away, replace the original climate control unit. ■

DTC indicator E: An Open in the Sunlight Sensor Circuit

1. Disconnect the sunlight sensor 2P connector.
2. Disconnect climate control unit connector B (30P).
3. Check for continuity between the No. 20 terminal of climate control unit connector B (30P) and the No. 1 terminal of the sunlight sensor 2P connector.

CLIMATE CONTROL UNIT CONNECTOR B (30P)
Wire side of female terminals



SUNLIGHT SENSOR 2P CONNECTOR
Wire side of female terminals

Is there continuity?

YES—Go to step 4.

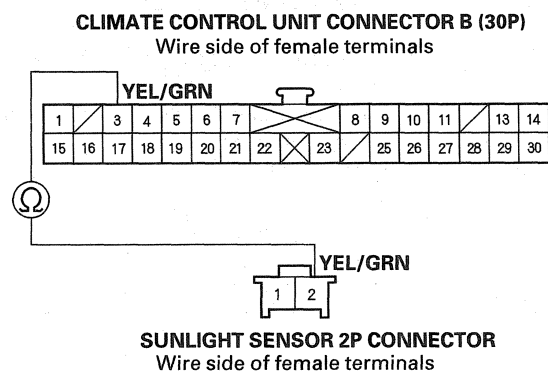
NO—Repair open in the wire between the climate control unit and the sunlight sensor. ■

(cont'd)

Climate Control

DTC Troubleshooting (cont'd)

4. Check for continuity between the No. 3 terminal of climate control unit connector B (30P) and the No. 2 terminal of the sunlight sensor 2P connector.



Is there continuity?

YES—Go to step 5.

NO—Repair open in the wire between the climate control unit and the sunlight sensor. ■

5. Reconnect the sunlight sensor 2P connector.
6. Reconnect climate control unit connector B (30P).
7. Test the sunlight sensor (see page 21-122).

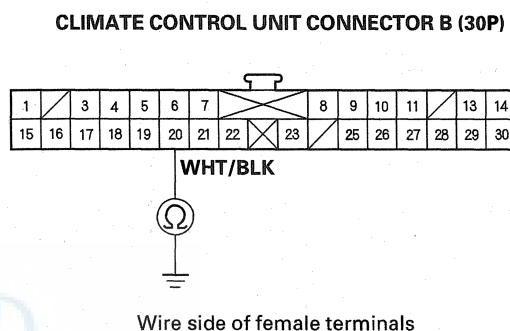
Is the sunlight sensor OK?

YES—Check for loose wires or poor connections at climate control unit connector B (30P) and at the sunlight sensor 2P connector. If the connections are good, substitute a known-good climate control unit, and recheck. If the symptom/indication goes away, replace the original climate control unit. ■

NO—Replace the sunlight sensor. ■

DTC indicator F: A Short in the Sunlight Sensor Circuit

1. Disconnect the sunlight sensor 2P connector.
2. Disconnect climate control unit connector B (30P).
3. Check for continuity between the No. 20 terminal of climate control unit connector B (30P) and body ground.



Is there continuity?

YES—Repair short to body ground in the wire between the climate control unit and the sunlight sensor. ■

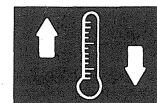
NO—Go to step 4.

4. Reconnect the sunlight sensor 2P connector.
5. Reconnect climate control unit connector B (30P).
6. Test the sunlight sensor (see page 21-122).

Is the sunlight sensor OK?

YES—Substitute a known-good climate control unit, and recheck. If the symptom/indication goes away, replace the original climate control unit. ■

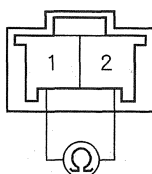
NO—Replace the sunlight sensor. ■



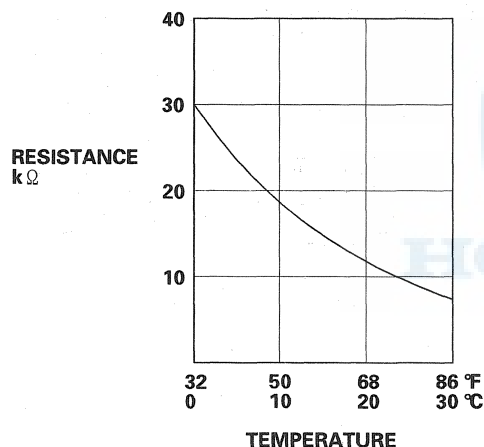
DTC indicator G: An Open in the Evaporator Temperature Sensor Circuit

1. Disconnect the evaporator temperature sensor 2P connector.
2. Measure the resistance between the No. 1 and No. 2 terminals of the evaporator temperature sensor.

EVAPORATOR TEMPERATURE SENSOR



Terminal side of male terminals



Is the resistance within the specifications shown on the graph?

YES—Go to step 3.


NO—Replace the evaporator temperature sensor. ■

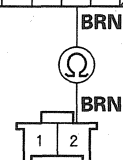
3. Disconnect climate control unit connector B (30P).

4. Check for continuity between the No. 21 terminal of climate control unit connector B (30P) and the No. 2 terminal of the evaporator temperature sensor 2P connector.

CLIMATE CONTROL UNIT CONNECTOR B (30P)

Wire side of female terminals

																													
1	3	4	5	6	7			8	9	10	11		13			14													
15	16	17	18	19	20	21	22		23		25	26	27	28	29	30													



EVAPORATOR TEMPERATURE SENSOR 2P CONNECTOR

Wire side of female terminals

Is there continuity?

YES—Go to step 5.

NO—Repair open in the wire between the climate control unit and the evaporator temperature sensor. ■

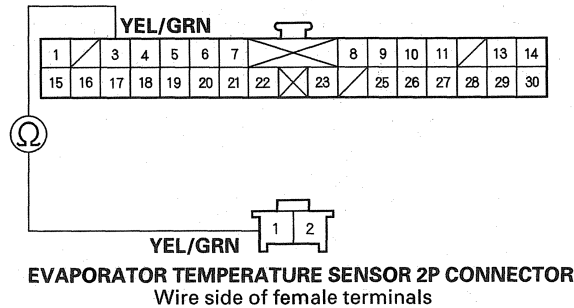
(cont'd)

Climate Control

DTC Troubleshooting (cont'd)

- Check for continuity between the No. 3 terminal of climate control unit connector B (30P) and the No. 1 terminal of the evaporator temperature sensor 2P connector.

CLIMATE CONTROL UNIT CONNECTOR B (30P)
Wire side of female terminals



Is there continuity?

YES—Check for loose wires or poor connections at climate control unit connector B (30P) and at the evaporator temperature sensor 2P connector. If the connections are good, substitute a known-good climate control unit, and recheck. If the symptom/indication goes away, replace the original climate control unit. ■

NO—Repair open in the wire between the climate control unit and the evaporator temperature sensor. ■

DTC indicator H: A Short in the Evaporator Temperature Sensor Circuit

- Disconnect the evaporator temperature sensor 2P connector.
- Test the evaporator temperature sensor (see page 21-48).

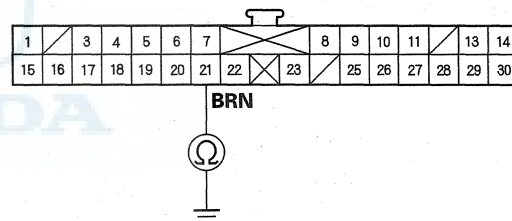
Is the rear evaporator temperature sensor OK?

YES—Go to step 3.

NO—Replace the evaporator temperature sensor. ■

- Disconnect climate control unit connector B (30P).
- Check for continuity between the No. 21 terminal of climate control unit connector B (30P) and body ground.

CLIMATE CONTROL UNIT CONNECTOR B (30P)

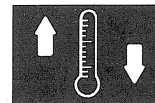


Wire side of female terminals

Is there continuity?

YES—Repair short to body ground in the wire between the climate control unit and the evaporator temperature sensor. ■

NO—Substitute a known-good climate control unit, and recheck. If the symptom/indication goes away, replace the original climate control unit. ■



DTC indicator I: An Open in the Front Air Mix Control Motor Circuit

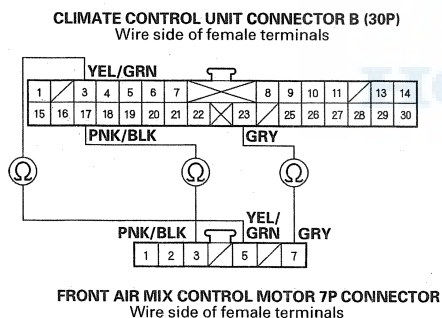
1. Test the front air mix control motor (see page 21-49).

Is the front air mix control motor OK?

YES—Go to step 2.

NO—Replace the front air mix control motor. ■

2. Disconnect the front air mix control motor 7P connector.
3. Disconnect climate control unit connector B (30P), and gauge control module connector B (36P).
4. Check for continuity between the following terminals of climate control unit connector B (30P) and the front air mix control motor 7P connector.
 30P: 7P:
 No. 3 No. 5
 No. 17 No. 3
 No. 23 No. 7



Is there continuity?

YES—Check for loose wires or poor connections at climate control unit connector B (30P) and at the front air mix control motor 7P connector. If the connections are good, substitute a known-good front air mix control motor, and recheck. If the symptom/indication goes away, replace the original front air mix control motor. If the symptom/indication continues, substitute a known-good climate control unit, and recheck. If the symptom/indication goes away, replace the original climate control unit. ■

NO—Repair open in the wire(s) between the climate control unit, the gauge control module, and the front air mix control motor. ■

DTC indicator J: A Short in the Front Air Mix Control Motor Circuit

1. Test the front air mix control motor (see page 21-49).

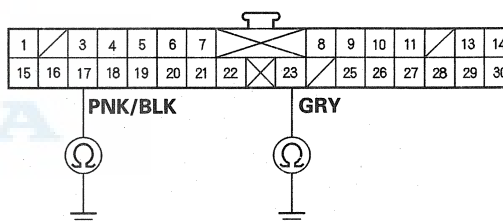
Is the front air mix control motor OK?

YES—Go to step 2.

NO—Replace the front air mix control motor. ■

2. Disconnect the front air mix control motor 7P connector.
3. Disconnect climate control unit connector B (30P), and gauge control module connector B (36P).
4. Check for continuity between body ground and climate control unit connector B (30P) terminals No. 17 and No. 23 individually.

CLIMATE CONTROL UNIT CONNECTOR B (30P)



Wire side of female terminals

Is there continuity?

YES—Repair short to body ground in the wire(s) between the climate control unit, the gauge control module, and the front air mix control motor. ■

NO—Go to step 5.

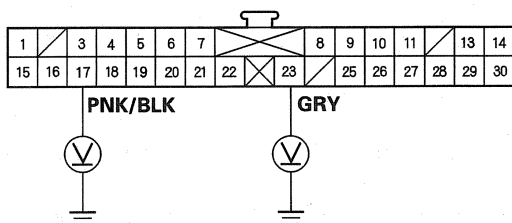
(cont'd)

Climate Control

DTC Troubleshooting (cont'd)

5. Turn the ignition switch ON (II), and check the same terminals for voltage.

CLIMATE CONTROL UNIT CONNECTOR B (30P)



Wire side of female terminals

Is there any voltage?

YES—Repair short to power in the wire(s) between the climate control unit, the gauge control module, and the front air mix control motor. This short may also damage the climate control unit. Repair the short to power before replacing the climate control unit. ■

NO—Substitute a known-good front air mix control motor, and recheck. If the symptom/indication goes away, replace the original front air mix control motor. If the symptom/indication continues, substitute a known-good climate control unit, and recheck. If the symptom/indication goes away, replace the original climate control unit. ■

DTC indicator K: A Problem in the Front Air Mix Control Linkage, Door, or Motor

1. Test the front air mix control motor (see page 21-49).

Is the front air mix control motor OK?

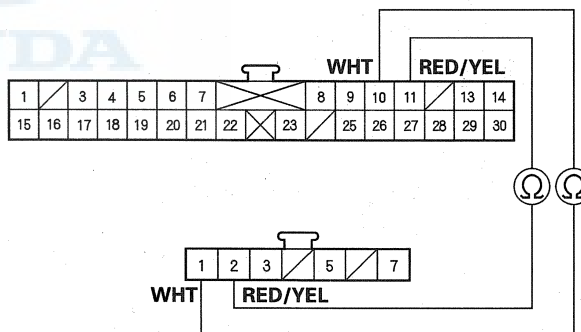
YES—Go to step 2.

NO—Replace the front air mix control motor, or repair the linkage and doors. ■

2. Disconnect the front air mix control motor 7P connector.
3. Disconnect climate control unit connector B (30P).
4. Check for continuity between the following terminals of climate control unit connector B (30P) and the front air mix control motor 7P connector.
30P: 7P:
No. 10 No. 1
No. 11 No. 2

CLIMATE CONTROL UNIT CONNECTOR B (30P)

Wire side of female terminals



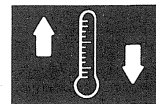
FRONT AIR MIX CONTROL MOTOR 7P CONNECTOR

Wire side of female terminals

Is there continuity?

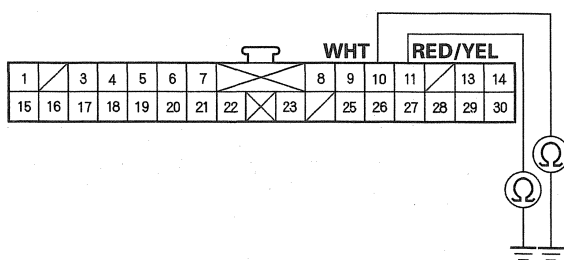
YES—Go to step 5.

NO—Repair open in the wire(s) between the climate control unit and the front air mix control motor. ■



5. Check for continuity between body ground and climate control unit connector B (30P) terminals No. 10 and No. 11 individually.

CLIMATE CONTROL UNIT CONNECTOR B (30P)



Wire side of female terminals

Is there continuity?

YES—Repair short to body ground in the wire(s) between the climate control unit and the front air mix control motor. ■

NO—Substitute a known-good climate control unit, and recheck. If the symptom/indication goes away, replace the original climate control unit. ■

DTC indicator L: An Open or Short in the Front Mode Control Motor Circuit

1. Test the front mode control motor (see page 21-50).

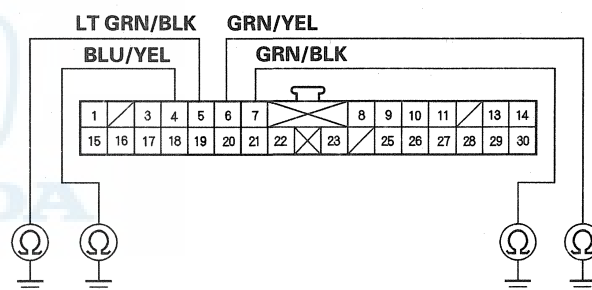
Is the front mode control motor OK?

YES—Go to step 2.

NO—Replace the front mode control motor. ■

2. Disconnect the front mode control motor 7P connector.
3. Disconnect climate control unit connector B (30P).
4. Check for continuity between body ground and climate control unit connector B (30P) terminals No. 4, 5, 6, and 7 individually.

CLIMATE CONTROL UNIT CONNECTOR B (30P)



Wire side of female terminals

Is there continuity?

YES—Repair short to body ground in the wire(s) between the climate control unit and the front mode control motor. ■

NO—Go to step 5.

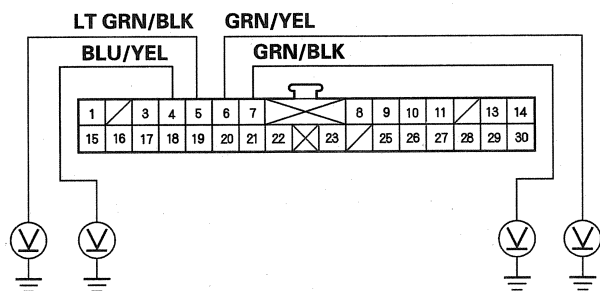
(cont'd)

Climate Control

DTC Troubleshooting (cont'd)

5. Turn the ignition switch ON (II), and check the same terminals for voltage.

CLIMATE CONTROL UNIT CONNECTOR B (30P)



Wire side of female terminals

Is there any voltage?

YES—Repair short to power in the wire(s) between the climate control unit and the front mode control motor. This short may also damage the climate control unit. Repair the short to power before replacing the climate control unit. ■

NO—Go to step 6.

6. Turn the ignition switch OFF, and check for continuity between the following terminals of climate control unit connector B (30P) and the front mode control motor 7P connector.

30P: 7P:

No. 3 No. 7

No. 4 No. 3

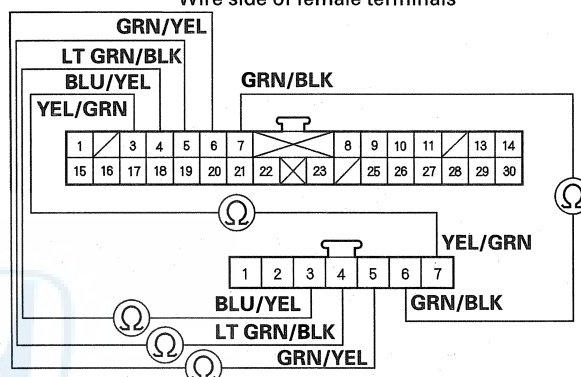
No. 5 No. 4

No. 6 No. 5

No. 7 No. 6

CLIMATE CONTROL UNIT CONNECTOR B (30P)

Wire side of female terminals



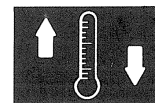
FRONT MODE CONTROL MOTOR 7P CONNECTOR

Wire side of female terminals

Is there continuity?

YES—Check for loose wires or poor connections at climate control unit connector B (30P) and at the front mode control motor 7P connector. If the connections are good, substitute a known-good front mode control motor, and recheck. If the symptom/indication goes away, replace the original front mode control motor. If the symptom/indication continues, substitute a known-good climate control unit, and recheck. If the symptom/indication goes away, replace the original climate control unit. ■

NO—Repair open in the wire(s) between the climate control unit and the front mode control motor. ■



DTC indicator M: A Problem in the Front Mode Control Linkage, Doors, or Motor

1. Test the front mode control motor (see page 21-50).

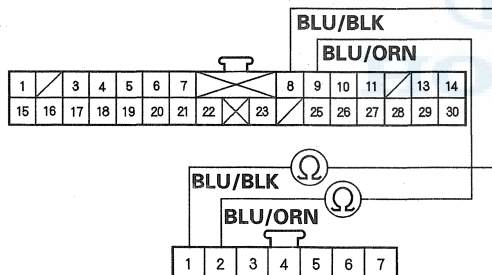
Is the front mode control motor OK?

YES—Go to step 2.

NO—Replace the front mode control motor, or repair the linkage and doors. ■

2. Disconnect the front mode control motor 7P connector.
3. Disconnect climate control unit connector B (30P).
4. Check for continuity between the following terminals of climate control unit connector B (30P) and the front mode control motor 7P connector.
 30P: 7P:
 No. 8 No. 1
 No. 9 No. 2

CLIMATE CONTROL UNIT CONNECTOR B (30P)
Wire side of female terminals



FRONT MODE CONTROL MOTOR 7P CONNECTOR
Wire side of female terminals

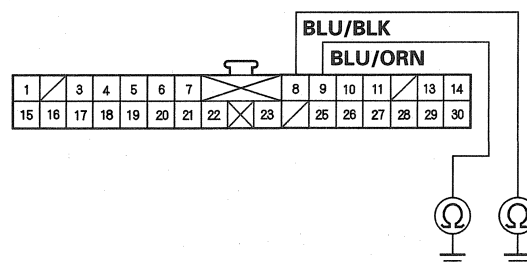
Is there continuity?

YES—Go to step 5.

NO—Repair open in the wire(s) between the climate control unit and the front mode control motor. ■

5. Check for continuity between body ground and climate control unit connector B (30P) terminals No. 8 and No. 9 individually.

CLIMATE CONTROL UNIT CONNECTOR B (30P)



Wire side of female terminals

Is there continuity?

YES—Repair short to body ground in the wire(s) between the climate control unit and the front mode control motor. ■

NO—Substitute a known-good climate control unit, and recheck. If the symptom/indication goes away, replace the original climate control unit. ■

Climate Control

DTC Troubleshooting (cont'd)

DTC indicator N: A Problem in the Front Blower Motor Circuit

1. Check the No. 56 (40 A) fuse in the under-hood fuse/relay box, and the No. 3 (7.5 A) fuse in the driver's under-dash fuse/relay box.

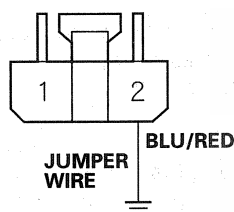
Are the fuses OK?

YES—Go to step 2.

NO—Replace the fuse(s), and recheck. ■

2. Connect the No. 2 terminal of the front blower motor 2P connector to body ground with a jumper wire.

FRONT BLOWER MOTOR 2P CONNECTOR



Wire side of female terminals

3. Turn the ignition switch ON (II).

Does the front blower motor run?

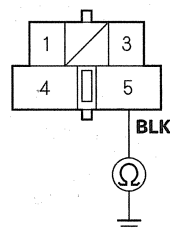
YES—Go to step 4.

NO—Go to step 17.

4. Turn the ignition switch OFF.
5. Disconnect the jumper wire.
6. Disconnect the front power transistor 5P connector.

7. Check for continuity between the No. 5 terminal of the front power transistor 5P connector and body ground.

FRONT POWER TRANSISTOR 5P CONNECTOR



Wire side of female terminals

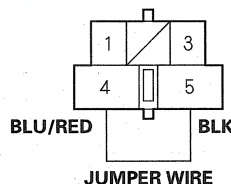
Is there continuity?

YES—Go to step 8.

NO—Check for an open in the wire between the front power transistor and body ground. If the wire is OK, check for poor ground at G401. ■

8. Connect the No. 4 and No. 5 terminals of the front power transistor 5P connector with a jumper wire.

FRONT POWER TRANSISTOR 5P CONNECTOR



Wire side of female terminals

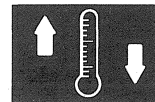
9. Turn the ignition switch ON (II).

Does the front blower motor run at high speed?

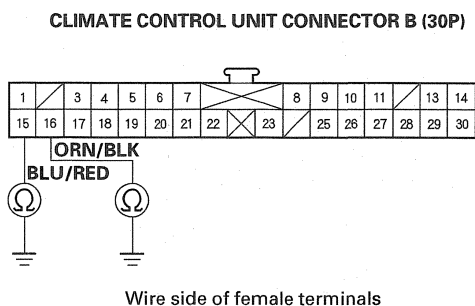
YES—Go to step 10.

NO—Repair open in the wire between the front power transistor and the front blower motor. ■

10. Turn the ignition switch OFF.
11. Disconnect the jumper wire.



12. Disconnect climate control unit connector B (30P).
13. Check for continuity between the No. 15 and No. 16 terminals of climate control unit connector B (30P) and body ground individually.

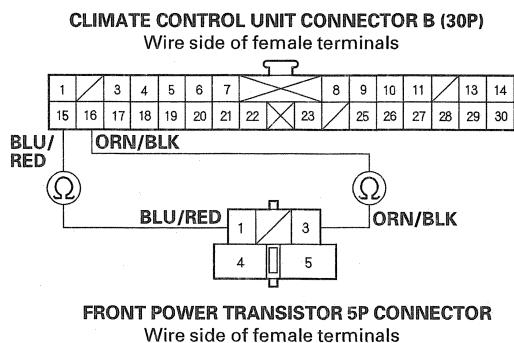


Is there continuity?

YES—Repair short to body ground in the wire(s) between the climate control unit and the front power transistor. ■

NO—Go to step 14.

14. Check for continuity between the following terminals of climate control unit connector B (30P) and front power transistor 5P connector.
- | | |
|--------|-------|
| 30P: | 5P: |
| No. 15 | No. 1 |
| No. 16 | No. 3 |



Is there continuity?

YES—Go to step 15.

NO—Repair open in the wire(s) between the climate control unit and the front power transistor. ■

15. Reconnect climate control unit connector B (30P).

16. Test the front power transistor (see page 21-48).

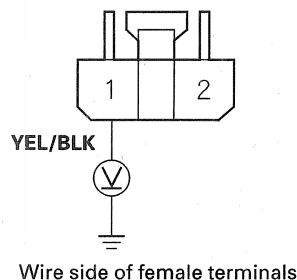
Is the front power transistor OK?

YES—Check for loose wires or poor connections at climate control unit connector B (30P) and at the front power transistor 5P connector. If the connections are good, substitute a known-good climate control unit, and recheck. If the symptom/indication goes away, replace the original climate control unit. ■

NO—Replace the front power transistor. ■

17. Measure the voltage between the No. 1 terminal of the front blower motor 2P connector and body ground.

FRONT BLOWER MOTOR 2P CONNECTOR



Is there battery voltage?

YES—Replace the front blower motor. ■

NO—Go to step 18.

18. Turn the ignition switch OFF.

19. Remove the front blower motor relay from the under-hood fuse/relay box, and test it (see page 22-83).

Is the relay OK?

YES—Go to step 20.

NO—Replace the front blower motor relay. ■

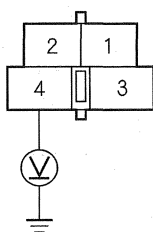
(cont'd)

Climate Control

DTC Troubleshooting (cont'd)

20. Measure the voltage between the No. 4 terminal of the front blower motor relay 4P socket and body ground.

FRONT BLOWER MOTOR RELAY 4P SOCKET



Terminal side of female terminals

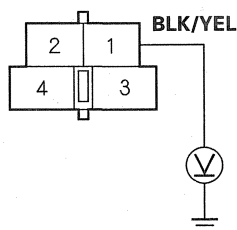
Is there battery voltage?

YES—Go to step 21.

NO—Replace the under-hood fuse/relay box. ■

21. Turn the ignition switch ON (II).
22. Measure the voltage between the No. 1 terminal of the front blower motor relay 4P socket and body ground.

FRONT BLOWER MOTOR RELAY 4P SOCKET



Terminal side of female terminals

Is there battery voltage?

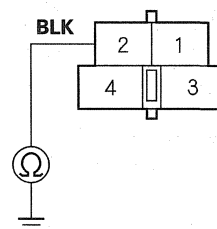
YES—Go to step 23.

NO—Repair open in the wire between the No. 3 (7.5 A) fuse in the driver's under-dash fuse/relay box and the front blower motor relay. ■

23. Turn the ignition switch OFF.

24. Check for continuity between the No. 2 terminal of the front blower motor relay 4P socket and body ground.

FRONT BLOWER MOTOR RELAY 4P SOCKET

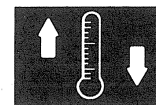


Terminal side of female terminals

Is there continuity?

YES—Repair open in the YEL/BLK wire between the front blower motor relay and the front blower motor. ■

NO—Check for an open in the wire between the front blower motor relay and body ground. If the wire is OK, check for poor ground at G201. ■



DTC 1: A Problem in the Rear Blower Motor Circuit

1. Check the No. 55 (30 A) fuse in the under-hood fuse/relay box, and the No. 3 (7.5 A) fuse in the driver's under-dash fuse/relay box.

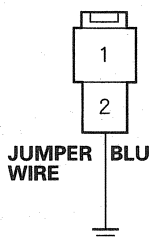
Are the fuses OK?

YES—Go to step 2.

NO—Replace the fuse(s), and recheck. ■

2. Connect the No. 2 terminal of the rear blower motor 2P connector to body ground with a jumper wire.

REAR BLOWER MOTOR 2P CONNECTOR



Wire side of female terminals

3. Turn the ignition switch ON (II).

Does the rear blower motor run?

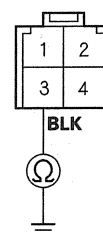
YES—Go to step 4.

NO—Go to step 25.

4. Turn the ignition switch OFF.
5. Disconnect the jumper wire.
6. Disconnect the rear power transistor 4P connector.

7. Check for continuity between the No. 3 terminal of the rear power transistor 4P connector and body ground.

REAR POWER TRANSISTOR 4P CONNECTOR



Wire side of female terminals

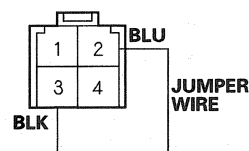
Is there continuity?

YES—Go to step 8.

NO—Check for an open in the wire between the rear power transistor and body ground. If the wire is OK, check for poor ground at G501. ■

8. Connect the No. 2 and No. 3 terminals of the rear power transistor 4P connector with a jumper wire.

REAR POWER TRANSISTOR 4P CONNECTOR



Wire side of female terminals

9. Turn the ignition switch ON (II).

Does the rear blower motor run at high speed?

YES—Go to step 10.

NO—Repair open in the wire between the rear power transistor and the rear blower motor. ■

10. Turn the ignition switch OFF.
11. Disconnect the jumper wire.

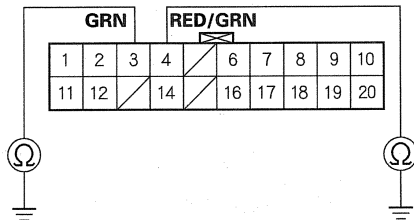
(cont'd)

Climate Control

DTC Troubleshooting (cont'd)

12. Disconnect climate control unit connector A (20P).
13. Check for continuity between the No. 3 and No. 4 terminals of climate control unit connector A (20P) and body ground individually.

CLIMATE CONTROL UNIT CONNECTOR A (20P)



Wire side of female terminals

Is there continuity?

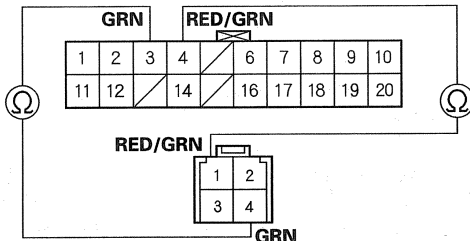
YES—Repair short to body ground in the wire(s) between the climate control unit and the rear power transistor. ■

NO—Go to step 14.

14. Check for continuity between the following terminals of climate control unit connector A (20P) and rear power transistor 4P connector.
- | | |
|-------|-------|
| 20P: | 4P: |
| No. 3 | No. 4 |
| No. 4 | No. 1 |

CLIMATE CONTROL UNIT CONNECTOR A (20P)

Wire side of female terminals



REAR POWER TRANSISTOR 4P CONNECTOR

Wire side of female terminals

Is there continuity?

YES—Go to step 15.

NO—Repair open in the wire(s) between the climate control unit and the rear power transistor. ■

15. Reconnect climate control unit connector A (20P).

16. Test the rear power transistor (see page 21-129).

Is the rear power transistor OK?

YES—Go to step 17.

NO—Replace the rear power transistor. ■

17. Disconnect the rear heater-A/C control switch 10P connector.

18. Test the rear heater-A/C control switch (see page 21-130).

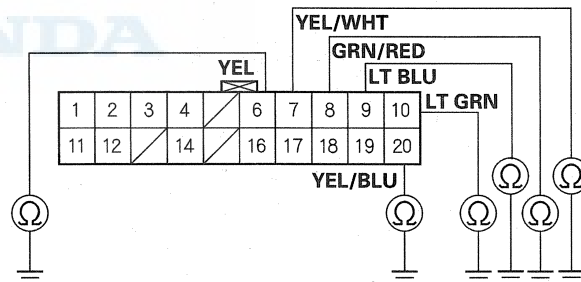
Is the rear heater-A/C control switch OK?

YES—Go to step 19.

NO—Replace the rear heater-A/C control switch. ■

19. Check for continuity between body ground and climate control unit connector A (20P) terminals No. 6, 7, 8, 9, 10, and 20 individually.

CLIMATE CONTROL UNIT CONNECTOR A (20P)



Wire side of female terminals

Is there continuity?

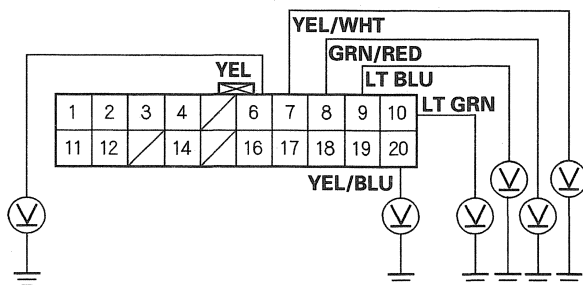
YES—Repair short to body ground in the wire(s) between the climate control unit and the rear heater-A/C control switch. ■

NO—Go to step 20.



20. Turn the ignition switch ON (II), and check the same terminals for voltage.

CLIMATE CONTROL UNIT CONNECTOR A (20P)



Wire side of female terminals

Is there any voltage?

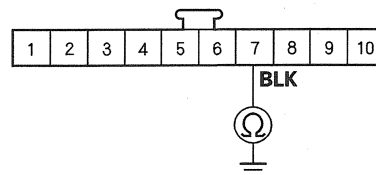
YES—Repair short to power in the wire(s) between the climate control unit and the rear heater-A/C control switch. This short may also damage the rear heater-A/C control switch. Repair the short to power before replacing the rear heater-A/C control switch. ■

NO—Go to step 21.

21. Turn the ignition switch OFF.

22. Check for continuity between the No. 7 terminal of the rear heater-A/C control switch 10P connector and body ground.

REAR HEATER-A/C CONTROL SWITCH 10P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Go to step 23.

NO—Check for an open in the wire between the rear heater-A/C control switch and body ground. If the wire is OK, check for poor ground at G501. ■

(cont'd)

Climate Control

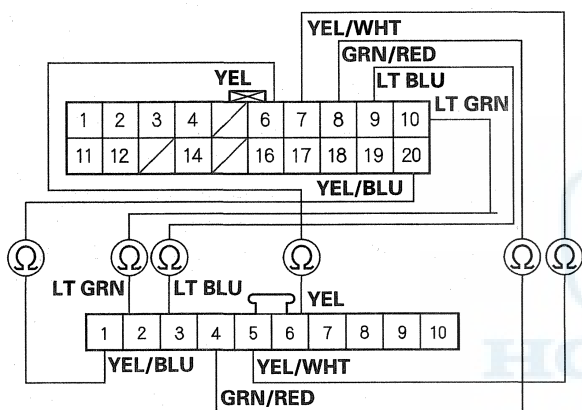
DTC Troubleshooting (cont'd)

23. Turn the ignition switch OFF.

24. Check for continuity between the following terminals of climate control unit connector A (20P) and the rear heater-A/C control switch 10P connector.

20P:	10P:
No. 6	No. 6
No. 7	No. 5
No. 8	No. 4
No. 9	No. 3
No. 10	No. 2
No. 20	No. 1

CLIMATE CONTROL UNIT CONNECTOR A (20P)
Wire side of female terminals



REAR HEATER-A/C CONTROL SWITCH 10P CONNECTOR
Wire side of female terminals

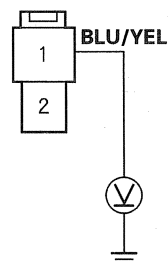
Is there continuity?

YES—Check for loose wires or poor connections at climate control unit connector A (20P) and at the rear heater-A/C control switch 10P connector. If the connections are good, substitute a known-good climate control unit, and recheck. If the symptom/indication goes away, replace the original climate control unit. ■

NO—Repair open in the wire(s) between the climate control unit and the rear heater-A/C control switch. ■

25. Measure the voltage between the No. 1 terminal of the rear blower motor 2P connector and body ground.

REAR BLOWER MOTOR 2P CONNECTOR

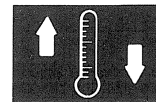


Wire side of female terminals

Is there battery voltage?

YES—Replace the rear blower motor (see page 21-131). ■

NO—Go to step 26.



26. Turn the ignition switch OFF.

27. Remove the rear blower motor relay from the left side of rear heater-A/C unit, and test it (see page 22-83).

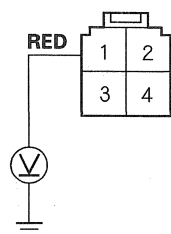
Is the relay OK?

YES—Go to step 28.

NO—Replace the rear blower motor relay. ■

28. Measure the voltage between the No. 1 terminal of the rear blower motor relay 4P connector and body ground.

REAR BLOWER MOTOR RELAY 4P CONNECTOR



Wire side of female terminals

Is there battery voltage?

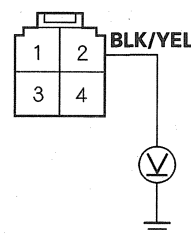
YES—Go to step 29.

NO—Repair open in the wire between the No. 55 (30 A) fuse in the under-hood fuse/relay box and the rear blower motor relay. ■

29. Turn the ignition switch ON (II).

30. Measure the voltage between the No. 2 terminal of the rear blower motor relay 4P connector and body ground.

REAR BLOWER MOTOR RELAY 4P CONNECTOR



Wire side of female terminals

Is there battery voltage?

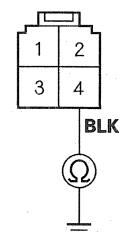
YES—Go to step 31.

NO—Repair open in the wire between the No. 3 (7.5 A) fuse in the driver's under-dash fuse/relay box and the rear blower motor relay. ■

31. Turn the ignition switch OFF.

32. Check for continuity between the No. 4 terminal of the rear blower motor relay 4P connector and body ground.

REAR BLOWER MOTOR RELAY 4P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair open in the BLU/YEL wire between the rear blower motor relay and the rear blower motor. ■

NO—Check for an open in the wire between the rear blower motor relay and body ground. If the wire is OK, check for poor ground at G501. ■

Climate Control

DTC Troubleshooting (cont'd)

DTC 2: A Problem in the Rear Air Mix Control Linkage, Door, or Motor

1. Test the rear air mix control motor (see page 21-126).

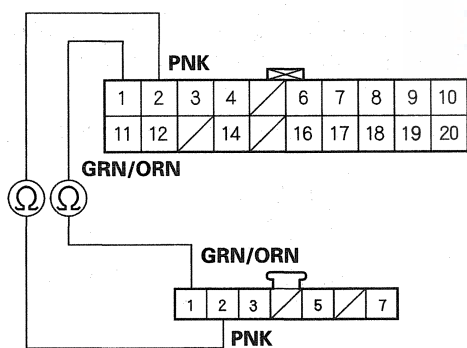
Is the rear air mix control motor OK?

YES—Go to step 2.

NO—Replace the rear air mix control motor (see page 21-126), or repair the rear air mix control linkage or door. ■

2. Disconnect the rear air mix control motor 7P connector.
3. Disconnect climate control unit connector A (20P).
4. Check for continuity between the following terminals of climate control unit connector A (20P) and the rear air mix control motor 7P connector.
20P: 7P:
No. 1 No. 1
No. 2 No. 2

CLIMATE CONTROL UNIT CONNECTOR A (20P)
Wire side of female terminals



REAR AIR MIX CONTROL MOTOR 7P CONNECTOR
Wire side of female terminals

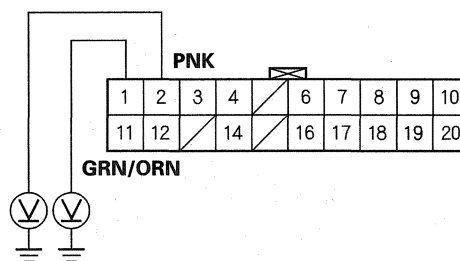
Is there continuity?

YES—Go to step 5.

NO—Repair open in the wire(s) between the climate control unit and the rear air mix control motor. ■

5. Check for continuity between body ground and climate control unit connector A (20P) terminals No. 1 and No. 2 individually.

CLIMATE CONTROL UNIT CONNECTOR A (20P)

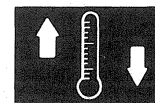


Wire side of female terminals

Is there continuity?

YES—Repair short to body ground in the wire(s) between the climate control unit and the rear air mix control motor. ■

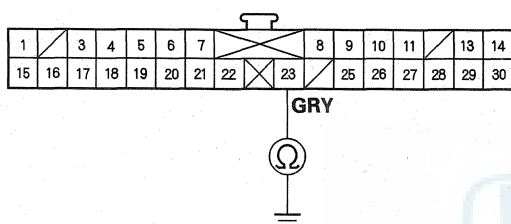
NO—Substitute a known-good climate control unit, and recheck. If the symptom/indication goes away, replace the original climate control unit. ■



DTC 3: A Short in the Rear Air Mix Control Motor Circuit

1. Disconnect the rear air mix control motor 7P connector.
2. Disconnect climate control unit connector B (30P), and gauge control module connector B (36P).
3. Check for continuity between body ground and climate control unit connector B (30P) terminal No. 23.

CLIMATE CONTROL UNIT CONNECTOR B (30P)



Wire side of female terminals

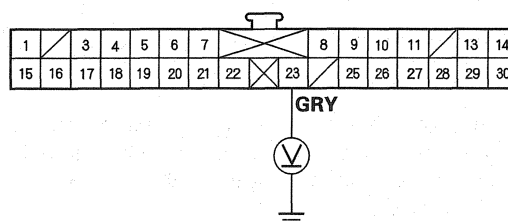
Is there continuity?

YES—Repair short to body ground in the wire(s) between the climate control unit, the gauge control module, and the rear air mix control motor. ■

NO—Go to step 4.

4. Turn the ignition switch ON (II), and check the same terminal for voltage.

CLIMATE CONTROL UNIT CONNECTOR B (30P)



Wire side of female terminals

Is there any voltage?

YES—Repair short to power in the wire(s) between the climate control unit, the gauge control module, and the rear air mix control motor. This short may also damage the climate control unit. Repair the short to power before replacing the climate control unit. ■

NO—Substitute a known-good climate control unit, and recheck. If the symptom/indication goes away, replace the original climate control unit. ■

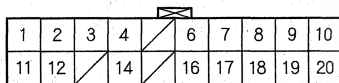
Climate Control

DTC Troubleshooting (cont'd)

DTC 4: An Open in the Rear Air Mix Control Motor Circuit

1. Disconnect the rear air mix control motor 7P connector.
 2. Disconnect climate control unit connector A (20P) and B (30P).
 3. Check for continuity between following terminals of climate control unit connector A (20P) and B (30P) and the rear air mix control motor 7P connector.
- 20P: 7P:
No. 14 No. 3
30P: 7P:
No. 3 No. 5
No. 23 No. 7

CLIMATE CONTROL UNIT CONNECTOR A (20P)
Wire side of female terminals



BRN/YEL

REAR AIR MIX CONTROL
MOTOR 7P CONNECTOR

Wire side of female terminals

BRN/YEL

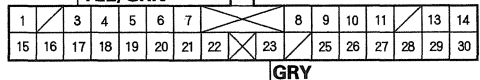
1 2 3 5 7

YEL/GRN

GRY



YEL/GRN



GRY

CLIMATE CONTROL UNIT CONNECTOR B (30P)
Wire side of female terminals

Is there continuity?

YES—Check for loose wires or poor connections at climate control unit connectors A (20P) and B (30P) and at the rear air mix control motor 7P connector. If the connections are good, substitute a known-good rear air mix control motor, and recheck. If the symptom/indication goes away, replace the original rear air mix control motor. If the symptom continues, substitute a known-good climate control unit, and recheck. If the symptom/indication goes away, replace the original climate control unit. ■

NO—Repair open in the wire(s) between the climate control unit and the rear air mix control motor. ■

Recirculation Control Motor Circuit Troubleshooting

1. Check the No. 3 (7.5 A) fuse in the driver's under-dash fuse/relay box.

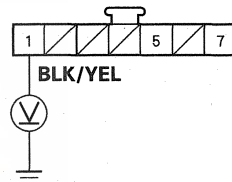
Is the fuse OK?

YES—Go to step 2.

NO—Replace the fuse, and recheck. ■

2. Disconnect the recirculation control motor 7P connector.
3. Turn the ignition switch ON (II).
4. Measure the voltage between the No. 1 terminal of the recirculation control motor 7P connector and body ground.

RECIRCULATION CONTROL MOTOR
7P CONNECTOR



BLK/YEL

Wire side of female terminals

Is there battery voltage?

YES—Go to step 5.

NO—Repair open in the wire between the No. 3 (7.5 A) fuse in the driver's under-dash fuse/relay box and the recirculation control motor. ■

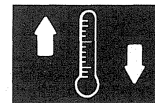
5. Turn the ignition switch OFF.
6. Test the recirculation control motor (see page 21-51).

Is the recirculation control motor OK?

YES—Go to step 7.

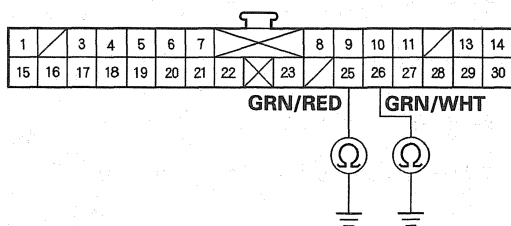
NO—Replace the recirculation control motor. ■

7. Disconnect climate control unit connector B (30P).



8. Check for continuity between the No. 25 and No. 26 terminals of climate control unit connector B (30P) and body ground individually.

CLIMATE CONTROL UNIT CONNECTOR B (30P)



Wire side of female terminals

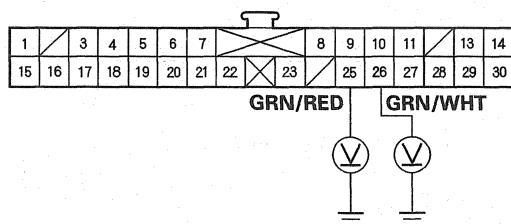
Is there continuity?

YES—Repair short to body ground in the wire(s) between the climate control unit and the recirculation control motor. ■

NO—Go to step 9.

9. Turn the ignition switch ON (II), and check the same terminals for voltage.

CLIMATE CONTROL UNIT CONNECTOR B (30P)



Wire side of female terminals

Is there any voltage?

YES—Repair short to power in the wire(s) between the climate control unit and the recirculation control motor. This short may also damage the climate control unit. Repair the short to power before replacing the climate control unit. ■

NO—Go to step 10.

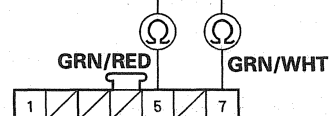
10. Turn the ignition switch OFF.

11. Check for continuity between the following terminals of climate control unit connector B (30P) and the recirculation control motor 7P connector.

30P: 7P:
No. 25 No. 5
No. 26 No. 7

CLIMATE CONTROL UNIT CONNECTOR B (30P)

Wire side of female terminals



RECIRCULATION CONTROL MOTOR 7P CONNECTOR

Wire side of female terminals

Is there continuity?

YES—Check for loose wires or poor connections at climate control unit connector B (30P) and at recirculation control motor 7P connector. If the connections are good, substitute a known-good climate control unit, and recheck. If the symptom/indication goes away, replace the original climate control unit. ■

NO—Repair open in the wire(s) between the climate control unit and the recirculation control motor. ■

Climate Control

ECT Sensor 1 Circuit Troubleshooting

NOTE: Before performing symptom troubleshooting, check for powertrain DTC (see page 11-3).

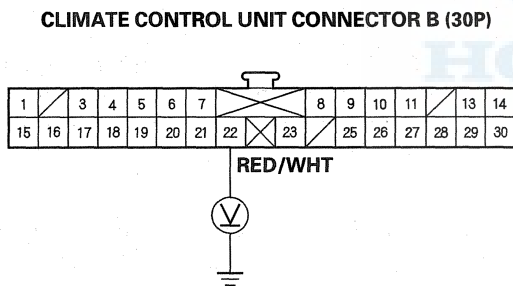
1. Check the malfunction indicator lamp (MIL).

Does the malfunction indicator lamp come on?

YES—Refer to the fuel and emissions systems DTCs (see page 11-3).

NO—Go to step 2.

2. Turn the ignition switch OFF.
3. Disconnect the ECT sensor 1 2P connector.
4. Disconnect climate control unit connector B (30P).
5. Turn the ignition switch ON (II).
6. Measure the voltage between the No. 22 terminal of climate control unit connector B (30P) and body ground.



Is there about 5 V?

YES—Check for loose wires or poor connections at climate control unit connector B (30P) and at the ECT sensor 1 2P connector. If the connections are good, substitute a known-good climate control unit, and recheck. If the symptom/indication goes away, replace the original climate control unit. ■

NO—Repair open in the wire between the climate control unit and the ECT sensor 1. ■

Climate Control Power and Ground Circuit Troubleshooting

NOTE: Before performing symptom troubleshooting, check for powertrain DTC (see page 11-3).

1. Check the No. 3 (7.5 A) fuse in the driver's under-dash fuse/relay box.

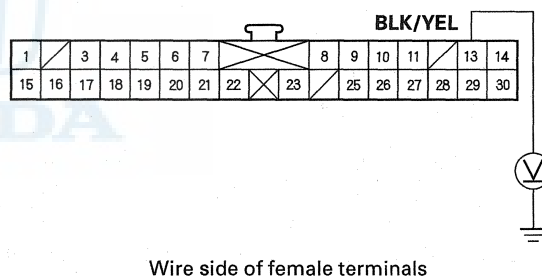
Is the fuse OK?

YES—Go to step 2.

NO—Replace the fuse, and recheck. ■

2. Disconnect climate control unit connector B (30P).
3. Turn the ignition switch ON (II).
4. Measure the voltage between the No. 13 terminal of climate control unit connector B (30P) and body ground.

CLIMATE CONTROL UNIT CONNECTOR B (30P)

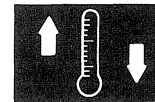


Is there battery voltage?

YES—Go to step 5.

NO—Repair open in the wire between the No. 3 (7.5 A) fuse in the driver's under-dash fuse/relay box and the climate control unit. ■

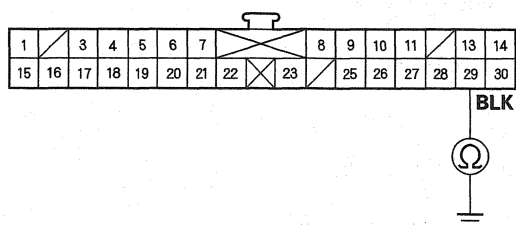
5. Turn the ignition switch OFF.



Navigation Communication Line Circuit Troubleshooting

6. Check for continuity between the No. 29 terminal of climate control unit connector B (30P) and body ground.

CLIMATE CONTROL UNIT CONNECTOR B (30P)



Wire side of female terminals

Is there continuity?

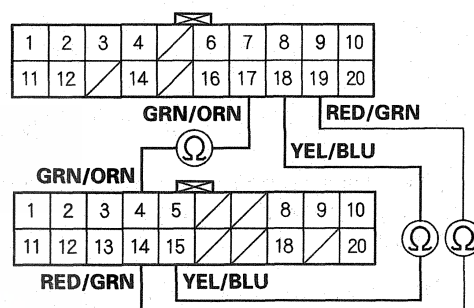
YES—Check for loose wires or poor connections at climate control unit connector B (30P). If the connections are good, substitute a known-good climate control unit, and recheck. If the symptom/indication goes away, replace the original climate control unit. ■

NO—Check for an open in the wire between the climate control unit and body ground. If the wire is OK, check for poor ground at G401. ■

1. Disconnect navigation unit connector A (20P).
 2. Disconnect climate control unit connector A (20P).
 3. Check for continuity between the following terminals of climate control unit connector A (20P) and navigation unit connector A (20P).
- | | |
|--------|--------|
| 20P | 20P |
| No. 17 | No. 4 |
| No. 18 | No. 15 |
| No. 19 | No. 14 |

CLIMATE CONTROL UNIT CONNECTOR A (20P)

Wire side of female terminals



NAVIGATION UNIT CONNECTOR A (20P)

Wire side of female terminals

Is there continuity?

YES—Go to step 4.

NO—Repair open in the wire(s) between the climate control unit and the navigation unit. ■

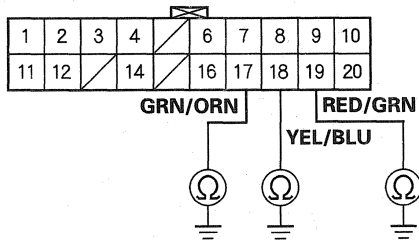
(cont'd)

Climate Control

Navigation Communication Line Circuit Troubleshooting (cont'd)

4. Check for continuity between body ground and climate control unit connector A (20P) terminals No. 17, 18, and 19 individually.

CLIMATE CONTROL UNIT CONNECTOR A (20P)



Wire side of female terminals

Is there continuity?

YES—Repair short to body ground in the wire(s) between the climate control unit and the navigation unit. ■

NO—Check for loose wire or poor connections at climate control unit connector A (20P) and at the navigation unit connector A (20P). If the connections are good, substitute a known-good climate control unit and/or navigation unit, and recheck. If the symptom/indication goes away, replace the original climate control unit and/or navigation unit. ■

Rear Mode Control Motor Circuit Troubleshooting

NOTE: Before performing symptom troubleshooting, check for powertrain DTC (see page 11-3).

1. Check the No. 3 (7.5 A) fuse in the driver's under-dash fuse/relay box.

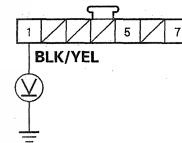
Is the fuse OK?

YES—Go to step 2.

NO—Replace the fuse, and recheck. ■

2. Turn the ignition switch ON (II).
3. Measure the voltage between the No. 1 terminal of the rear mode control motor 7P connector and body ground.

REAR MODE CONTROL MOTOR 7P CONNECTOR



Wire side of female terminals

Is there battery voltage?

YES—Go to step 4.

NO—Repair open in the wire between the No. 3 (7.5 A) fuse in the driver's under-dash fuse/relay box and the rear mode control motor. ■

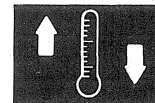
4. Turn the ignition switch OFF.
5. Disconnect the rear mode control motor 7P connector.
6. Test the rear mode control motor (see page 21-127).

Is the rear mode control motor OK?

YES—Go to step 7.

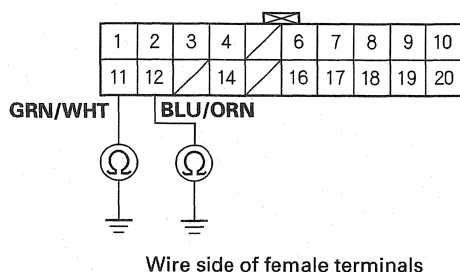
NO—Replace the rear mode control motor. ■

7. Disconnect climate control unit connector A (20P).



8. Check for continuity between the No. 11 and No. 12 terminals of climate control unit connector A (20P) and body ground individually.

CLIMATE CONTROL UNIT CONNECTOR A (20P)



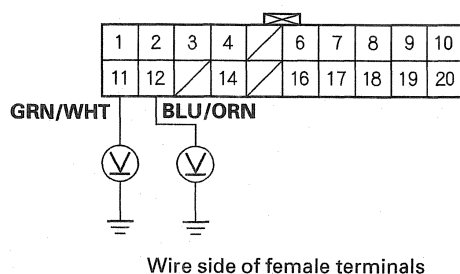
Is there continuity?

YES—Repair short to body ground in the wire(s) between the climate control unit and the rear mode control motor. ■

NO—Go to step 9.

9. Turn the ignition switch ON (II), and check the same terminals for voltage.

CLIMATE CONTROL UNIT CONNECTOR A (20P)



Is there any voltage?

YES—Repair short to power in the wire(s) between the climate control unit and the rear mode control motor. This short may also damage the climate control unit. Repair the short to power before replacing the climate control unit. ■

NO—Go to step 10.

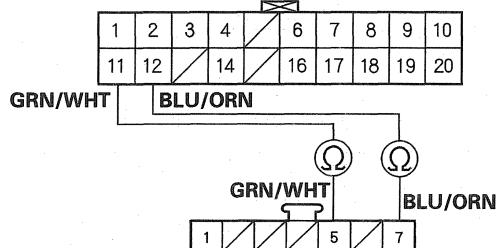
10. Turn the ignition switch OFF.

11. Check for continuity between the following terminals of climate control unit connector A (20P) and the rear mode control motor 7P connector.

20P: 7P:
No. 11 No. 5
No. 12 No. 7

CLIMATE CONTROL UNIT CONNECTOR A (20P)

Wire side of female terminals



REAR MODE CONTROL MOTOR 7P CONNECTOR

Wire side of female terminals

Is there continuity?

YES—Check for loose wires or poor connections at climate control unit connector A (20P) and at rear mode control motor 7P connector. If the connections are good, substitute a known-good climate control unit, and recheck. If the symptom/indication goes away, replace the original climate control unit. ■

NO—Repair open in the wire(s) between the climate control unit and the rear mode control motor. ■

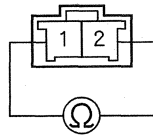
Climate Control

In-car Temperature Sensor Test

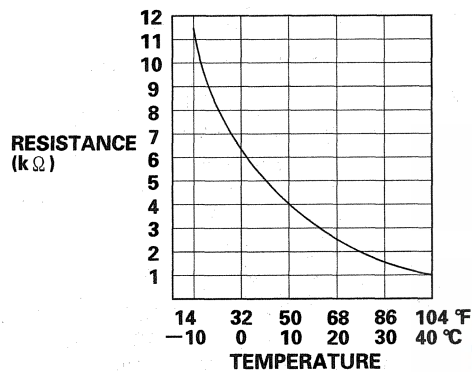
Check for a change in resistance by heating or cooling the sensor with a hair dryer.

Compare the resistance reading between the No. 1 and No. 2 terminals of the in-car temperature sensor with the specifications shown in the graph; the resistance should be within the specifications.

IN-CAR TEMPERATURE SENSOR

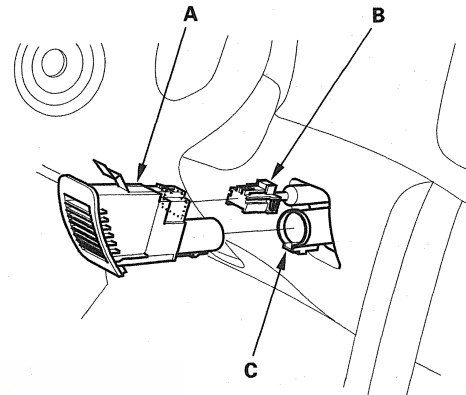


Terminal side of male terminals

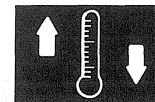


In-car Temperature Sensor Replacement

1. Remove the in-car temperature sensor (A) from the dashboard, then disconnect the 2P connector (B) and the air hose (C). Be careful not to damage the sensor or the dashboard.



2. Install the sensor in the reverse order of removal. Be sure to connect the air hose securely.

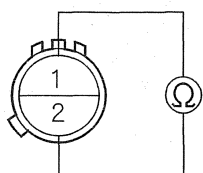


Outside Air Temperature Sensor Test

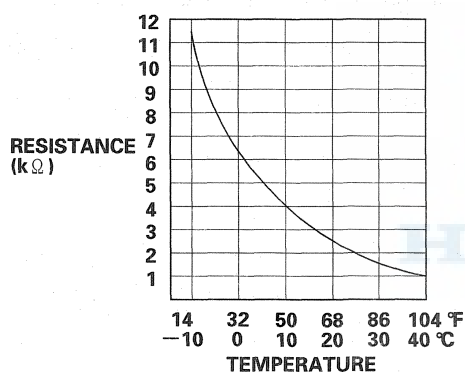
Dip the sensor in ice water, and measure the resistance. Then pour warm water on the sensor, and check for a change in resistance.

Compare the resistance reading between the No. 1 and No. 2 terminals of the outside air temperature sensor with the specifications shown in the graph; the resistance should be within the specifications.

OUTSIDE AIR TEMPERATURE SENSOR

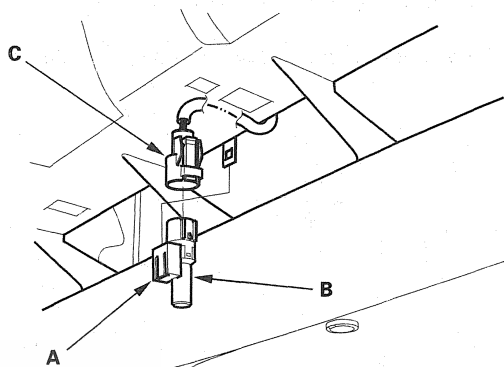


Terminal side of male terminals



Outside Air Temperature Sensor Replacement

1. Lift the tab (A) to release the lock, and remove the outside air temperature sensor (B) from the back of the front bumper beam. Disconnect the 2P connector (C) from the outside air temperature sensor.



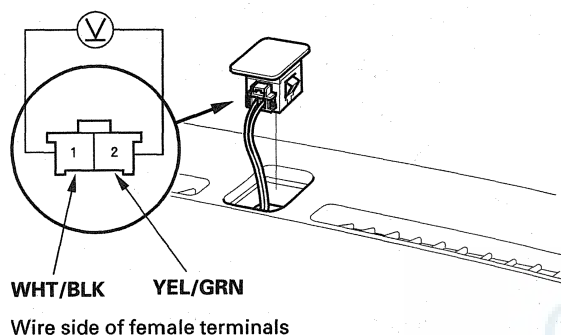
2. Install the sensor in the reverse order of removal.

Climate Control

Sunlight Sensor Test

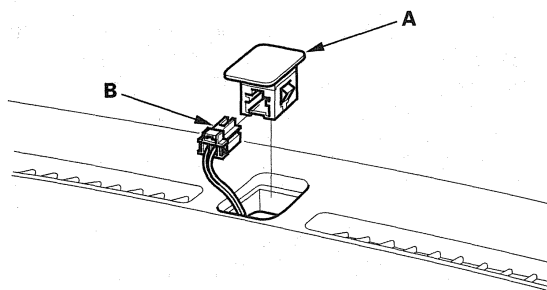
Turn the ignition switch ON (II). Measure the voltage between the terminals with the (+) probe on the No. 1 terminal and the (−) probe on the No. 2 terminal with the 2P connector connected. The voltage readings will not change under the light of a flashlight or a fluorescent lamp. Voltage should be:

- 3.6—3.7 V or more with the sensor out of direct sunlight.
- 3.3—3.5 V or less with the sensor in direct sunlight.

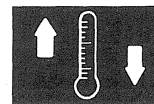


Sunlight Sensor Replacement

1. Remove the sunlight sensor (A) from the dashboard, then disconnect the 2P connector (B). Be careful not to damage the sensor or the dashboard.

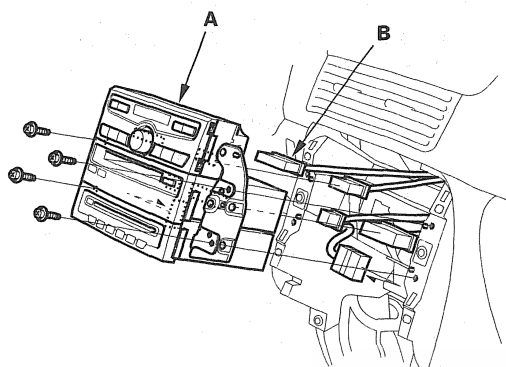


2. Install the sensor in the reverse order of removal.

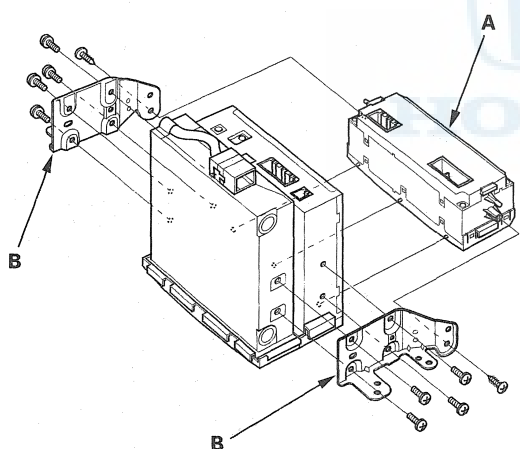


Climate Control Unit Removal/Installation

1. Remove the center panel (see page 20-93).
2. Remove the screws, and remove the climate control unit (A) with the brackets from the dashboard, then disconnect the connectors (B).



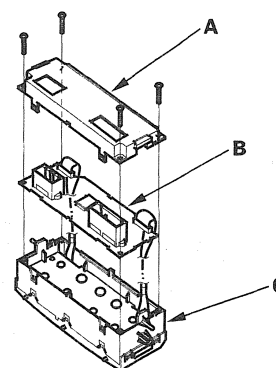
3. Remove the screws and the climate control unit (A) from the brackets (B).



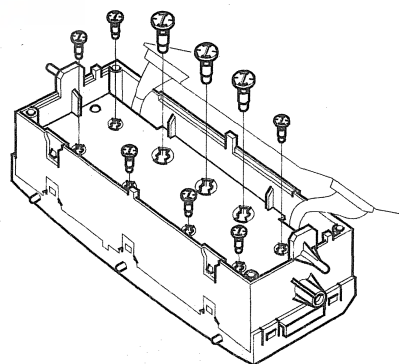
4. Install the control unit in the reverse order of removal. After installation, operate the control unit controls to see whether it works properly.
5. Run the self-diagnostic function to confirm that there are no problems in the system (see page 21-78).

Climate Control Unit Bulb Replacement

1. Discharge the static electricity (which accumulated on you when you removed the climate control unit) by touching the door striker or other body parts.
2. Remove the self-tapping screws, then carefully separate the climate control unit cover (A) and the control unit (B) from the control unit display (C). Do not kink or pull on the wires between the display and the control unit. Do not touch the electronic components on the printed circuit board in the control unit.



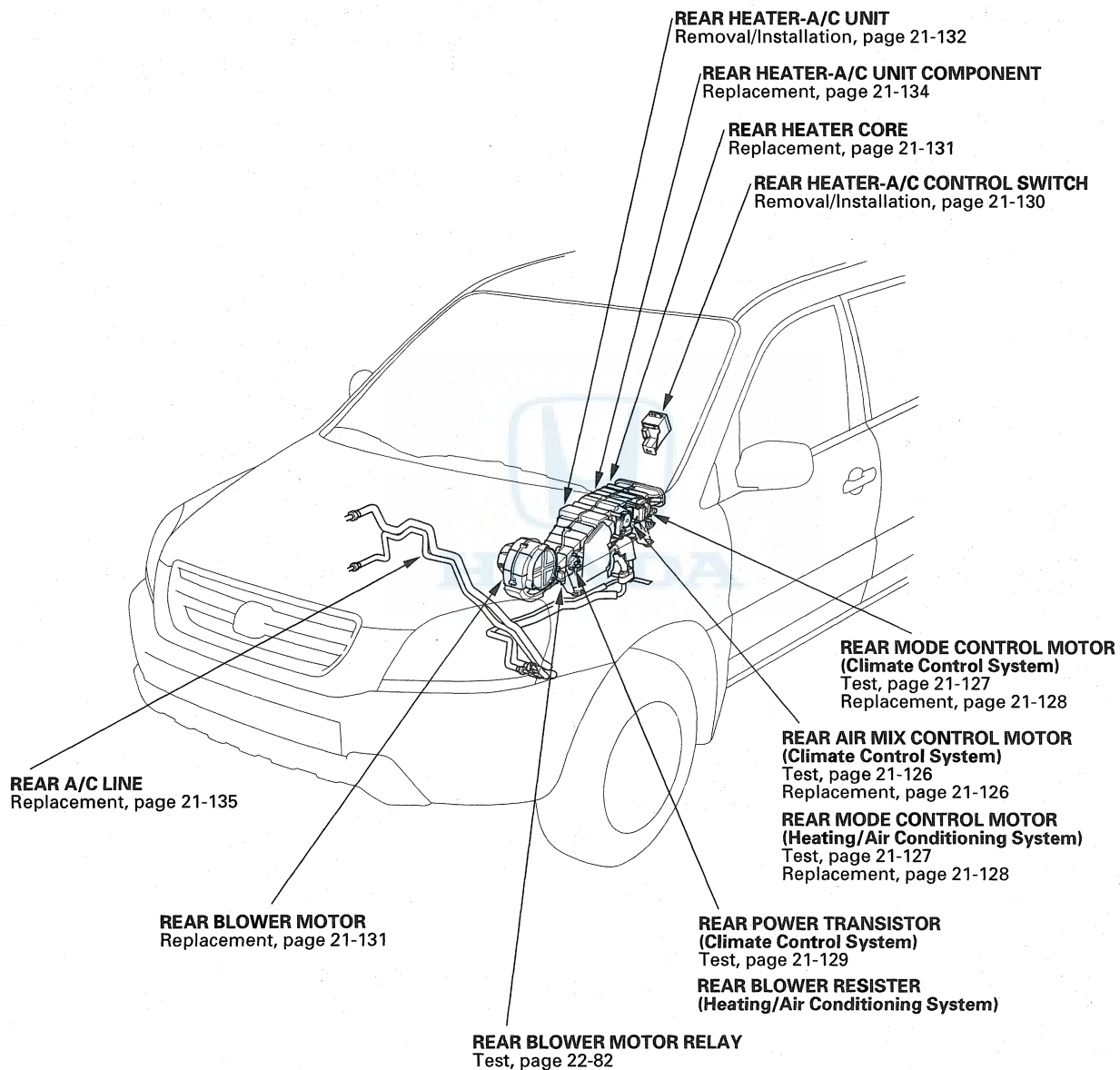
3. Remove the bulb(s) with a flat-tip screwdriver.

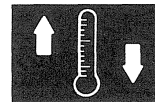


4. Install the bulb(s) in the reverse order of removal.

Rear Heater-A/C

Component Location Index



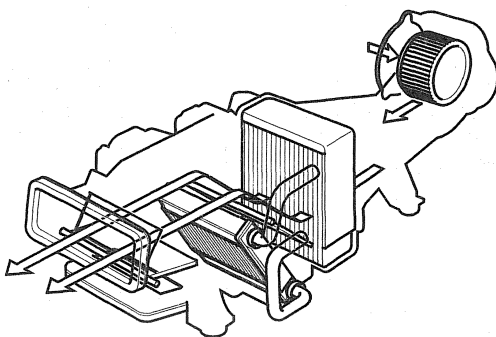


System Description

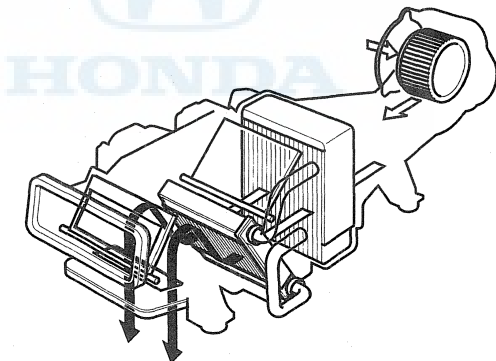
Rear Heater-A/C Door Positions



← COOL



← HOT



Rear Heater-A/C

Rear Air Mix Control Motor Test

Climate Control System

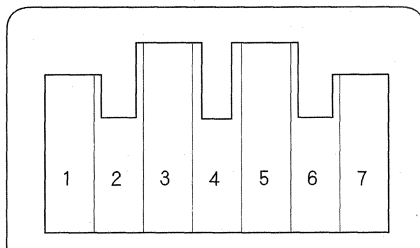
1. Disconnect the 7P connector from the rear air mix control motor.

NOTICE

Incorrectly applying power and ground to the rear air mix control motor will damage it. Follow the instructions carefully.

2. Connect battery power to the No. 1 terminal of the rear air mix control motor, and ground the No. 2 terminal; the rear air mix control motor should run, and stop at Max Hot. If it doesn't, reverse the connections; the rear air mix control motor should run, and stop at Max Cool.
3. If the rear air mix control motor does not run in step 2, remove it, then check the rear air mix control linkage and door for smooth movement.
 - If the linkage and doors move smoothly, replace the rear air mix control motor.
 - If the linkage or doors stick or bind, repair them as needed.
 - If the rear air mix control motor runs smoothly, go to step 4.

REAR AIR MIX CONTROL MOTOR



4. Measure the resistance between the No. 5 and No. 7 terminals. It should be between 2.5 to 4.7 k Ω .
5. Reconnect the rear air mix control motor 7P connector, then turn the ignition switch ON (II).
6. Using the backprobe set, measure the voltage between the No. 3 and No. 5 terminals.

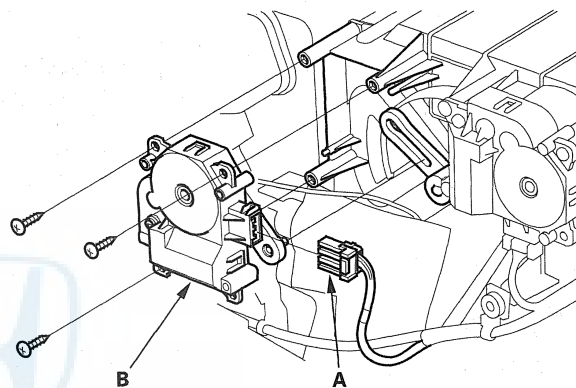
Max Cool: About 4.2 V
Max Hot: About 0.7 V

7. If either the resistance or voltage readings are not as specified, replace the rear air mix control motor.

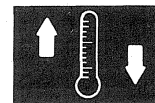
Rear Air Mix Control Motor Replacement

Climate Control System

1. Remove the driver's seat (see page 20-104).
2. Remove the center console (see page 20-88).
3. Disconnect the 7P connector (A) from the rear air mix control motor (B). Remove the self-tapping screws and the rear air mix control motor from the rear heater-A/C unit.



4. Install the motor in the reverse order of removal. Make sure the pin on the motor is properly engaged with the linkage. After installation, make sure the motor runs smoothly.



Rear Mode Control Motor Test

Heating/Air Conditioning System

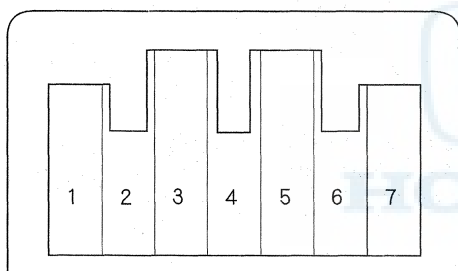
1. Disconnect the 7P connector from the rear mode control motor.

NOTICE

Incorrectly applying power and ground to the rear mode control motor will damage it. Follow the instructions carefully.

2. Connect battery power to the No. 2 terminal of the rear mode control motor, and ground the No. 1 terminal, then connect ground the No. 3 or No. 4 or No. 7 terminals; the rear mode control motor should run smoothly. To avoid damaging the rear mode control motor, do not reverse power and ground; the rear mode control motor should stop at Vent or Heat.

REAR MODE CONTROL MOTOR



3. If the rear mode control motor does not run in step 2, remove it, then check the rear mode control linkage and door for smooth movement.

- If the linkage and doors move smoothly, replace the rear mode control motor.
- If the linkage or doors stick or bind, repair them as needed.

Climate Control System

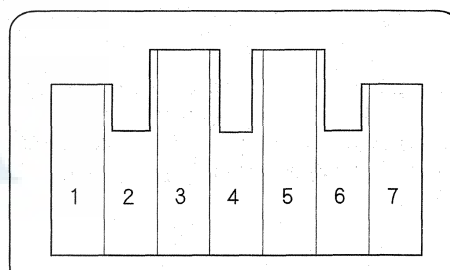
1. Disconnect the 7P connector from the rear mode control motor.

NOTICE

Incorrectly applying power and ground to the rear mode control motor will damage it. Follow the instructions carefully.

2. Connect battery power to the No. 1 terminal of the rear mode control motor, and ground the No. 5 and No. 7 terminals; the rear mode control motor should run smoothly. To avoid damaging the rear mode control motor, do not reverse power and ground. Disconnect the No. 5 or No. 7 terminals from ground; the rear mode control motor should stop at Vent or Heat. Don't cycle the rear mode control motor for a long time.

REAR MODE CONTROL MOTOR



3. If the rear mode control motor does not run in step 2, remove it, then check the rear mode control linkage and door for smooth movement.

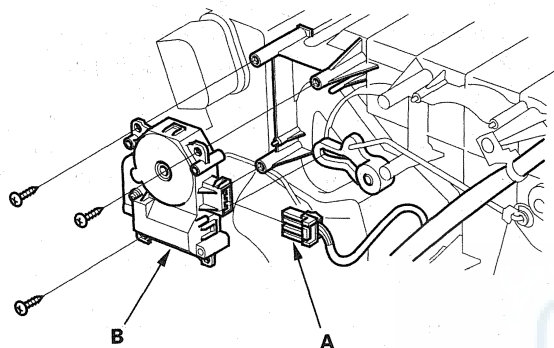
- If the linkage and doors move smoothly, replace the rear mode control motor.
- If the linkage or doors stick or bind, repair them as needed.

Rear Heater-A/C

Rear Mode Control Motor Replacement

Heating/Air Conditioning System

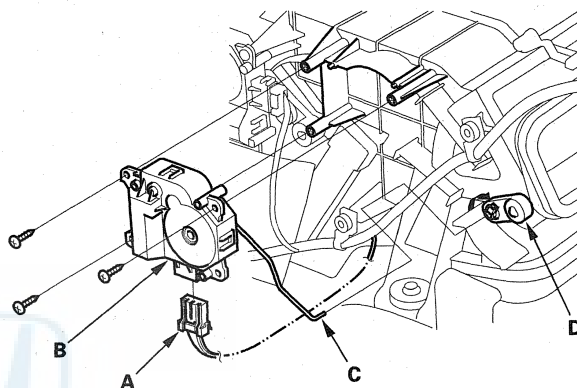
1. Remove the driver's seat (see page 20-104).
2. Remove the center console (see page 20-88).
3. Disconnect the 7P connector (A) from the rear mode control motor (B). Remove the self-tapping screws and the rear mode control motor from the rear heater-A/C unit.



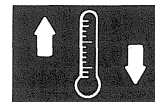
4. Install the motor in the reverse order of removal. Make sure the pin on the motor is properly engaged with the linkage. After installation, make sure the motor runs smoothly.

Climate Control System

1. Remove the center console (see page 20-88).
2. Disconnect the 7P connector (A) from the rear mode control motor (B). Remove the rod (C) of the rear mode control motor from the rear mode control linkage (D). Remove the self-tapping screws and the rear mode control motor from the rear heater-A/C unit.



3. Install the motor in the reverse order of removal. After installation, make sure the motor runs smoothly.



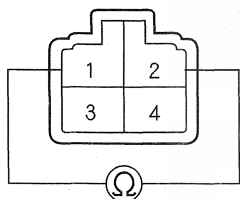
Rear Power Transistor Test

Climate Control System

1. Disconnect the 4P connector from the rear power transistor.
2. Measure the resistance between the No. 1 and No. 2 terminals of the rear power transistor. It should be about 1.4—1.5 k Ω .
 - If the resistance is within the specifications, go to step 3.
 - If the resistance is not within the specifications, replace the rear power transistor.

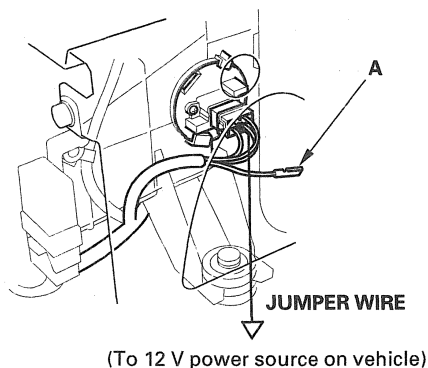
NOTE: Also check the rear blower motor. Rear power transistor failure can be caused by a defective blower motor.

REAR POWER TRANSISTOR



Terminal side of male terminals

3. Carefully release the lock tab on the No. 4 terminal (GRN) (A) in the 4P connector, then remove the terminal and insulate it from body ground.

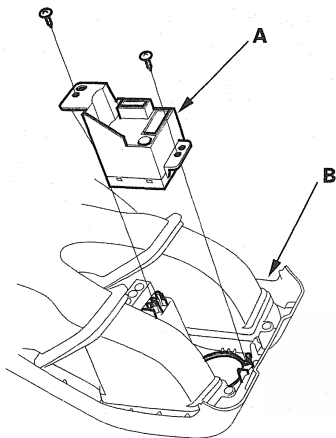


4. Reconnect the 4P connector to the rear power transistor.
5. Supply 12 V to the No. 4 cavity with a jumper wire.
6. Turn the ignition switch ON (II), and check that the rear blower motor runs.
 - If the rear blower motor does not run, replace the rear power transistor.
 - If the rear blower motor runs, the rear power transistor is OK.

Rear Heater-A/C

Rear Heater-A/C Control Switch Removal/Installation

- 1. Remove the console rear trim (see step 5 on page 20-89).
- 2. Remove the self-tapping screws and the rear heater-A/C control switch (A) from the console rear trim (B).



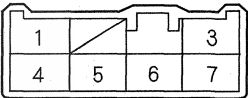
- 3. Install the control switch in the reverse order of removal. After installation, operate the control switch controls to see whether it works properly.
- 4. Run the self-diagnostic function to confirm that there are no problems in the system.

Rear Heater-A/C Control Switch Test

Check for continuity between the terminals in each switch position according to the table.

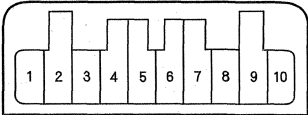
Terminal Position	1	3	4	5	6	7
OFF						
• (Cool)						
• (Cool)						
• (Cool)						
• (Hot)						
• (Hot)						
• (Hot)						

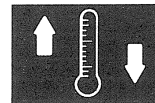
REAR HEATER-A/C CONTROL SWITCH SOCKET A (7P)



Terminal Position	1	2	3	4	5	6	7	8	10
OFF									
• (Cool)									
• (Cool)									
• (Cool)									
• (Hot)									
• (Hot)									
• (Hot)									

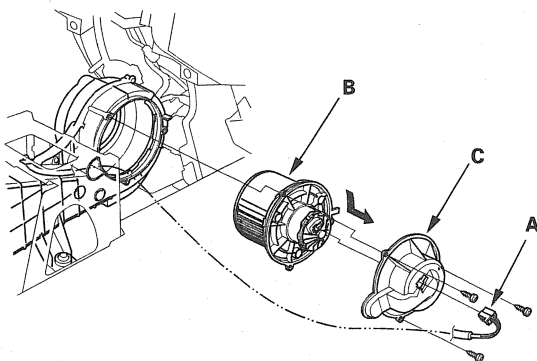
REAR HEATER-A/C CONTROL SWITCH SOCKET B (10P)





Rear Blower Motor Replacement

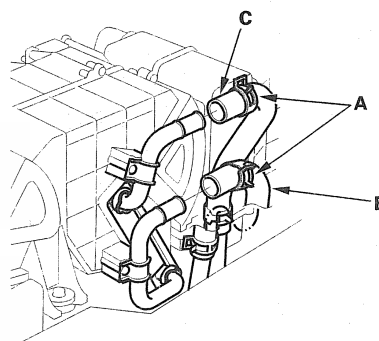
1. Remove the center console (see page 20-88).
2. Disconnect the 2P connector (A) from the rear blower motor (B), then remove the self-tapping screws and the cover (C). Turn the rear blower motor clockwise to the stop, and remove it.



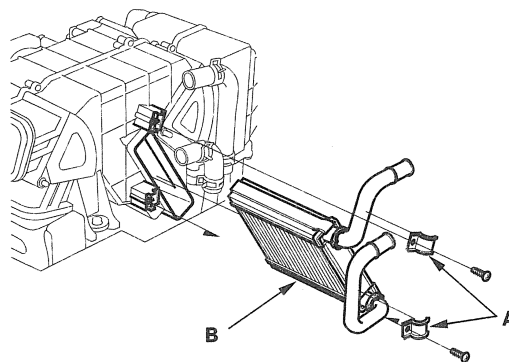
3. Install the motor in the reverse order of removal.

Rear Heater Core Replacement

1. When the engine is cool, drain the engine coolant from the radiator (see page 10-6).
2. Remove the front passenger's seat (see page 20-104).
3. Remove the center console (see page 20-88).
4. Slide the hose clamps (A) back, then disconnect the inlet heater hose (B) and the outlet heater hose (C) from the rear heater core. Engine coolant will run out when the hoses are disconnected; drain it into a clean drip pan. Be sure not to let coolant spill on the electrical parts or the painted surfaces. If any coolant spills, rinse it off immediately.



5. Remove the self-tapping screws and the clamps (A). Carefully pull out the rear heater core (B) so you don't bend the inlet and outlet pipes.

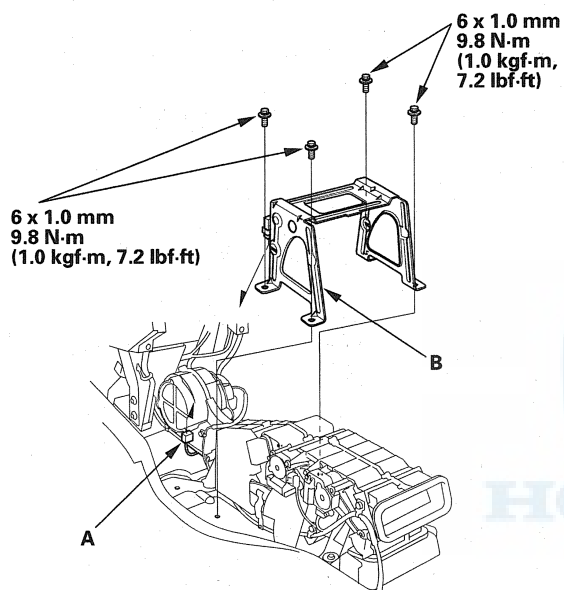


6. Install the heater core in the reverse order of removal, and note these items:
 - Do not interchange the inlet and outlet heater hoses, and install the hose clamps securely.
 - Refill the cooling system with engine coolant (see page 10-6).
 - Make sure that there is no coolant leakage.

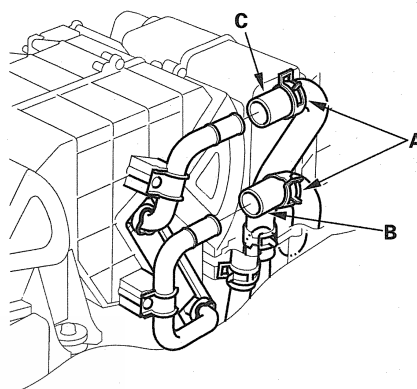
Rear Heater-A/C

Rear Heater-A/C Unit Removal/Installation

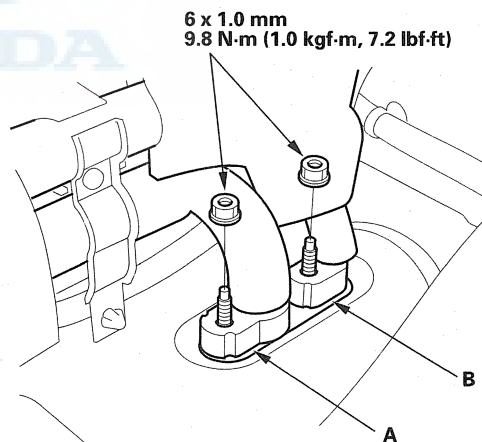
1. When the engine is cool, drain the engine coolant from the radiator (see page 10-6).
2. Recover the refrigerant with a recovery/recycling/charging station (see page 21-67).
3. Remove the center console (see page 20-88).
4. Disconnect the connector (A) from the rear blower motor relay. Remove the bolts and the bracket (B).



5. Slide the hose clamps (A) back, then disconnect the inlet heater hose (B) and the outlet heater hose (C) from the rear heater core. Engine coolant will run out when the hoses are disconnected; drain it into a clean drip pan. Be sure not to let coolant spill on the electrical parts, the carpet, or the painted surfaces. If any coolant spills, rinse it off immediately.

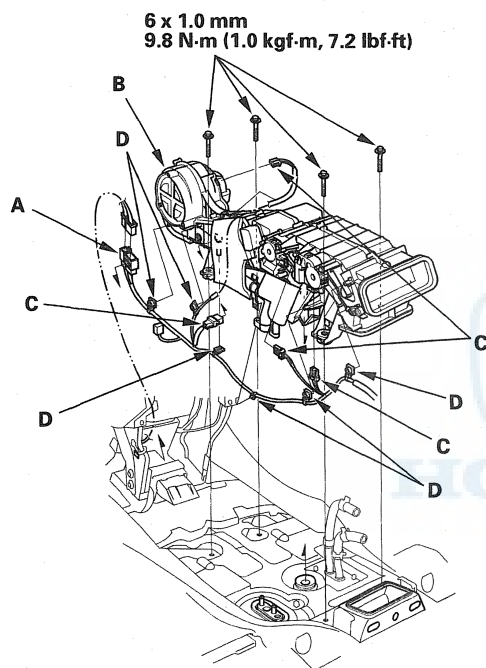


6. Remove the nuts at the rear evaporator suction line (A) and the receiver line (B) connections.





7. Disconnect the connector (A) from the dashboard wire harness. Remove the mounting bolts and the rear heater-A/C unit (B). Plug or cap the lines immediately after disconnecting them to avoid moisture and dust contamination. Disconnect the connectors (C) from the rear blower motor, the rear blower resistor (heating/air conditioning), the rear power transistor (climate control system), the rear air mix control motor (climate control system) and the rear mode control motor, then remove the wire harness clips (D).



8. Install the unit in the reverse order of removal, and note these items:

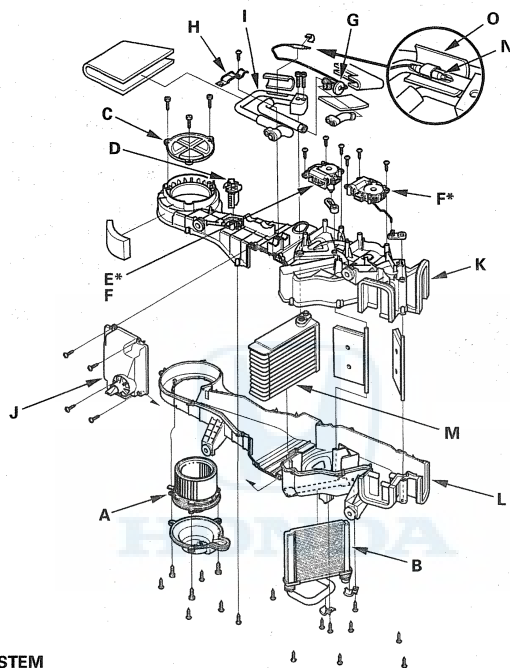
- If you're installing a new rear evaporator, add refrigerant oil (DENSO ND-OIL 8) (see page 21-5).
- Replace the O-rings with new ones at each fitting, and apply a thin coat of refrigerant oil before installing them. Be sure to use the correct O-rings for HFC-134a (R-134a) to avoid leakage.
- Immediately after using the oil, reinstall the cap on the container, and seal it to avoid moisture absorption.
- Do not spill refrigerant oil on the vehicle; it may damage the paint; if the refrigerant oil contacts the paint, wash it off immediately.
- Do not interchange the inlet and outlet heater hoses, and install the hose clamps securely.
- Refill the cooling system with engine coolant (see page 10-6).
- Make sure that there is no coolant leakage.
- Charge the system (see page 21-69).

Rear Heater-A/C

Rear Heater-A/C Unit Component Replacement

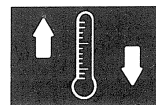
NOTE: The rear blower motor (A), the rear heater core (B), the blower screen (C), the rear blower resistor (heating/air conditioning system) and the rear power transistor (climate control system) (D), the rear air mix control motor (climate control system) (E), the rear mode control motor (F) and the rear expansion valve (G) can be replaced without removing the rear heater-A/C unit.

1. Remove the self-tapping screws and the clamp (H), then remove the bolts and the rear evaporator lines (I) with the rear expansion valve. If necessary, remove the rear expansion valve. Use a second wrench to hold the other fitting on the valve so the rear evaporator lines won't twist. Leave the first fitting loosely connected so you can use it to hold the valve while you loosen the second fitting.



*CLIMATE CONTROL SYSTEM

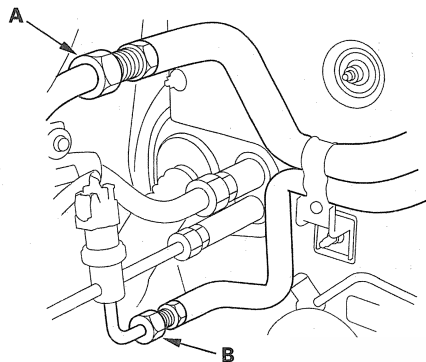
2. If necessary, remove the rear blower motor (see page 21-131), the rear heater core (see page 21-131), the blower screen, the rear blower resistor (heating/air conditioning system), the rear power transistor (climate control system), the rear air mix control motor (see page 21-126) and the rear mode control motor (see page 21-128).
3. Remove the self-tapping screws and the lower housing (J). Remove the self-tapping screws, and carefully separate the left upper housing (K) from the right upper housing (L). Remove the rear evaporator core (M).
4. Reassemble the unit in the reverse order of disassembly, and note these items:
 - Replace all O-rings with new ones at each fitting and apply a thin coat of refrigerant oil before installing them. Be sure to use the correct O-rings for HFC-134a (R-134a) to avoid leakage.
 - Immediately after using the oil, reinstall the cap on the container, and seal it to avoid moisture absorption.
 - Make sure no air is leaking from the left upper housing and the right upper housing fitting and from the upper housings and the lower housing fitting.
 - Install the capillary tube (N) directly against the outlet line, and wrap it with electrical tape (O).
 - Before reassembly, make sure that the rear air mix control linkage and door move smoothly without binding.
 - Before reassembly, make sure that the rear mode control linkage and door move smoothly without binding.
 - After reassembly, make sure the rear air mix control motor runs smoothly (see page 21-126).
 - After reassembly, make sure the rear mode control motor runs smoothly (see page 21-127).
 - Make sure that there is no coolant leakage.



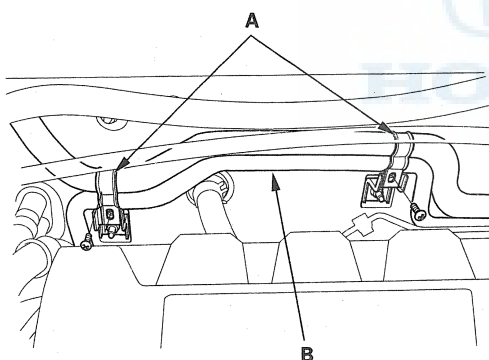
Rear A/C Line Replacement

Removal

1. Recover the refrigerant with a recovery/recycling/charging station (see page 21-67).
2. Disconnect the rear A/C suction line (A) and receiver line (B) at the front evaporator.

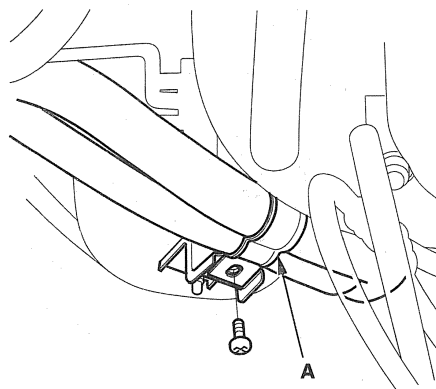


3. Remove the screws from the two clamps (A) along the engine compartment bulkhead, then free the rear A/C lines (B) from the clamps.

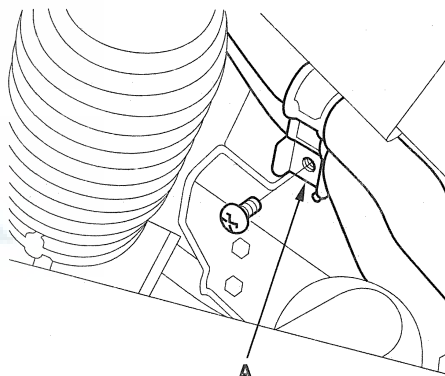


4. Raise the vehicle on a lift, and remove the left front wheel.

5. Remove the screw from the A/C line clamp (A) above the steering rack on the driver's side.



6. Remove the screw from the A/C line clamp (A) next to the steering rack.

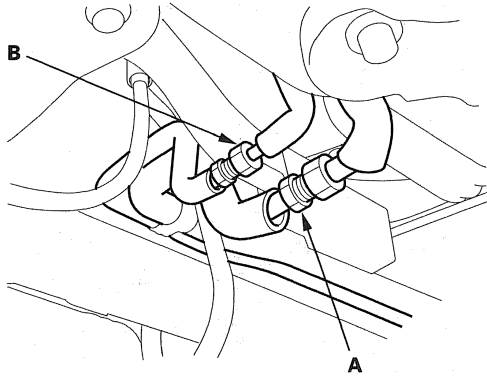


(cont'd)

Rear Heater-A/C

Rear A/C Line Replacement (cont'd)

7. Disconnect the rear A/C suction line (A) and receiver line (B) at the rear evaporator connections.



8. Free the rear A/C lines from the bracket above the steering gearbox.
9. Remove the rear A/C lines (receiver line, then suction line) from the top of the engine compartment. If necessary, bend the rear A/C lines as needed for removal.

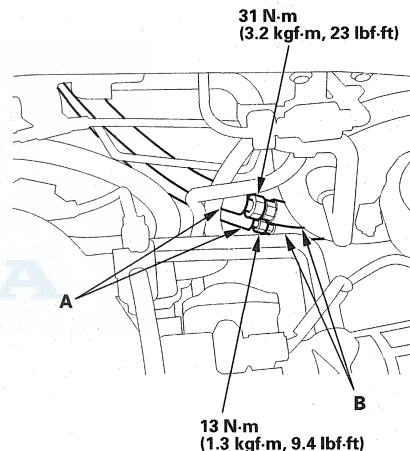
NOTE: Be careful not to bend or snag the brake lines, wire harness, or other components when removing the rear A/C lines.

Installation

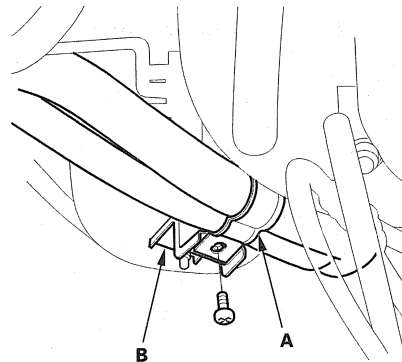
NOTE:

- Use care not to bend the replacement A/C lines during installation.
- Be careful not to bend or snag the brake lines, wire harness, or other components when installing the replacement A/C lines.

1. Route the lower replacement rear A/C lines (suction line, then receiver line) from the top of the engine compartment down to the rear evaporator connections. Do not connect the lines yet.
2. Route the upper replacement A/C lines along the engine compartment bulkhead, and loosely connect the upper lines (A) to the lower lines (B). Do not tighten the connections yet.

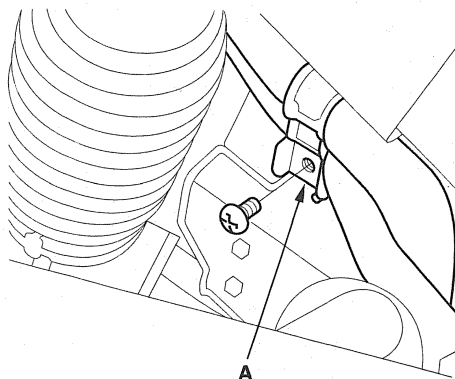


3. Install the A/C line clamp (A) on the lower replacement A/C line. Slide the bracket onto its A/C line bracket (B), but do not install the screw yet.

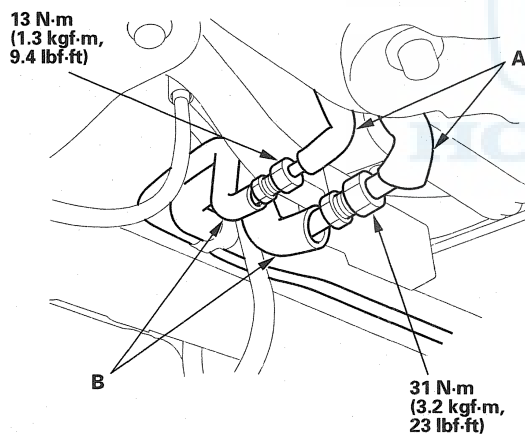




4. Install the A/C line clamp (A) on the lower replacement A/C line. Slide the bracket onto the its A/C line bracket, but do not install the screw yet.

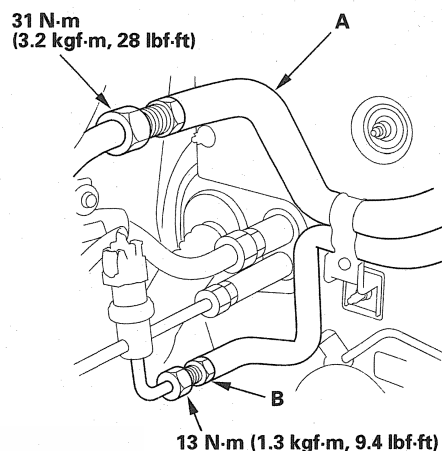


5. Apply a few drops of refrigerant oil to the connections, then connect the lower lines (A) to the rear evaporator lines (B). Do not tighten the connections yet.

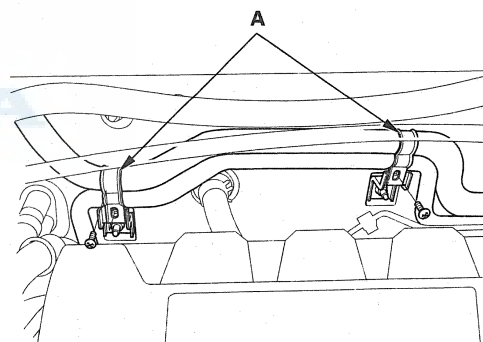


6. Install the screw in the A/C line clamp (above the steering gearbox) on the lower A/C lines.
7. Install the screw in the A/C line clamp (next to the steering rack) on the lower A/C lines.
8. Tighten the lower A/C lines at the rear evaporator connections.

9. Apply a few drops of refrigerant oil to the connections, then connect the rear A/C suction line (A) and receiver line (B) to the front evaporator lines. Do not tighten the connections yet.



10. Install the screws into the two A/C line clamps (A) along the engine compartment bulkhead.

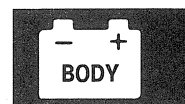


11. Tighten the upper-A/C-line-to-front-evaporator connections.
12. Tighten the upper-to-lower A/C line connections.
13. Add refrigerant oil (see page 21-5).
14. Charge the system (see page 21-69).
15. Reinstall the left front wheel.

SUPPLEMENTAL RESTRAINT SYSTEM (SRS) (If electrical maintenance is required)

The Pilot SRS includes a driver's airbag in the steering wheel hub, a passenger's airbag in the dashboard above the glove box, seat belt tensioners in the front seat belt retractors, side curtain airbags in the side of the roof, and side airbags in the front seat-backs. Information necessary to safely service the SRS is included in this Service Manual. Items marked with an asterisk (*) on the contents page include or are located near SRS components. Servicing, disassembling, or replacing these items requires special precautions and tools, and should be done by an authorized Honda dealer.

- To avoid rendering the SRS inoperative, which could lead to personal injury or death in the event of a severe frontal or side collision, all SRS service work should be done by an authorized Honda dealer.
- Improper service procedures, including incorrect removal and installation of the SRS, could lead to personal injury caused by unintentional deployment of the airbags and/or side airbags.
- Do not bump or impact the SRS unit, front impact sensors, or side impact sensors when the ignition switch is ON (II), or for at least 3 minutes after the ignition switch is turned OFF; otherwise, the system may fail in a collision, or the airbags may deploy.
- SRS electrical connectors are identified by yellow color coding. Related components are located in the steering column, front console, dashboard, dashboard lower panel, in the dashboard above the glove box, in the front seats, in the roof side, and around the floor. Do not use electrical test equipment on these circuits.



Body Electrical

Body Electrical

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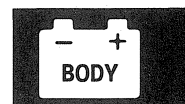
* Audio System

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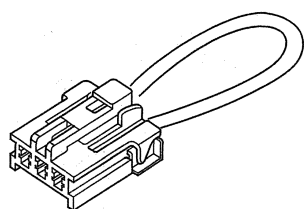
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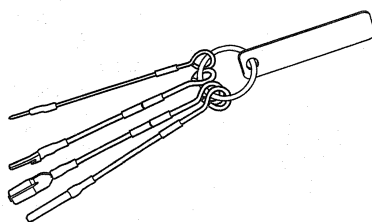
Body Electrical

Special Tools

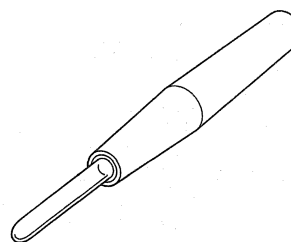
Ref. No.	Tool Number	Description	Qty
①	07WAZ-001010A	MPCS Short Connector	1
②	07XAJ-001000A	Terminal Inspection Feeler Tool Set	1
③	07TAZ-001020A	Back Probe Adaptor	1
④	07AAZ-SDBA100	Diagnostics CD	1
⑤	07AAZ-SDBA200 (ABEX-TCD-725B)	Skip Test CD	1
⑥	07AAZ-SDBA300 (ABEX-TCD-721)	Skip Test CD	1



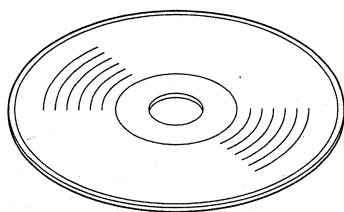
①



②



③



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General Troubleshooting Information

Tips and Precautions

Before Troubleshooting

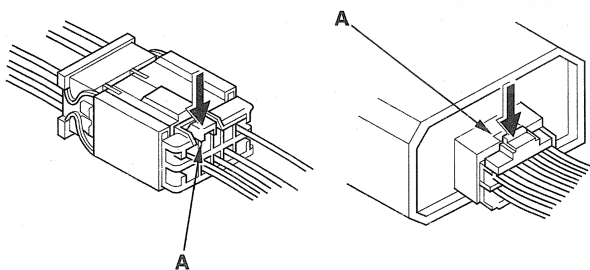
1. Check applicable fuses in the appropriate fuse/relay box.
2. Check the battery for damage, state of charge, and clean and tight connections.

NOTICE

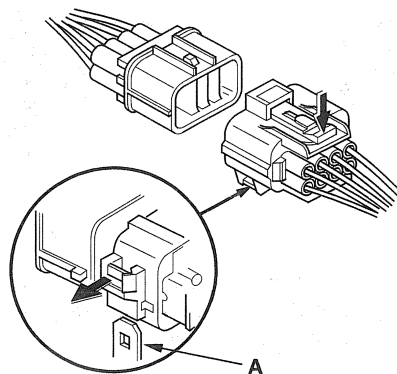
- Do not quick-charge a battery unless the battery ground cable has been disconnected, otherwise you will damage the alternator diodes.
- Do not attempt to crank the engine with the battery ground cable loosely connected or you will severely damage the wiring.

Handling Connectors

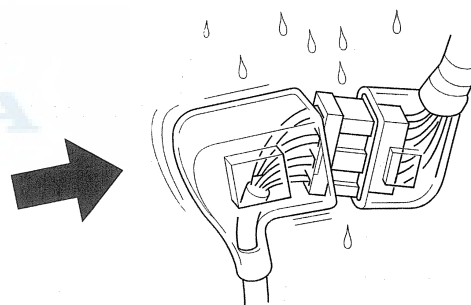
- Make sure the connectors are clean and have no loose wire terminals.
- Make sure multiple cavity connectors are packed with dielectric grease (except watertight connectors).
- All connectors have push-down release type locks (A).



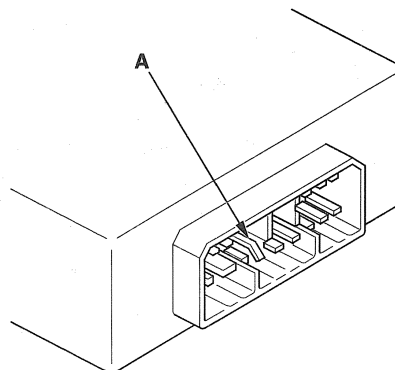
- Some connectors have a clip on their side used to attach them to a mount bracket on the body or on another component. This clip has a pull type lock.
- Some mounted connectors cannot be disconnected unless you first release the lock and remove the connector from its mount bracket (A).



- Never try to disconnect connectors by pulling on their wires; pull on the connector halves instead.
- Always reinstall plastic covers.



- Before connecting connectors, make sure the terminals (A) are in place and not bent.

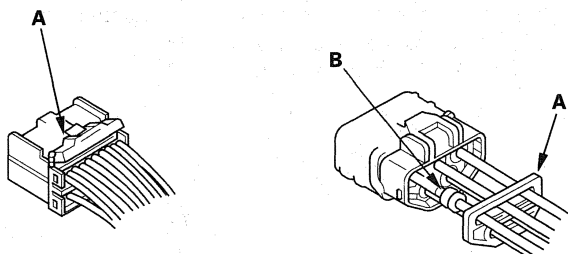


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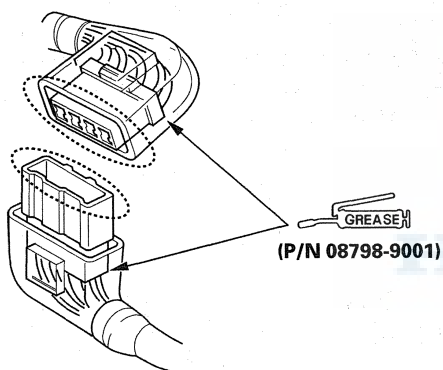
Body Electrical

General Troubleshooting Information (cont'd)

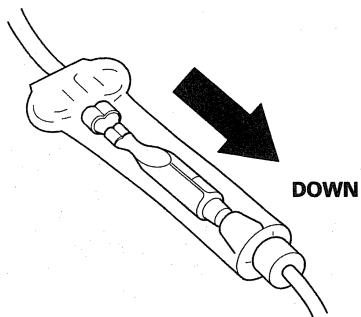
- Check for loose retainer (A) and rubber seals (B).



- The backs of some connectors are packed with dielectric grease. Add grease if necessary. If the grease is contaminated, replace it.

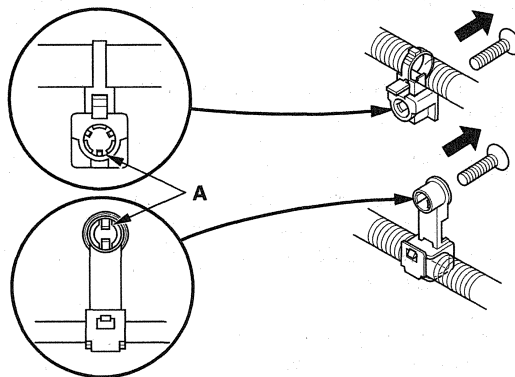


- Insert the connector all the way and make sure it is securely locked.
- Position wires so that the open end of the cover faces down.

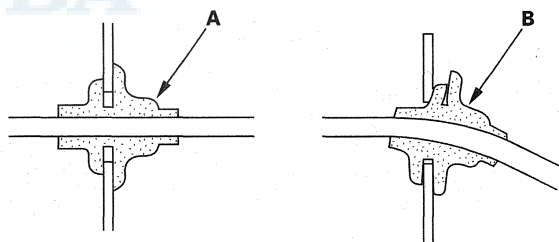


Handling Wires and Harnesses

- Secure wires and wire harnesses to the frame with their respective wire ties at the designated locations.
- Remove clips carefully; don't damage their locks (A).



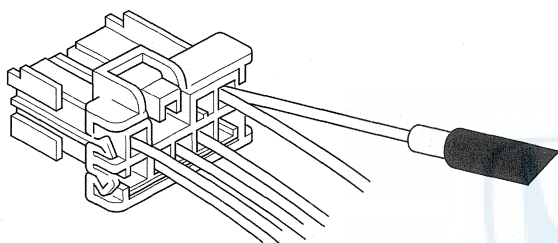
- After installing harness clips, make sure the harness doesn't interfere with any moving parts.
- Keep wire harnesses away from exhaust pipes and other hot parts, from sharp edges of brackets and holes, and from exposed screws and bolts.
- Seat grommets in their grooves properly (A). Do not leave grommets distorted (B).



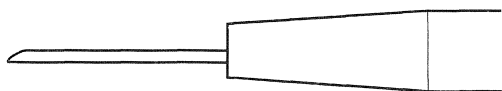


Testing and Repairs

- Do not use wires or harnesses with broken insulation. Replace them or repair them by wrapping the break with electrical tape.
- Never attempt to modify, splice, or repair SRS wiring. If there is an open or damage is SRS wiring or terminals, replace the harness.
- After installing parts, make sure that no wires are pinched under them.
- When using electrical test equipment, follow the manufacturer's instructions and those described in this manual.
- If possible, insert the probe of the tester from the wire side (except waterproof connector).



- Use back probe adaptor 07TAZ-001020A.



- Refer to the instructions in the Honda Terminal Kit for identification and replacement of connector terminals.

Five-step Troubleshooting

1. Verify The Complaint:

Turn on all the components in the problem circuit to verify the customer complaint. Note the symptoms. Do not begin disassembly or testing until you have narrowed down the problem area.

2. Analyze The Schematic:

Look up the schematic for the problem circuit. Determine how the circuit is supposed to work by tracing the current paths from the power feed through the circuit components to ground. If several circuits fail at the same time, the fuse or a ground is a likely cause.

Based on the symptoms and your understanding of the circuit operation, identify one or more possible causes of the problem.

3. Isolate The Problem By Testing The Circuit:

Make circuit tests to check the diagnosis you made in step 2. Keep in mind that a logical, simple procedure is the key to efficient troubleshooting. Test for the most likely cause of failure first. Try to make tests at points that are easily accessible.

4. Fix The Problem:

Once the specific problem is identified, make the repair. Be sure to use proper tools and safe procedures.

5. Make Sure The Circuit Works:

Turn on all components in the repaired circuit in all modes to make sure you've fixed the entire problem. If the problem was a blown fuse, be sure to test all of the circuits on the fuse. Make sure no new problems turn up and the original problem does not recur.

(cont'd)

Body Electrical

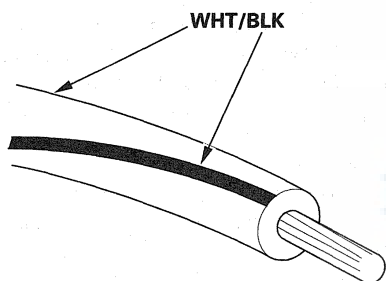
General Troubleshooting Information (cont'd)

Wire Color Codes

The following abbreviations are used to identify wire colors in the circuit schematics:

WHT	White
YEL	Yellow
BLK	Black
BLU	Blue
GRN	Green
RED	Red
ORN	Orange
PNK	Pink
BRN	Brown
GRY	Gray
PUR	Purple
LT BLU	Light Blue
LT GRN	Light Green

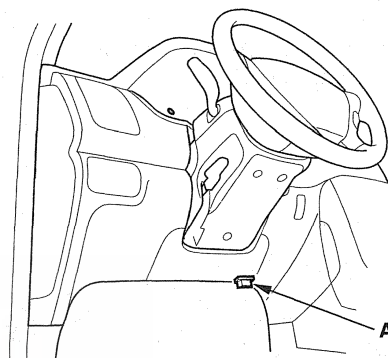
The wire insulation has one color or one color with another color stripe. The second color is the stripe.



How to Check for DTCs with the Honda Diagnostic System (HDS)

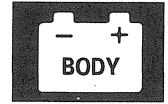
1. Connect the Honda Diagnostic System (HDS) to the Data Link Connector (DLC) (A) located under the driver's side of the dashboard.

NOTE: For specific operations, refer to the user's manual that came with the Honda Diagnostic System (HDS).

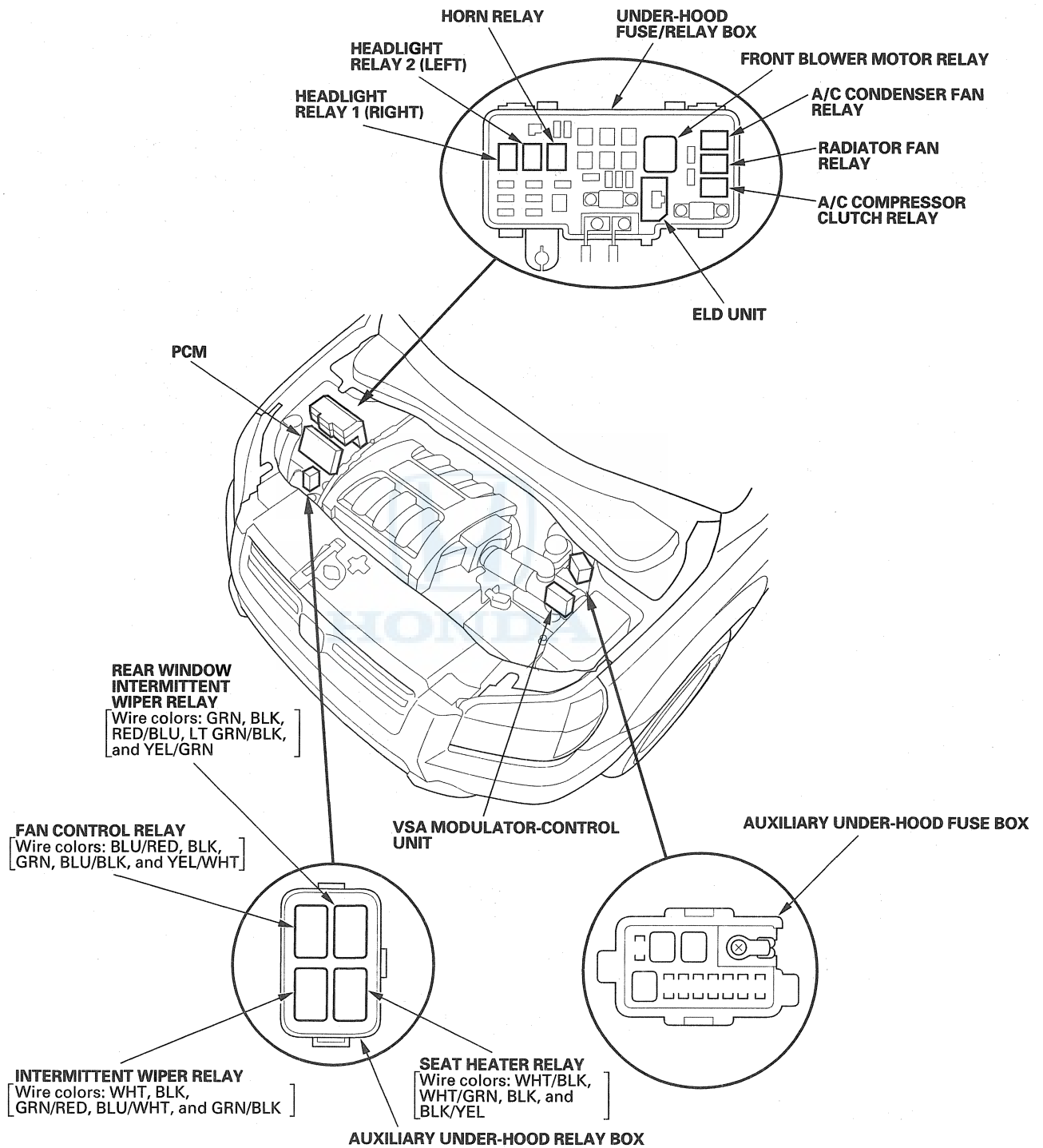


2. Select the TEST MODE MENU and check for Diagnostic Trouble Code (DTCs), and note them. Refer to the Troubleshooting Index and begin the appropriate troubleshooting procedure.

Relay and Control Unit Locations

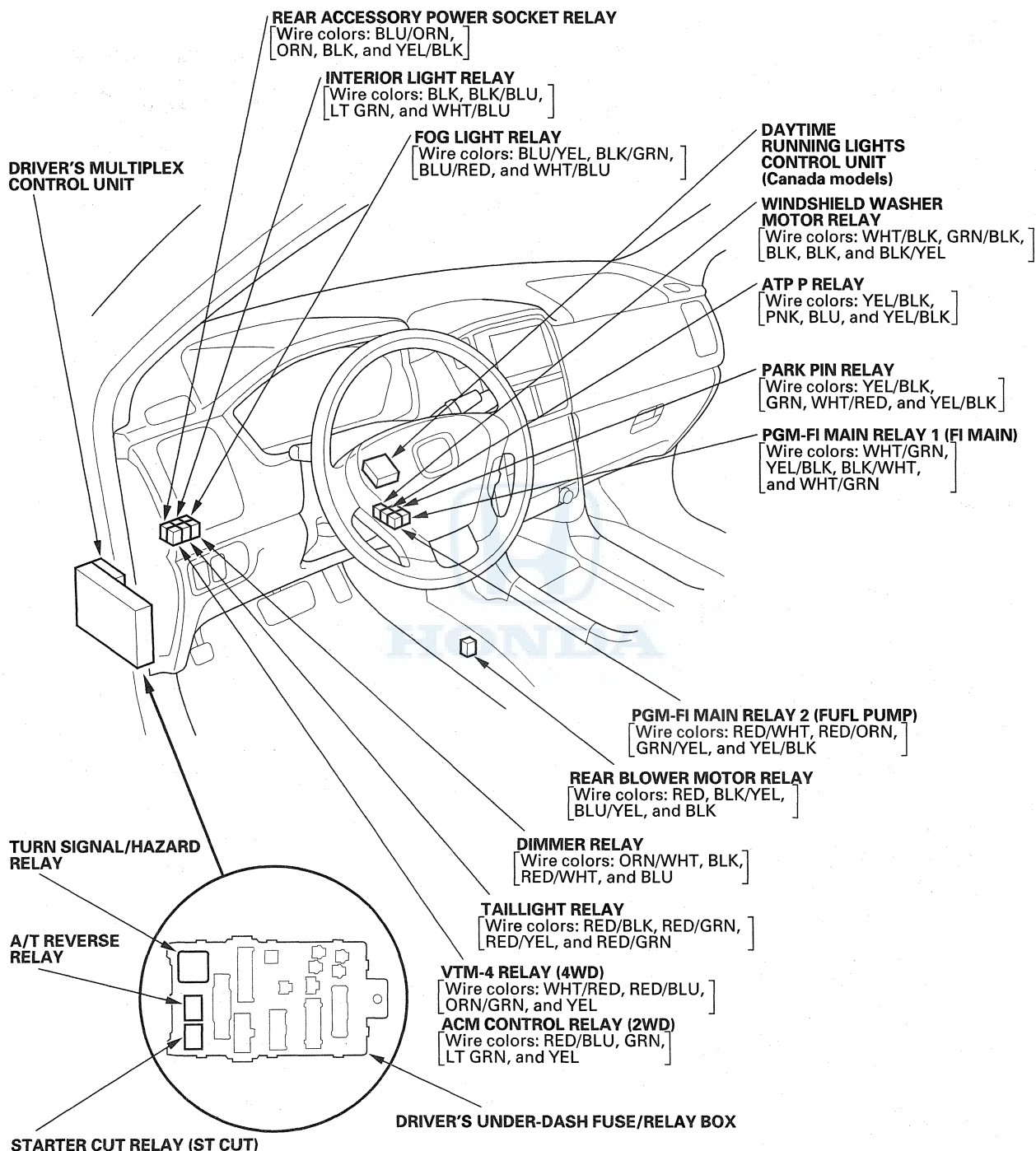


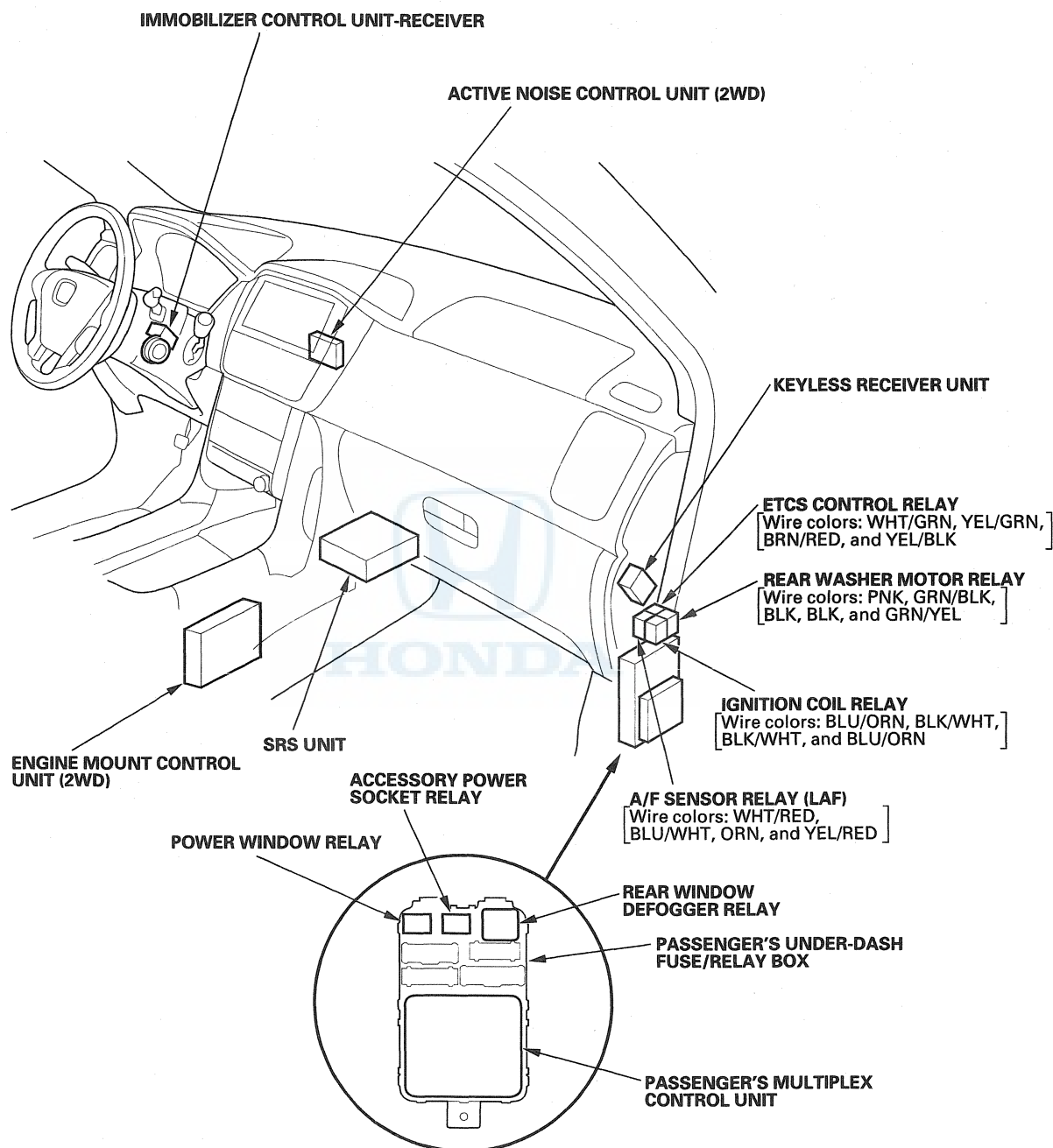
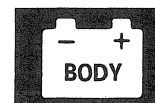
Engine Compartment



Relay and Control Unit Locations

Dashboard



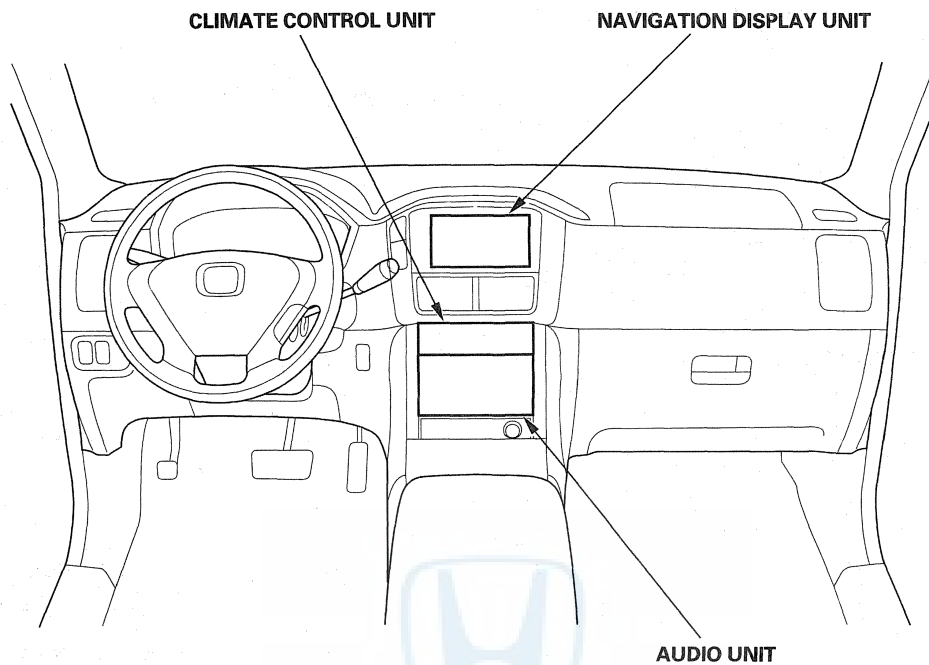


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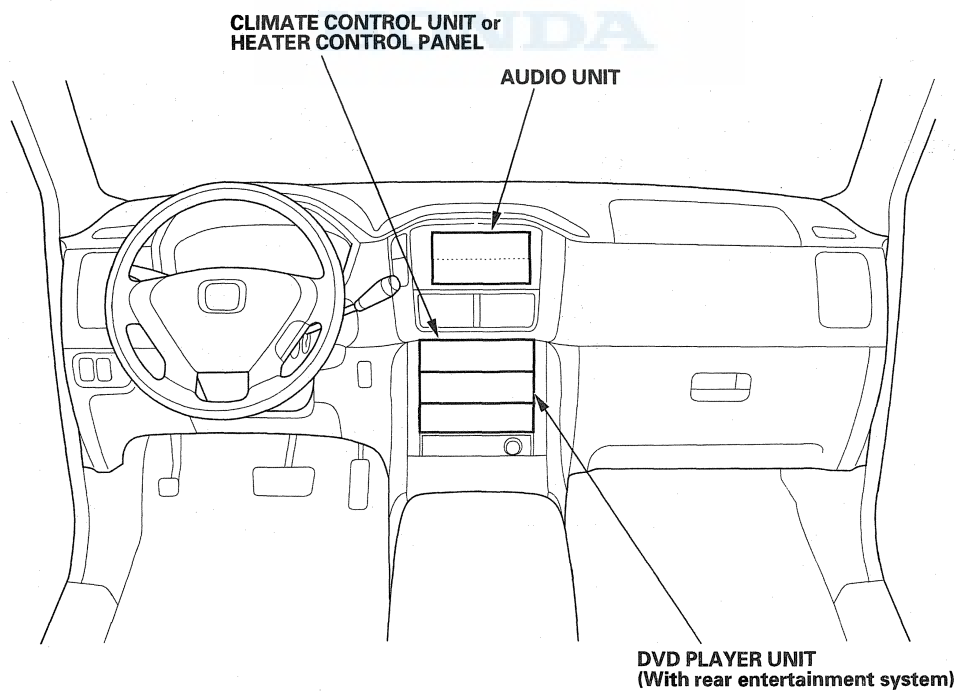
Relay and Control Unit Locations

Dashboard (cont'd)

With Navigation

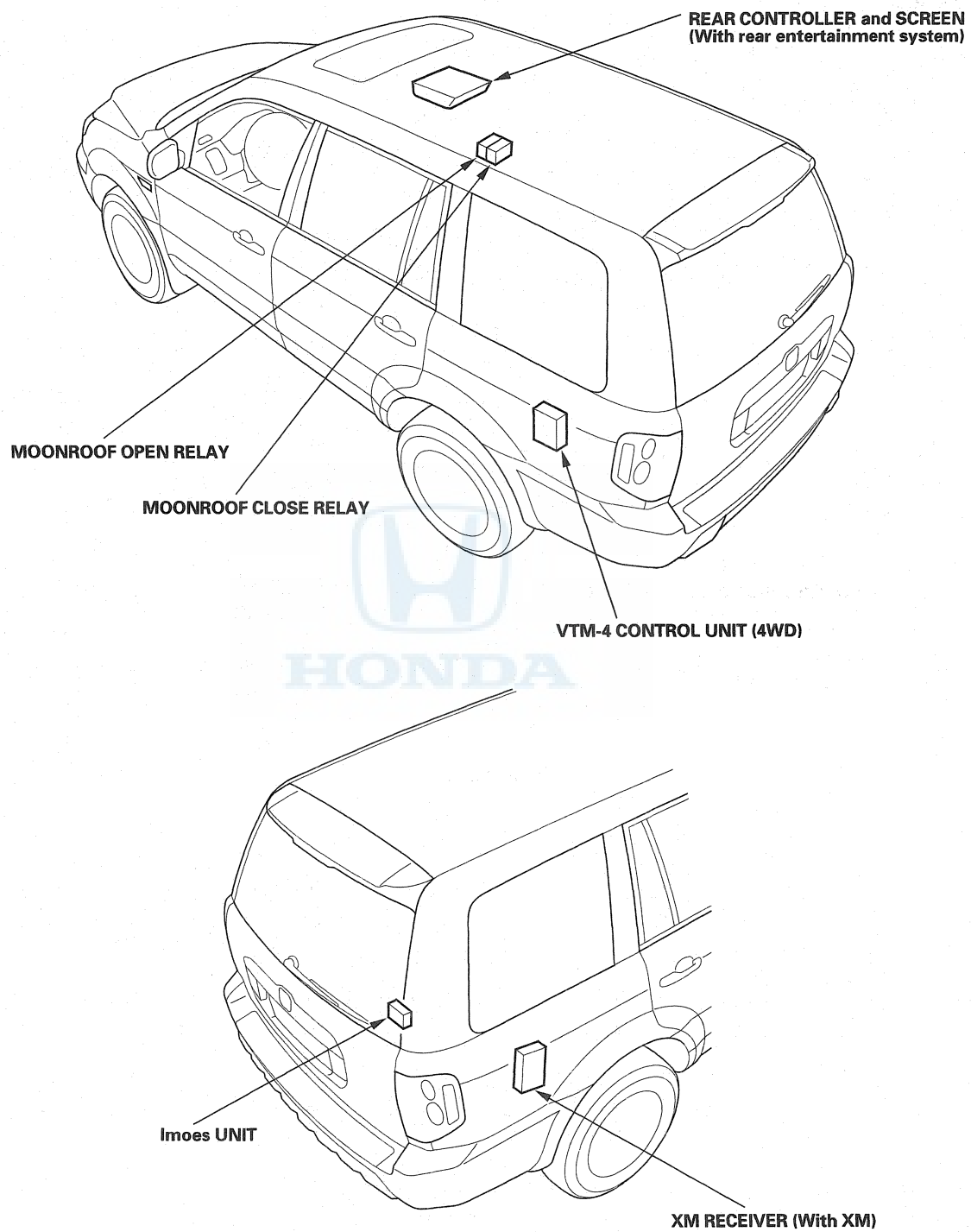


Without Navigation





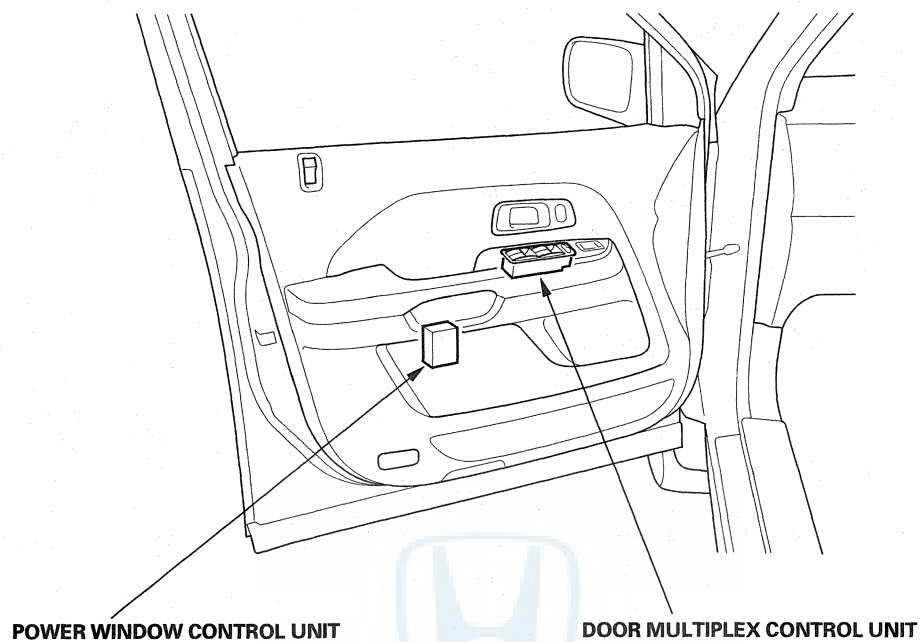
Side Trim and Roof



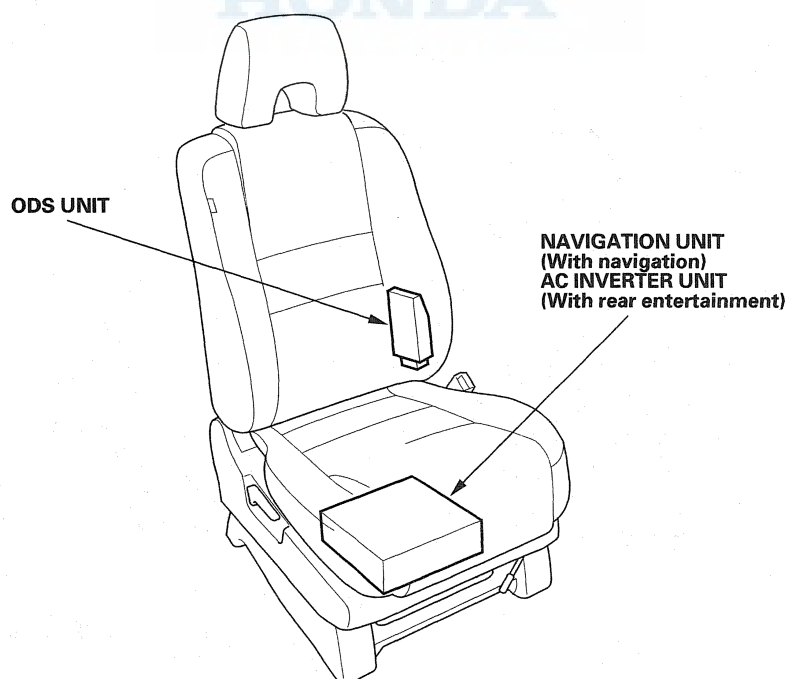
Relay and Control Unit Locations

Door and Seat

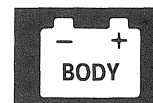
Driver's Door



Front Passenger's Seat



Connectors and Harnesses



Connector Index

Identification numbers have been assigned to in-line connectors, junction connectors, and terminals. The number is preceded by the letter "C" for connectors, "G" for ground terminals or "T" for non-ground terminals.

Harness	Location			
	Engine Compartment	Dashboard	Others (Floor, Seat, Door, Tailgate and Roof)	Notes
Battery ground cable	T4 G1 and (—)			(see page 22-15)
Cable reel subharness				(see page 22-66)
CKP sensor subharness	C171			(see page 22-25)
Console accessory power socket subharness			C951	(see page 22-54)
Dashboard wire harness B (left branch)		C301, C302, C324, C401, C402, C404, C601, G401		(see page 22-33)
Dashboard wire harness B (right branch)		C201, C202, C203, C403, C553		(see page 22-37)
Dashboard wire harness A (left branch)		C303, C304, C306, C323, C401, C402, C404, C502 through C504, C552, C602, C701, C801, C821, G501, G502, G504		(see page 22-39)
Dashboard wire harness A (right branch)		C204 through C208, C403, C551, C554, C651, C652, C901, C961, G503, G505	C951	(see page 22-43)
Driver's door wire harness		C701, C710	C702	(see page 22-58)
Driver's door subharness			C702	(see page 22-58)
Driver's seat position sensor subharness			C605	(see page 22-51)
Driver's seat wire harness			C605, C606	(see page 22-63)
Engine ground cable	T5 G2			(see page 22-15)
Engine mount control solenoid subharness	C305			(see page 22-31)
Engine wire harness (4WD)	C101 through C105, C151, C161, C171, G101 and G102			(see page 22-17)
Engine wire harness (2WD)	C101 through C105, C151, C161, C171, G101 and G102			(see page 22-21)

(cont'd)

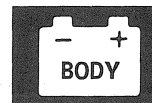
Connectors and Harnesses

Connector Index (cont'd)

Harness	Location			
	Engine Compartment	Dashboard	Others (Floor, Seat, Door, Tailgate and Roof)	Notes
Front console light subharness		C961		(see page 22-43)
Front passenger's door wire harness				(see page 22-59)
Front passenger's seat wire harness			C607	(see page 22-64)
Ignition switch lead				(see page 22-65)
Knock sensor subharness	C161			(see page 22-25)
Left rear door wire harness			C604	(see page 22-60)
Left engine compartment wire harness	C305, C321, G301	C301 through C304, C320, G302		(see page 22-31)
Left side wire harness		C601, C602	C603, C604, C608, C609, C657, G601 and G602	(see page 22-45)
Navigation wire harness		C901		(see page 22-62)
ODS unit harness			C802	(see page 22-51)
Rear A/C wire harness		C502 through C504		(see page 22-53)
Rear differential subharness A (4WD)			C609 T6	(see page 22-57)
Rear differential subharness B (4WD)			C608	(see page 22-57)
Right rear door wire harness			C653	(see page 22-61)
Right engine compartment wire harness	C101, C102, G201, G202	C201 through C206		(see page 22-27)
Right side wire harness		C651, C652	C603, C653 through C656, G651 and G652	(see page 22-47)
Roof wire harness		C551 through C554	G901	(see page 22-55)
Shift solenoid wire harness	C151			(see page 22-19) ^{*1} (see page 22-23) ^{*2}
SRS harness		C801, C854 G801	C605 through C607, C610, C656, C657	(see page 22-51)
SRS subharness		C821, C854 G802		(see page 22-51)
Starter cable	T1, T2, T3 and (+)			(see page 22-15)
Tailgate wire harness			C654, C655, C851 through C853	(see page 22-49)
Tailgate subharness			C851, C852, C853	(see page 22-50)

* 1: 4WD

* 2: 2WD



Connector to Harness Index

Starter Cable

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
T1	5		Right side of engine compartment	Under-hood fuse/relay box	
T2	6		Left side of engine compartment	Starter motor	
T3	7		Left side of engine compartment	Auxiliary under-hood fuse box	
(+)			Left side of engine compartment	Battery positive terminal	

Battery Ground Cable

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
T4	2		Left side of engine compartment	Transmission housing	
G1	1		Left side of engine compartment	Body ground, via battery ground cables	
(-)			Left side of engine compartment	Battery negative terminal	

Engine Ground Cable

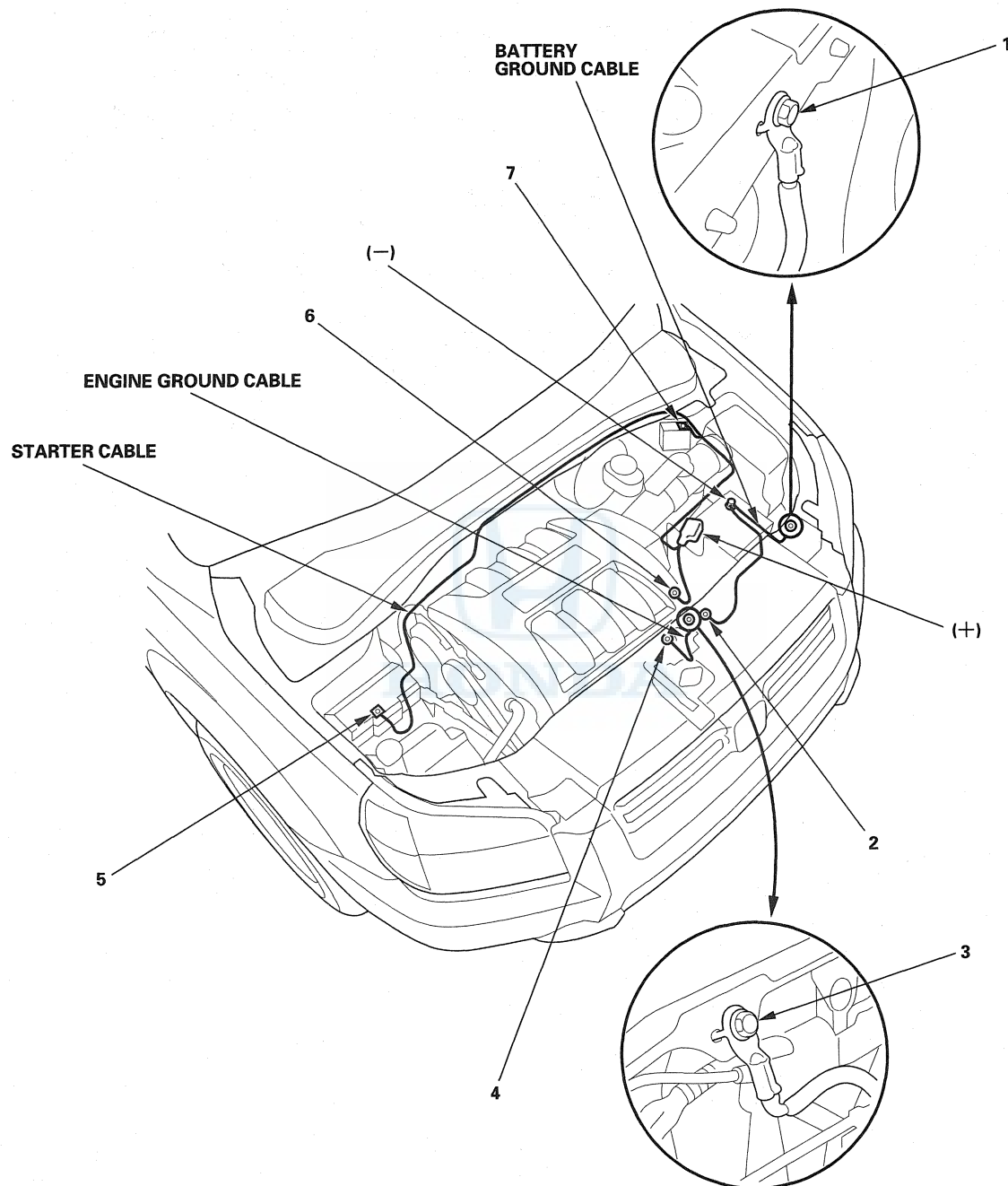
Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
T5	4		Front of engine	Front cylinder head	
G2	3		Front of engine compartment	Body ground, via engine ground cable	



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Connectors and Harnesses

Connector to Harness Index (cont'd)





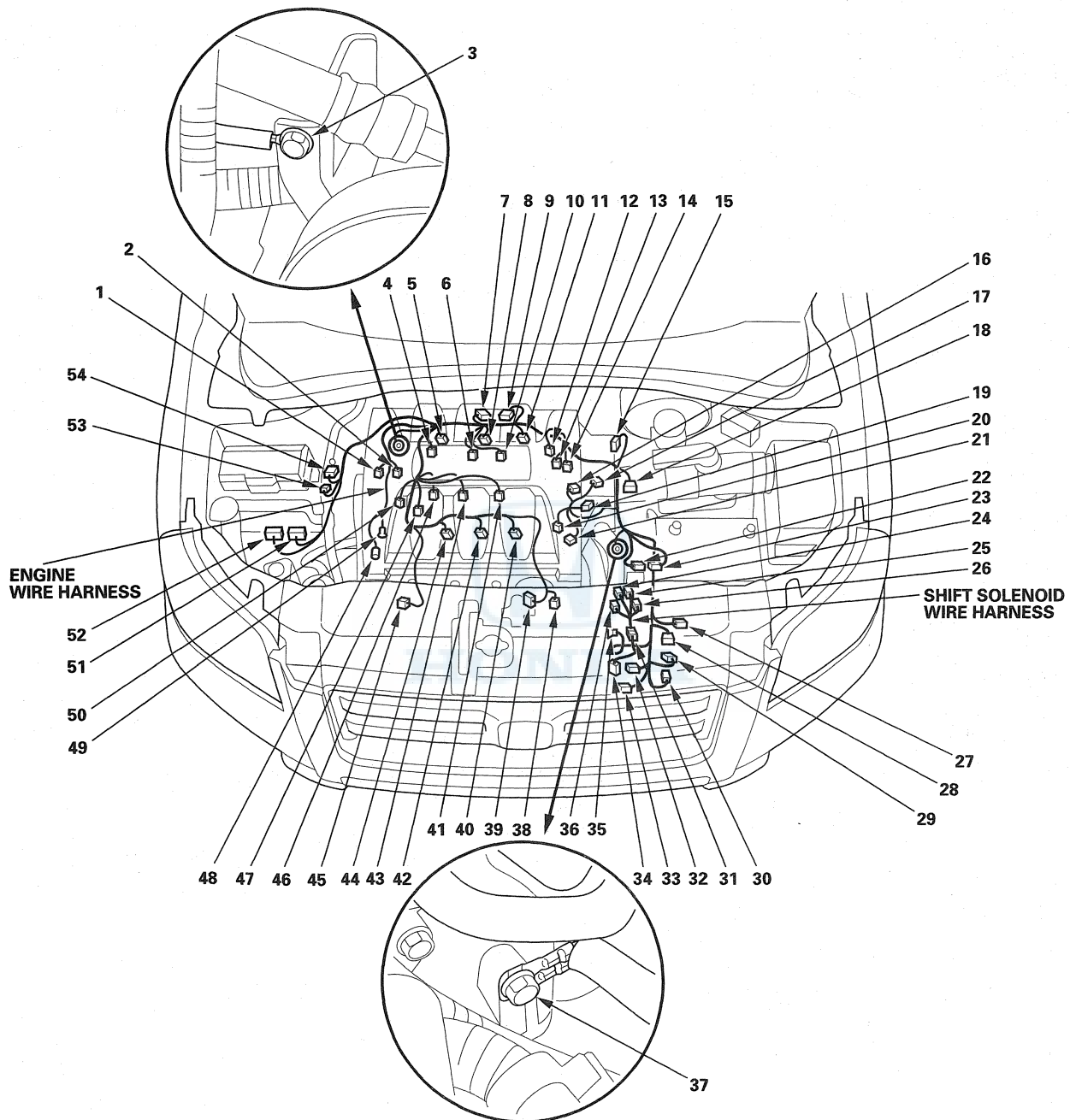
Engine Wire Harness (4WD)

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
Alternator	45	4	Middle of engine compartment		
ATF temperature sensor	29	2	Transmission housing		
A/T clutch pressure control solenoid valve A	28	2	Left side of engine compartment		
A/T clutch pressure control solenoid valve B	27	2	Left side of engine compartment		
A/T clutch pressure control solenoid valve C	22	2	Left side of engine compartment		
CMP sensor	50	3	Right side of engine compartment		
EGR valve and EGR valve position sensor	21	6	Left side of engine compartment		
Engine coolant temperature (ECT) sensor 1	20	2	Left side of engine compartment		
Engine coolant temperature (ECT) sensor 2	19	2	Left side of engine compartment		
EVAP canister purge valve	12	2	Left side of engine compartment		
Front A/F sensor (B2, S1)	38	8	Left side of engine compartment		
Front secondary HO2S (B2, S2)	39	4	Left side of engine compartment		
Ignition coil No. 1	5	3	Middle of engine compartment		
Ignition coil No. 2	7	3	Middle of engine compartment		
Ignition coil No. 3	11	3	Middle of engine compartment		
Ignition coil No. 4	44	3	Middle of engine compartment		
Ignition coil No. 5	42	3	Middle of engine compartment		
Ignition coil No. 6	40	3	Middle of engine compartment		
Injector No. 1	4	2	Middle of engine compartment		
Injector No. 2	6	2	Middle of engine compartment		
Injector No. 3	9	2	Middle of engine compartment		
Injector No. 4	46	2	Middle of engine compartment		
Injector No. 5	43	2	Middle of engine compartment		
Injector No. 6	41	2	Middle of engine compartment		
Input shaft (mainshaft) speed sensor	34	3	Left side of engine compartment		
Intake air temperature (IAT) sensor	16	2	Left side of engine compartment		
MAP sensor	17	3	Left side of engine compartment		
Oil pressure switch	49	1	Right side of engine compartment		
Output shaft (countershaft) speed sensor	32	3	Transmission housing		
PCM connector B	52	44	Right side of engine compartment		
PCM connector C	51	44	Right side of engine compartment		
Rear A/F sensor (B1, S1)	14	8	Left side of engine compartment		
Rear secondary HO2S (B1, S2)	13	4	Left side of engine compartment		

(cont'd)

Connectors and Harnesses

Connector to Harness Index (cont'd)





Engine Wire Harness (4WD) (cont'd)

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
Rocker arm oil pressure switch (VTEC oil pressure switch)	48	2	Right side of engine compartment		
Rocker arm oil control solenoid (VTEC solenoid valve)	1	1	Right side of engine compartment		
Starter solenoid	35	1	Left side of engine compartment		
Transmission range switch	30	10	Transmission housing		
Throttle position (TP) sensor/Throttle actuator	15	6	Middle of engine compartment		
3rd clutch transmission fluid pressure switch	33	1	Transmission housing		
4th clutch transmission fluid pressure switch	23	1	Transmission housing		
C101	54	23	Right side of engine compartment	Right engine compartment wire harness (see page 22-27)	
C102	53	2	Right side of engine compartment	Right engine compartment wire harness (see page 22-27)	
C103 (Junction connector)	8	24	Middle of engine compartment		
C104 (Junction connector)	10	24	Middle of engine compartment		
C105 (Junction connector)	18	24	Middle of engine compartment		
C151	31	5	Left side of engine compartment	Shift solenoid wire harness	
C161	47	1	Right side of engine compartment	Knock sensor subharness (see page 22-25)	
C171	2	6	Right side of engine compartment	CKP sensor subharness (see page 22-25)	
G101	37		Left side of engine compartment	Engine ground, via engine wire harness	
G102	3		Right side of engine compartment	Engine ground, via engine wire harness	

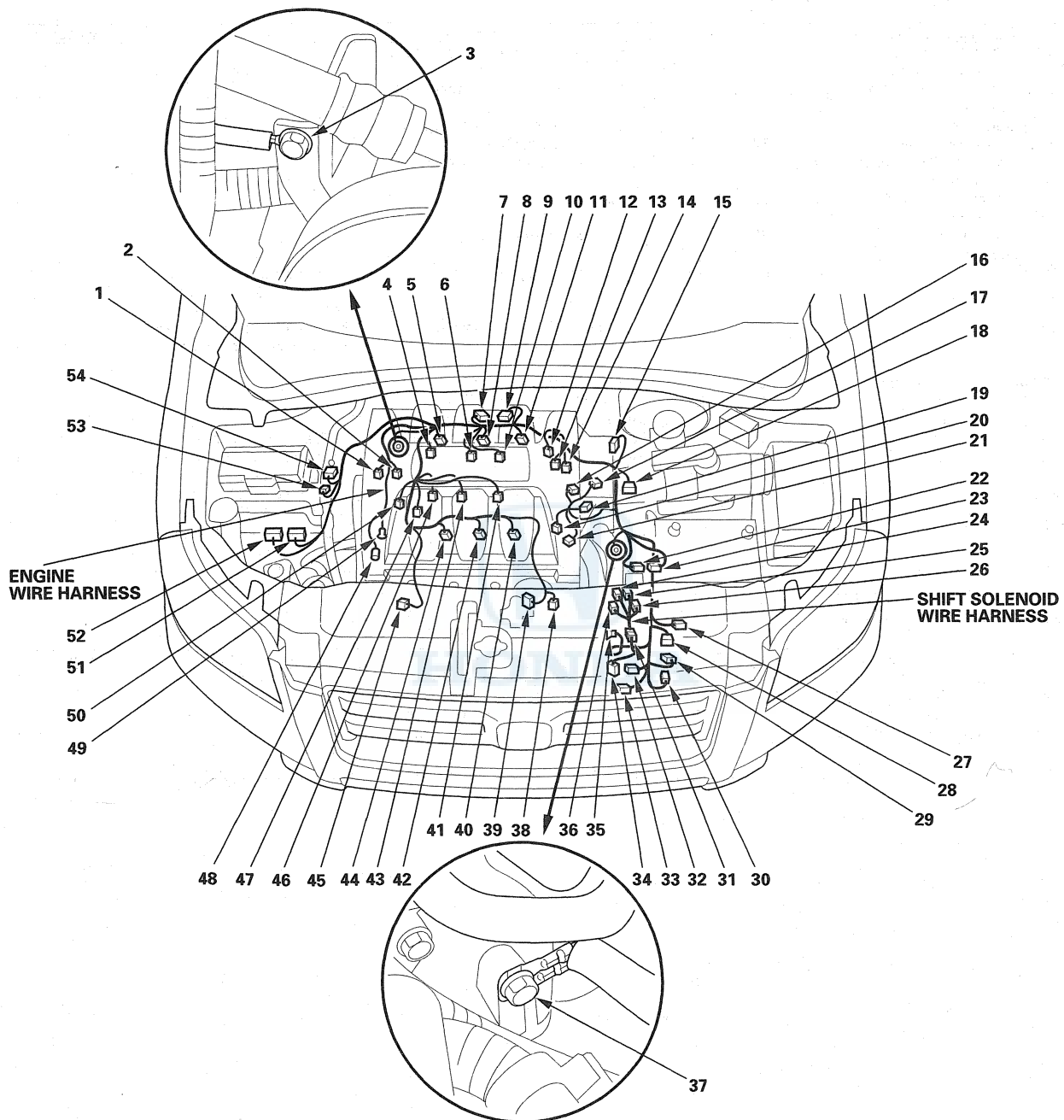
Shift Solenoid Wire Harness

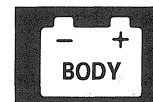
Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
Shift solenoid valve A	36	1	Left side of engine compartment		
Shift solenoid valve B	26	1	Left side of engine compartment		
Shift solenoid valve C	24	1	Left side of engine compartment		
Torque converter clutch solenoid valve	25	1	Left side of engine compartment		
C151	31	5	Left side of engine compartment	Engine wire harness (4WD)	

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Connectors and Harnesses

Connector to Harness Index (cont'd)





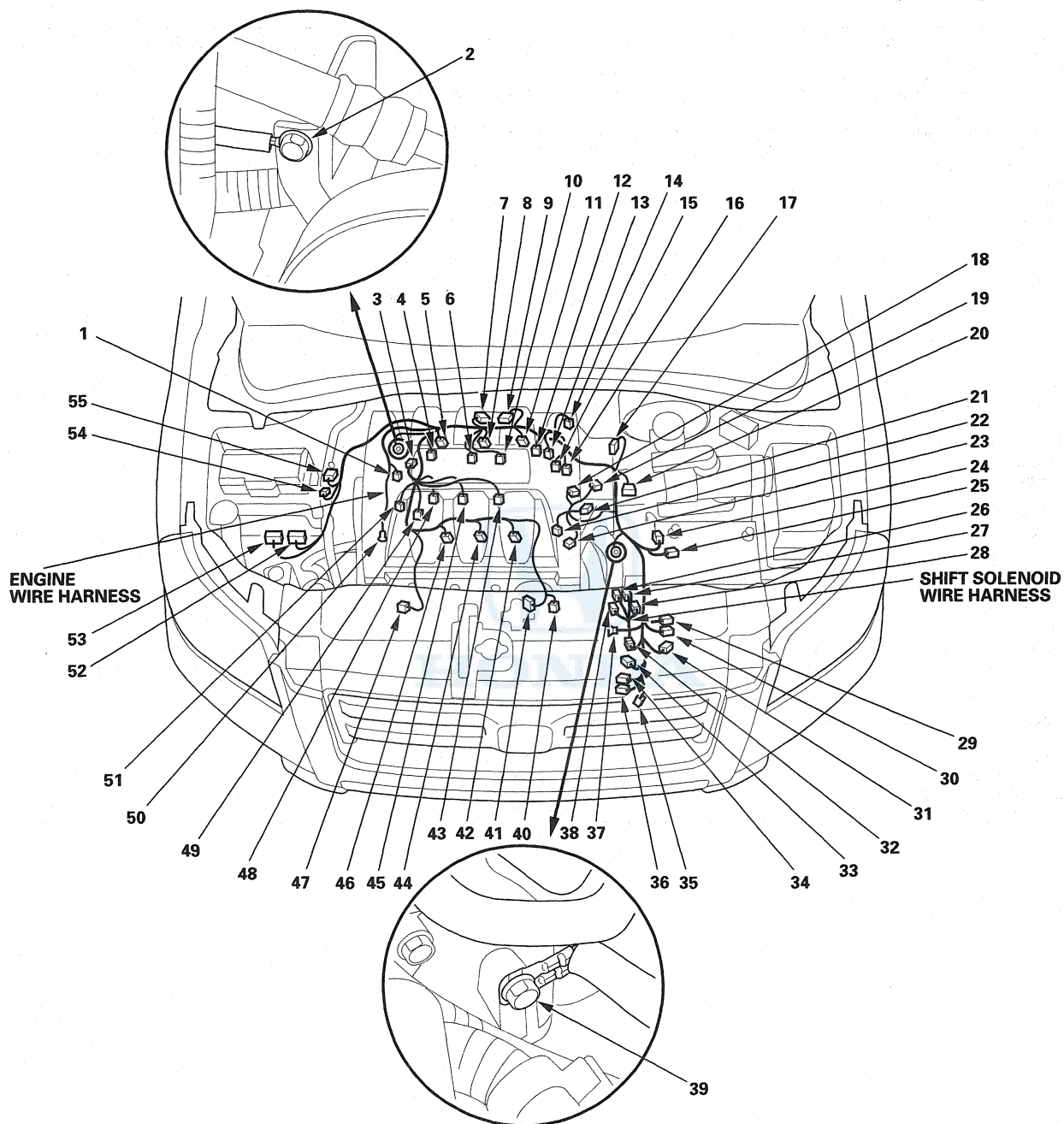
Engine Wire Harness (2WD)

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
Alternator	47	4	Middle of engine compartment		
ATF temperature sensor	35	2	Transmission housing		
A/T clutch pressure control solenoid valve A	30	2	Left side of engine compartment		
A/T clutch pressure control solenoid valve B	29	2	Left side of engine compartment		
A/T clutch pressure control solenoid valve C	25	2	Left side of engine compartment		
CMP sensor	51	3	Right side of engine compartment		
EGR valve and EGR valve position sensor	23	6	Left side of engine compartment		
Engine coolant temperature (ECT) sensor 1	22	2	Left side of engine compartment		
Engine coolant temperature (ECT) sensor 2	21	2	Left side of engine compartment		
EOP sensor	14	3	Left side of engine compartment		
EVAP canister purge valve	13	2	Left side of engine compartment		
Front A/F sensor (B2, S1)	40	8	Left side of engine compartment		
Front secondary HO2S (B2, S2)	41	4	Left side of engine compartment		
Ignition coil No. 1	5	3	Middle of engine compartment		
Ignition coil No. 2	7	3	Middle of engine compartment		
Ignition coil No. 3	11	3	Middle of engine compartment		
Ignition coil No. 4	46	3	Middle of engine compartment		
Ignition coil No. 5	44	3	Middle of engine compartment		
Ignition coil No. 6	42	3	Middle of engine compartment		
IMT actuator	3	5	Right side of engine compartment		
Injector No. 1	4	2	Middle of engine compartment		
Injector No. 2	6	2	Middle of engine compartment		
Injector No. 3	9	2	Middle of engine compartment		
Injector No. 4	48	2	Middle of engine compartment		
Injector No. 5	45	2	Middle of engine compartment		
Injector No. 6	43	2	Middle of engine compartment		
Input shaft (mainshaft) speed sensor	31	3	Left side of engine compartment		
Intake air temperature (IAT) sensor	18	2	Left side of engine compartment		
MAP sensor	19	3	Left side of engine compartment		
Oil pressure switch	50	1	Right side of engine compartment		
Output shaft (countershaft) speed sensor	34	3	Transmission housing		
PCM connector B	53	44	Right side of engine compartment		
PCM connector C	52	44	Right side of engine compartment		
Rear A/F sensor (B1, S1)	16	8	Left side of engine compartment		
Rear secondary HO2S (B1, S2)	15	4	Left side of engine compartment		

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Connectors and Harnesses

Connector to Harness Index (cont'd)





Engine Wire Harness (2WD) (cont'd)

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
Rocker arm oil control solenoid (VTEC solenoid valve)	12	2	Right side of engine compartment		
Starter solenoid	37	1	Left side of engine compartment		
Transmission range switch	33	10	Transmission housing		
Throttle position (TP) sensor/Throttle actuator	17	6	Middle of engine compartment		
3rd clutch transmission fluid pressure switch	36	1	Transmission housing		
4th clutch transmission fluid pressure switch	24	1	Transmission housing		
C101	55	23	Right side of engine compartment	Right engine compartment wire harness (see page 22-27)	
C102	54	2	Right side of engine compartment	Right engine compartment wire harness (see page 22-27)	
C103 (Junction connector)	8	24	Middle of engine compartment		
C104 (Junction connector)	10	24	Middle of engine compartment		
C105 (Junction connector)	20	24	Middle of engine compartment		
C151	32	5	Left side of engine compartment	Shift solenoid wire harness	
C161	49	1	Right side of engine compartment	Knock sensor subharness (see page 22-25)	
C171	1	6	Right side of engine compartment	CKP sensor subharness (see page 22-25)	
G101	39		Left side of engine compartment	Engine ground, via engine wire harness	
G102	2		Right side of engine compartment	Engine ground, via engine wire harness	

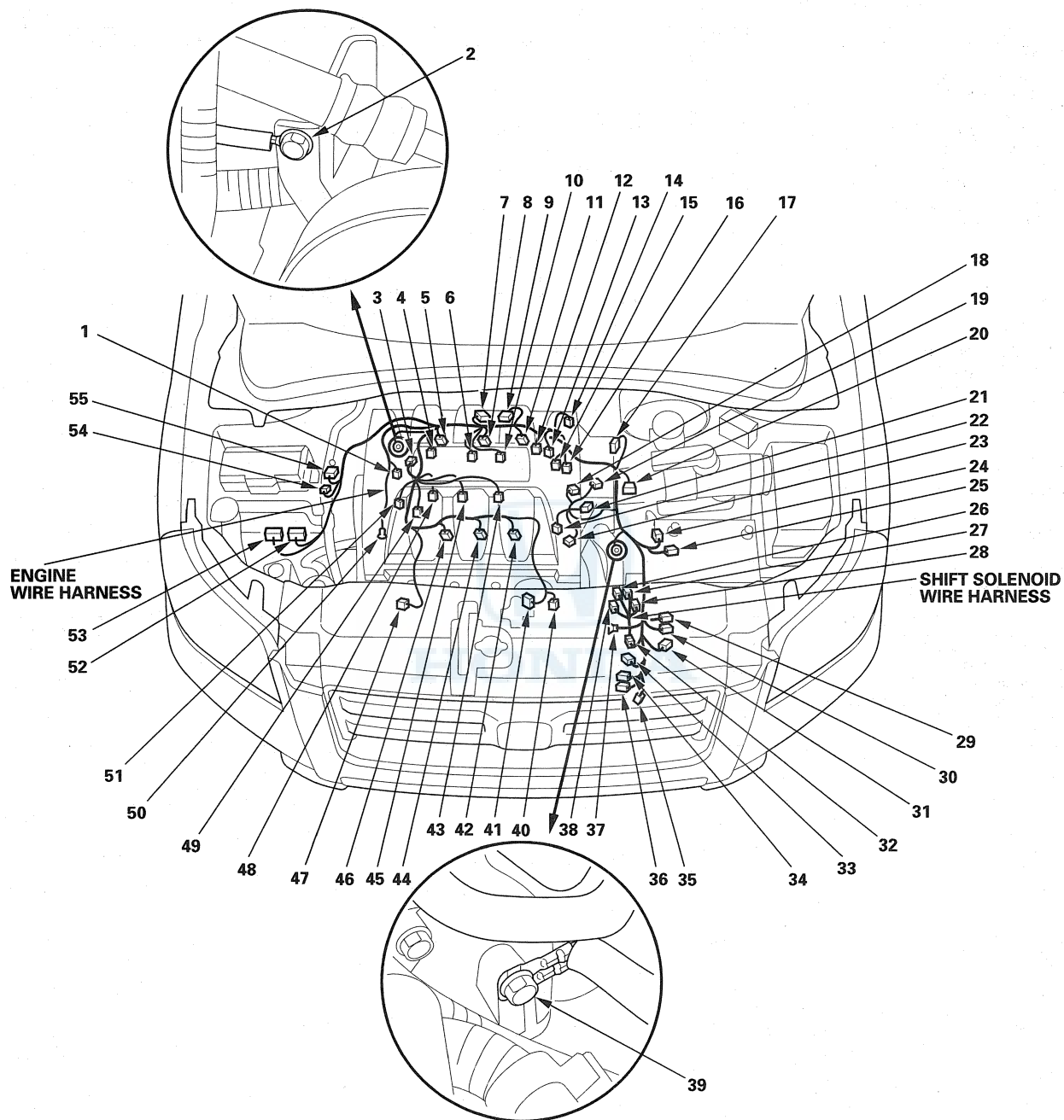
Shift Solenoid Wire Harness

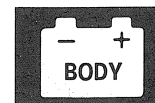
Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
Shift solenoid valve A	38	1	Left side of engine compartment		
Shift solenoid valve B	28	1	Left side of engine compartment		
Shift solenoid valve C	26	1	Left side of engine compartment		
Torque converter clutch solenoid valve	27	1	Left side of engine compartment		
C151	32	5	Left side of engine compartment	Engine wire harness (2WD)	

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Connectors and Harnesses

Connector to Harness Index (cont'd)





Knock Sensor Subharness

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
Knock sensor C161	3	1	Middle of engine compartment	Engine wire harness • 4WD (see page 22-17) • 2WD (see page 22-21)	
	2	1	Right side of engine compartment		

CKP Sensor Subharness

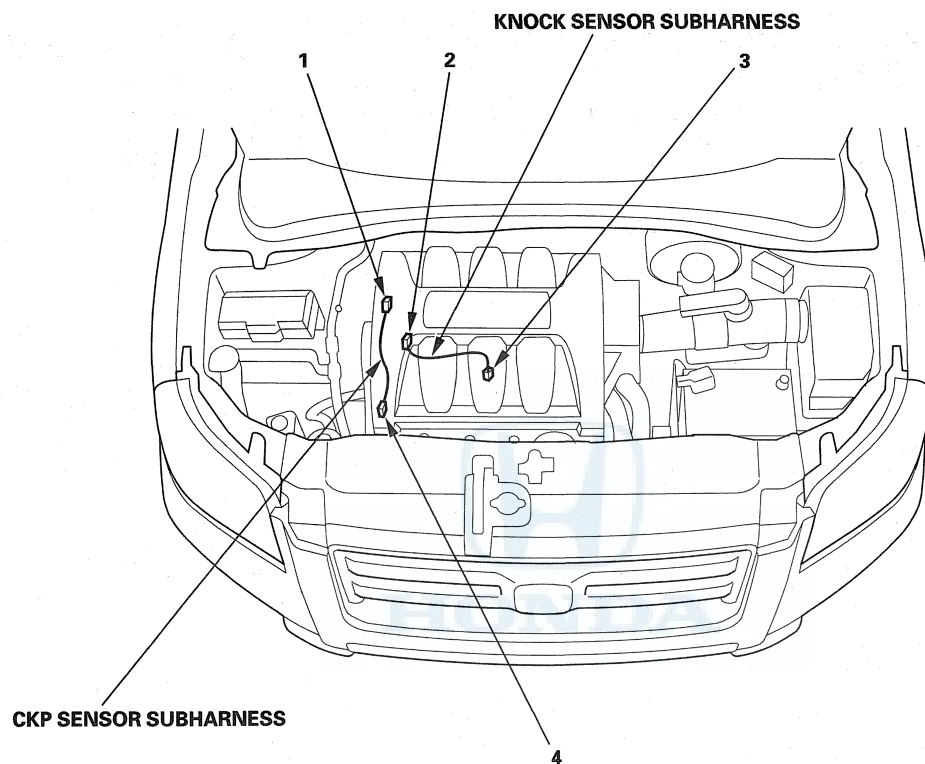
Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
Crankshaft position sensors A and B (CKP A, CKP B) C171	4	6	Right side of engine compartment	Engine wire harness • 4WD (see page 22-17) • 2WD (see page 22-21)	
	1	6	Right side of engine compartment		

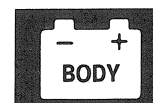


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Connectors and Harnesses

Connector to Harness Index (cont'd)





Right Engine Compartment Wire Harness

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
A/C compressor clutch	18	1	Middle of engine compartment	A/C compressor clutch harness	
A/C condenser fan motor	17	2	Middle of engine compartment		
A/C diode assembly	34	4	Behind right kick panel		
A/C pressure switch	33	2	Right side of engine compartment		
A/F sensor relay	40	4	Behind right kick panel		
ELD unit (see page 22-67)	32	3	In under-hood fuse/relay box		
ETCS control relay	41	4	Behind right kick panel		
Fan control relay	11	5	In auxiliary under-hood relay box		
High horn	20	1	Behind right side of front bumper		
Ignition coil relay	39	4	Behind right kick panel		
Auxiliary under-dash fuse holder	42	2	Behind right kick panel		
Intermittent wiper relay	10	5	In auxiliary under-hood relay box		
Outside air temperature sensor	16	2	Behind middle of front bumper		* 1
Passenger's under-dash fuse/relay box connector A (see page 22-69)	37	3	Behind right kick panel		
Passenger's under-dash fuse/relay box connector B (see page 22-69)	35	18	Behind right kick panel		
Passenger's under-dash fuse/relay box connector K (see page 22-69)	36	3	Behind right kick panel		
PCM connector A	31	44	Right side of engine compartment		
Power steering pressure (PSP) switch	8	2	Right side of engine compartment		
Radiator fan motor	14	2	Middle of engine compartment		
Rear engine mount control solenoid	9	2	Rear of engine compartment		2WD
Rear washer motor relay	38	4	Behind right kick panel		
Rear window intermittent wiper relay	12	5	In auxiliary under-hood relay box		
Right fog light	22	2	Behind right side of front bumper		* 2
Right front impact sensor	19	2	Right side of engine compartment		
Right front parking light	27	2	Behind right headlight assembly		
Right front side marker light	29	2	Behind right headlight assembly		
Right front turn signal light	28	2	Behind right headlight assembly		
Right front wheel sensor	5	2	Right side of engine compartment		
Right headlight (high)	23	2	Behind right headlight assembly		
Right headlight (low)	26	2	Behind right headlight assembly		
Seat heater relay	13	4	In auxiliary under-hood relay box		EXL
Security hood switch	15	2	Middle of engine compartment		* 2
Under-hood fuse/relay box connector A (see page 22-67)	4	18	Right side of engine compartment		
Under-hood fuse/relay box connector B (see page 22-67)	3	7	Right side of engine compartment		
Under-hood fuse/relay box connector C (see page 22-67)	2	3	Right side of engine compartment		
Under-hood fuse/relay box connector D (see page 22-67)	1	16	Right side of engine compartment		
Washer fluid level switch	21	2	Behind right side of front bumper		Canada models
Washer motor	25	2	Behind right side of front bumper		

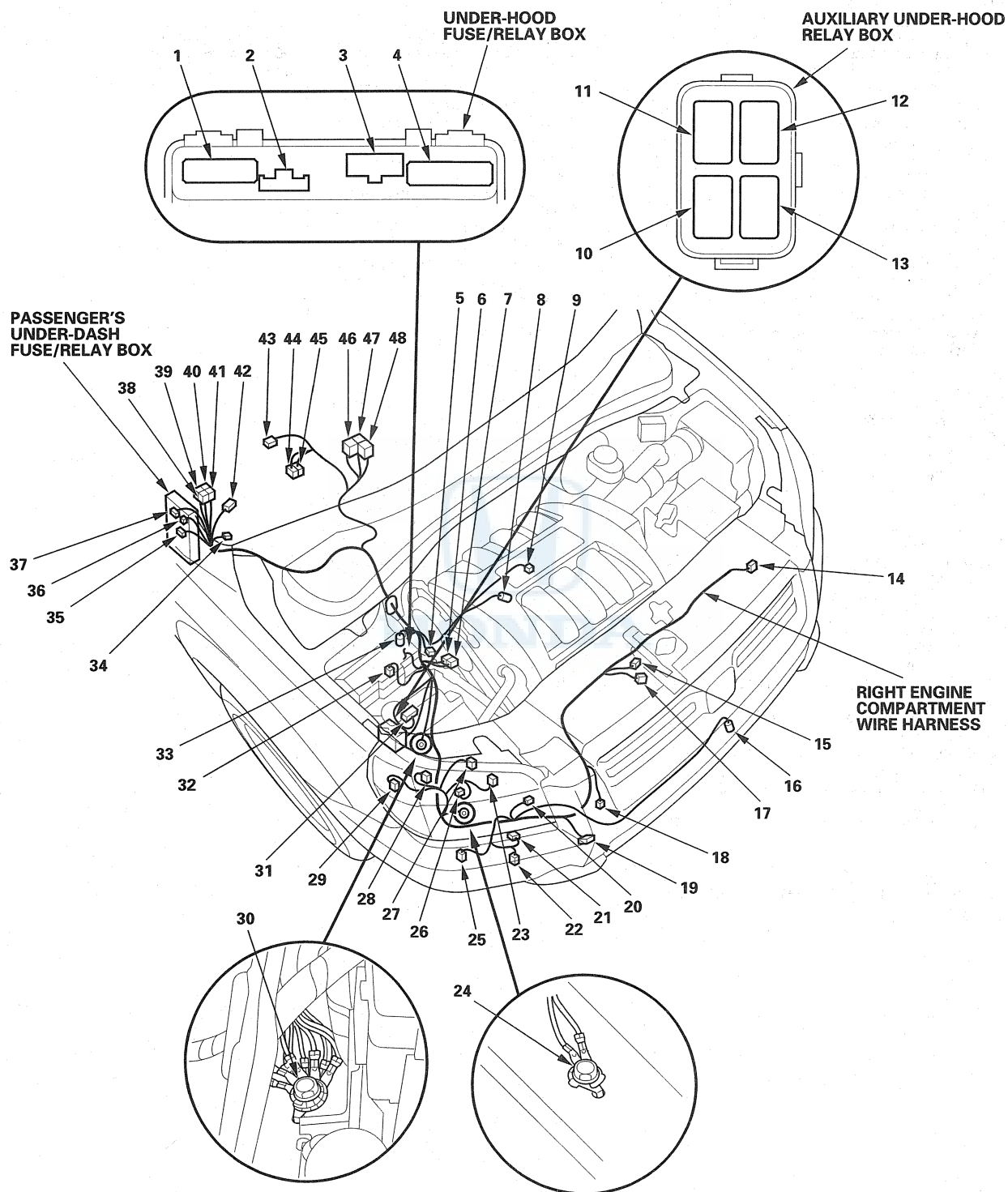
* 1: With climate control

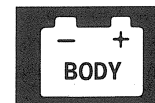
* 2: Except LX and LX-VP models

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Connectors and Harnesses

Connector to Harness Index (cont'd)





Right Engine Compartment Wire Harness (cont'd)

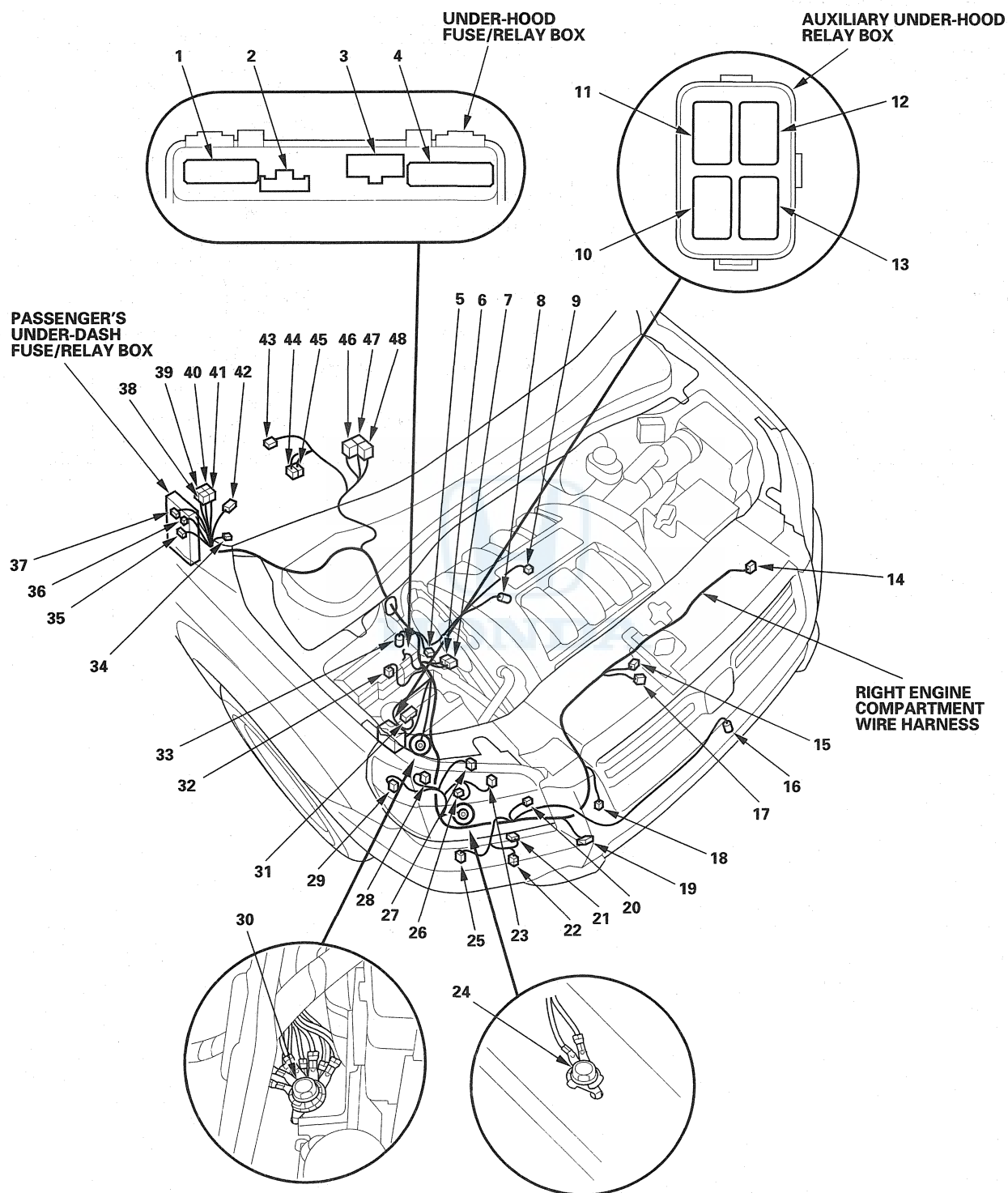
Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
C101	6	23	Right side of engine compartment	Engine wire harness • 4WD (see page 22-17) • 2WD (see page 22-21)	
C102	7	2	Right side of engine compartment	Engine wire harness • 4WD (see page 22-17) • 2WD (see page 22-21)	
C201	46	8	Behind glove box	Dashboard wire harness B (see page 22-37)	
C202	48	7	Behind glove box	Dashboard wire harness B (see page 22-37)	
C203	47	24	Behind glove box	Dashboard wire harness B (see page 22-37)	
C204	44	20	Behind glove box	Dashboard wire harness A (see page 22-43)	
C205	45	14	Behind glove box	Dashboard wire harness A (see page 22-43)	
C206	43	2	Behind glove box	Dashboard wire harness A (see page 22-43)	
G201	30		Right side of engine compartment	Body ground, via right engine compartment wire harness	
G202	24		Right side of engine compartment	Body ground, via right engine compartment wire harness	

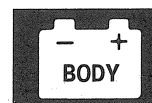


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Connectors and Harnesses

Connector to Harness Index (cont'd)





Left Engine Compartment Wire Harness

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
Brake fluid level switch connector (A)	1	1	Left side of engine compartment		
Brake fluid level switch connector (B)	2	1	Left side of engine compartment		
Driver's under-dash fuse/relay box connector C (see page 22-68)	8	5	Under left side of dash		
Driver's under-dash fuse/relay box connector D (see page 22-68)	7	20	Under left side of dash		
Left fog light	23	2	Left side of engine compartment		* 1
Left front impact sensor	24	2	Left side of engine compartment		
Left front parking light	19	2	Behind left headlight assembly		
Left front side marker light	18	2	Behind left headlight assembly		
Left front TPMS initiator	13	3	Behind left fender		
Left front turn signal light	17	2	Behind left headlight		
Left front wheel sensor	14	2	Left side of engine compartment		
Left side turn signal light	11	2	Behind left fender		
Left headlight (high)	22	2	Behind left headlight assembly		
Left headlight (low)	21	2	Behind left headlight assembly		
Low horn	26	1	Behind left side of front bumper		
VSA modulator-control unit	15	47	Left side of engine compartment		
Windshield wiper motor	3	5	Left side of engine compartment		
C301	4	20	Under left side of dash	Dashboard wire harness B (see page 22-33)	
C302	5	14	Under left side of dash	Dashboard wire harness B (see page 22-33)	
C303	9	18	Behind left kick panel	Dashboard wire harness A (see page 22-39)	
C304	10	4	Behind left kick panel	Dashboard wire harness A (see page 22-39)	
C305	25	2	Behind left side of front bumper	Engine mount control solenoid subharness	2WD
C320 (Fog light switch connector)	12	2	Under left side of dash		* 2
C321 (Fog light connector)	20	1	Left side of engine compartment		* 2
G301	16		Left side of engine compartment	Body ground, via left engine compartment wire harness	
G302	6		Behind left kick panel	Body ground, via left engine compartment wire harness	

Engine Mount Control Solenoid Subharness (2WD)

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
Engine mount control solenoid	27	2	Front of engine compartment		
C305	25	2	Behind left side of front bumper	Left engine compartment wire harness	

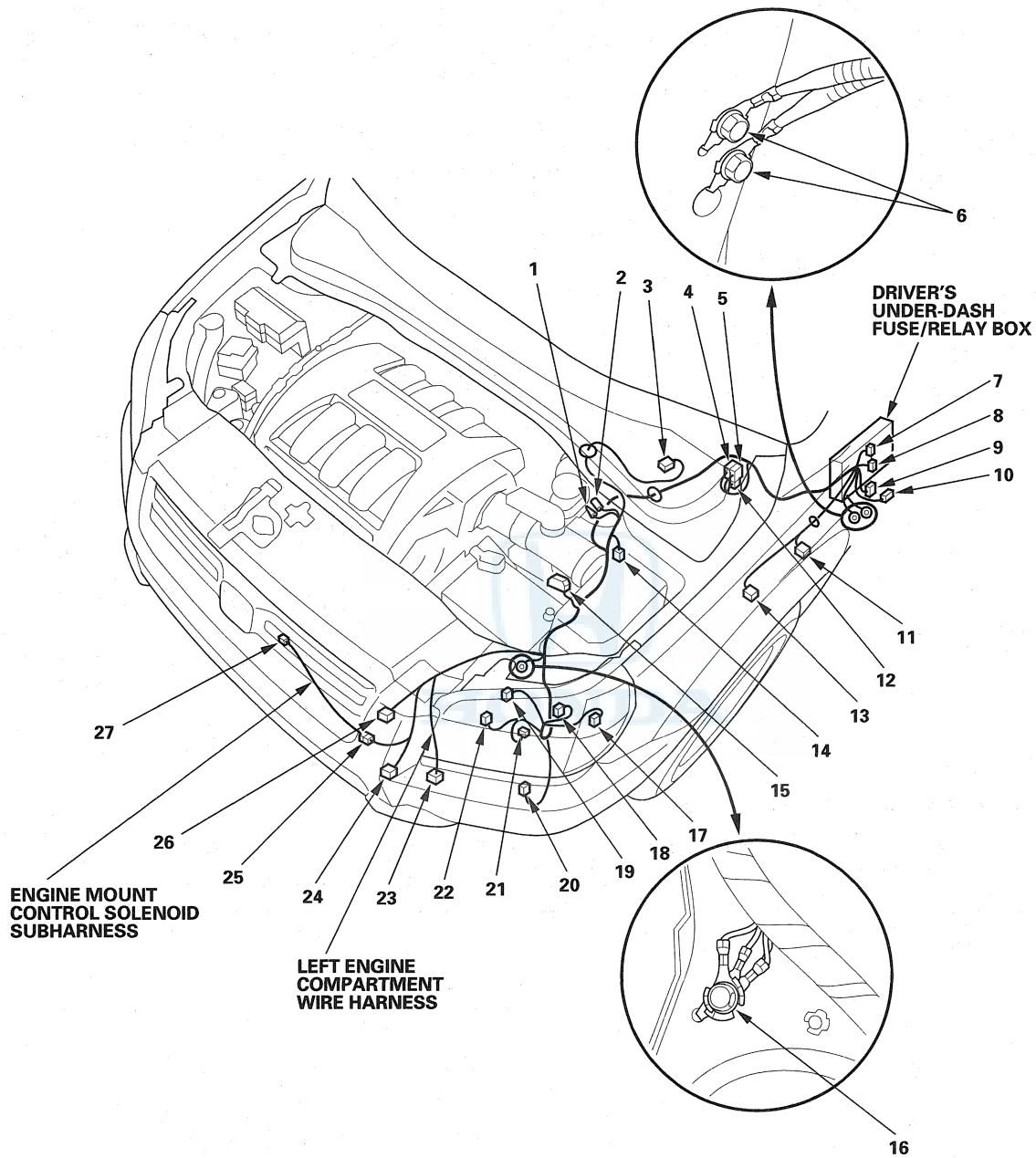
* 1: Except LX and LX-VP models

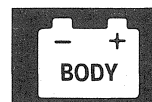
* 2: LX and LX-VP models

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Connectors and Harnesses

Connector to Harness Index (cont'd)





Dashboard Wire Harness B (Left branch)

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
AC inverter unit	16	12	Under left side of dash		* 1
ACM control relay	35	4	Under left side of dash		2WD
Active noise control unit	12	16	Under left side of dash		2WD
ATP P relay	15	5	Under left side of dash		
Brake pedal position switch	27	4	Under left side of dash		
Cable reel connector B	8	13	In steering column cover		* 2
Cable reel connector B	8	5	In steering column cover		* 3
Combination light switch	5	16	In steering column cover		
Cruise control main switch/VSA off switch	32	13	Left side of dash		
Data link connector (DLC)	21	16	Under left side of dash		
Daytime running lights control unit	11	14	Under left side of dash		Canada models
Dimmer relay	33	4	Under left side of dash		
Driver's under-dash fuse/relay box connector L (see page 22-68)	37	22	Under left side of dash		
Driver's under-dash fuse/relay box connector M (see page 22-68)	38	20	Under left side of dash		
Driver's under-dash fuse/relay box connector N (see page 22-68)	39	7	Under left side of dash		
Driver's under-dash fuse/relay box connector P (see page 22-68)	40	3	Under left side of dash		
Fog light relay	4	4	Under left side of dash		* 4
Front washer motor relay	14	5	Under left side of dash		
Ignition key switch/key light	23	7	In steering column cover		
Immobilizer control unit-receiver	9	7	In steering column cover		
In-car temperature sensor	20	2	Under left side of dash		* 4
Interior light relay	3	4	Under left side of dash		
Multiplex control inspection connector	28	3	Under left side of dash		
Park pin relay	13	4	Under left side of dash		
Park pin switch	7	3	In steering column cover		
PGM-FI main relay 1	17	4	Under left side of dash		
PGM-FI main relay 2	18	5	Under left side of dash		
Rear accessory power socket relay	2	4	Under left side of dash		
Shift lock diode (A and B)	19	4	Under left side of dash		
Shift lock solenoid	6	2	In steering column cover		
Steering angle sensor	24	5	In steering column cover		
Taillight relay	34	4	Under left side of dash		
TPMS control unit connector A	25	14	Under left side of dash		
TPMS control unit connector B	26	20	Under left side of dash		
VTM-4 relay	35	4	Under left side of dash		4WD
Wiper/washer switch	10	14	In steering column cover		

* 1: With AC power outlet

* 2: With navigation

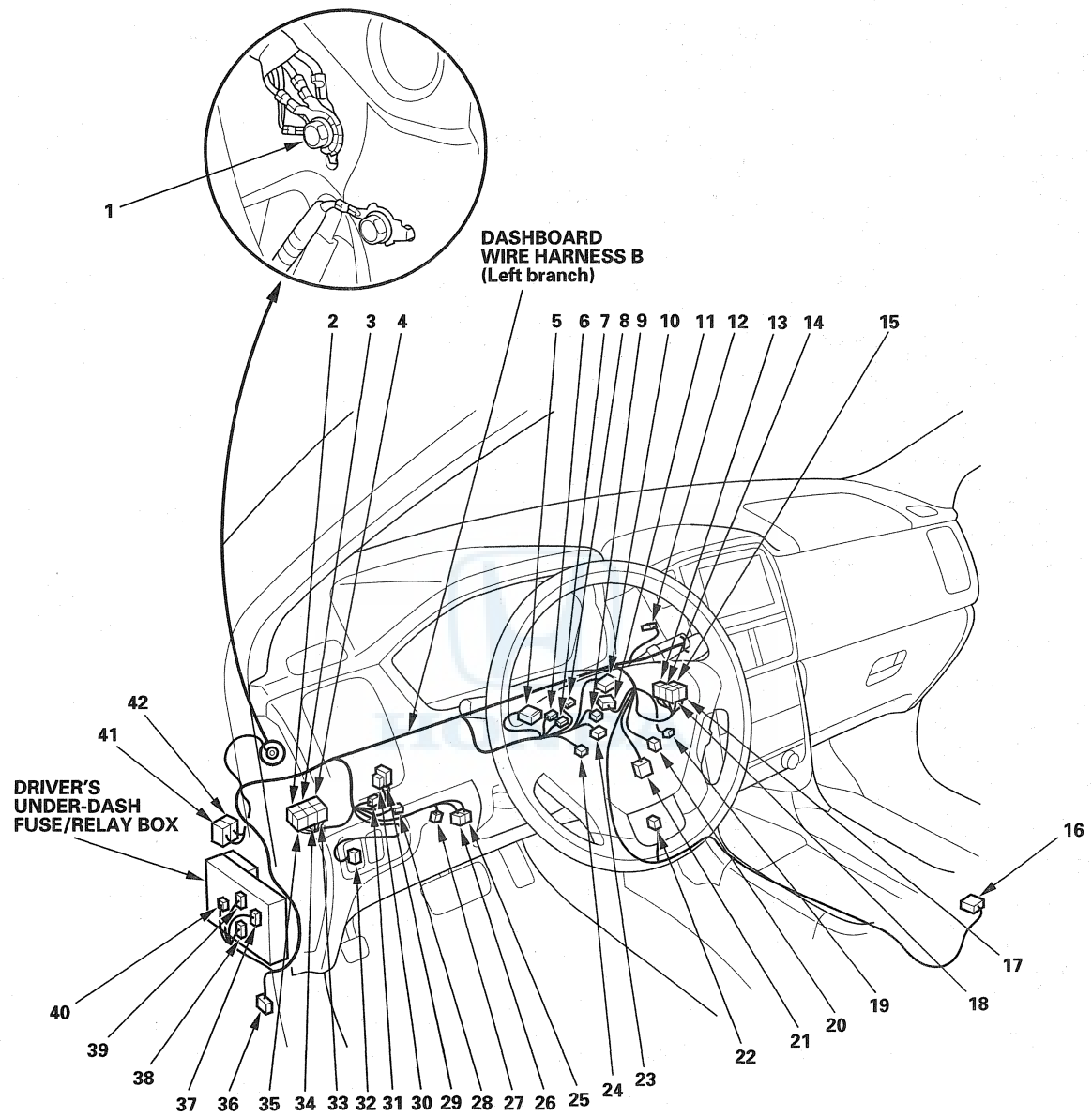
* 3: Without navigation

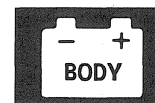
* 4: Except LX and LX-VP models

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Connectors and Harnesses

Connector to Harness Index (cont'd)





Dashboard Wire Harness B (Left branch) (cont'd)

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
C301	29	20	Under left side of dash	Left engine compartment wire harness (see page 22-31)	* 2
C302	30	14	Under left side of dash	Left engine compartment wire harness (see page 22-31)	
C324 (security connector)	31	14	Under left side of dash		
C401	41	34	Under left side of dash	Dashboard wire harness A (see page 22-39)	
C402	42	14	Under left side of dash	Dashboard wire harness A (see page 22-39)	* 1
C404	22	2	Under left side of dash	Dashboard wire harness A (see page 22-39)	
C601	36	18	Behind left kick panel	Left side wire harness (see page 22-45)	4WD
C601	36	8	Behind left kick panel	Left side wire harness (see page 22-45)	2WD
G401	1		Left side of dash	Body ground, via dashboard wire harness B	

* 1: With AC power outlet

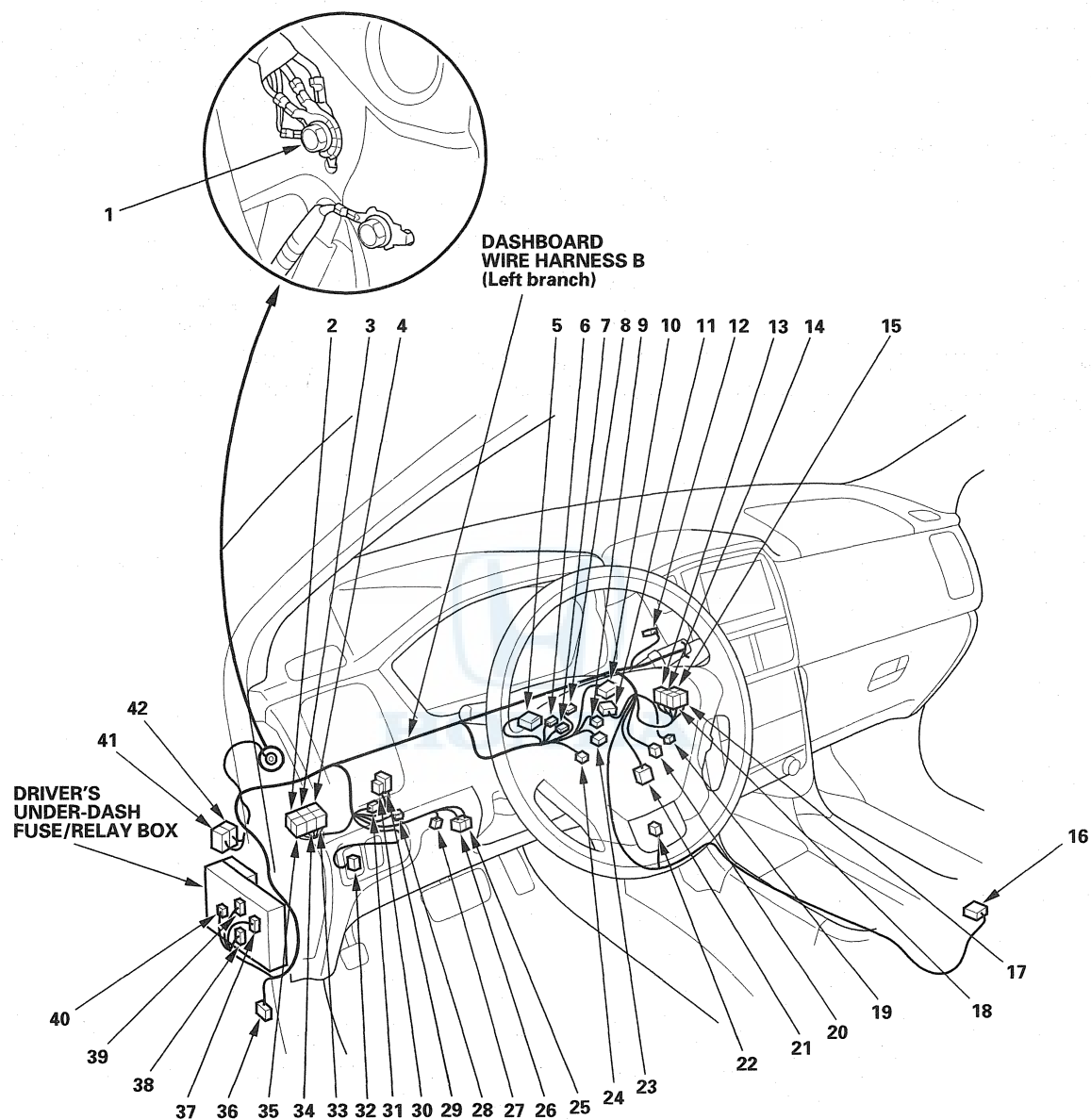
* 2: LX and LX-VP models

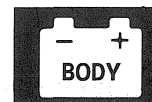


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Connectors and Harnesses

Connector to Harness Index (cont'd)





Dashboard Wire Harness B (Right branch)

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
Climate control unit connector B	2	30	Under middle of dash		* 1
Evaporator temperature sensor	13	2	Behind glove box		
Front air mix control motor	12	7	Under right side of dash		
Front blower motor	6	2	Under right side of dash		
Front blower power transistor	5	5	Under right side of dash		
Heater control panel	2	30	Under middle of dash		* 2
Front mode control motor	1	7	Under left side of dash		
Passenger's under-dash fuse/relay box connector I (see page 22-69)	8	16	Behind right kick panel		
Passenger's under-dash fuse/relay box connector J (see page 22-69)	9	16	Behind right kick panel		
Recirculation control motor	4	7	Behind glove box		
C201	10	8	Behind glove box	Right engine compartment wire harness (see page 22-27)	
C202	3	7	Behind glove box	Right engine compartment wire harness (see page 22-27)	
C203	11	24	Behind glove box	Right engine compartment wire harness (see page 22-27)	
C403	14	18	Under middle of dash	Dashboard wire harness A (see page 22-43)	
C553	7	6	Behind center of dash	Roof wire harness (see page 22-55)	

* 1: Except LX and LX-VP models

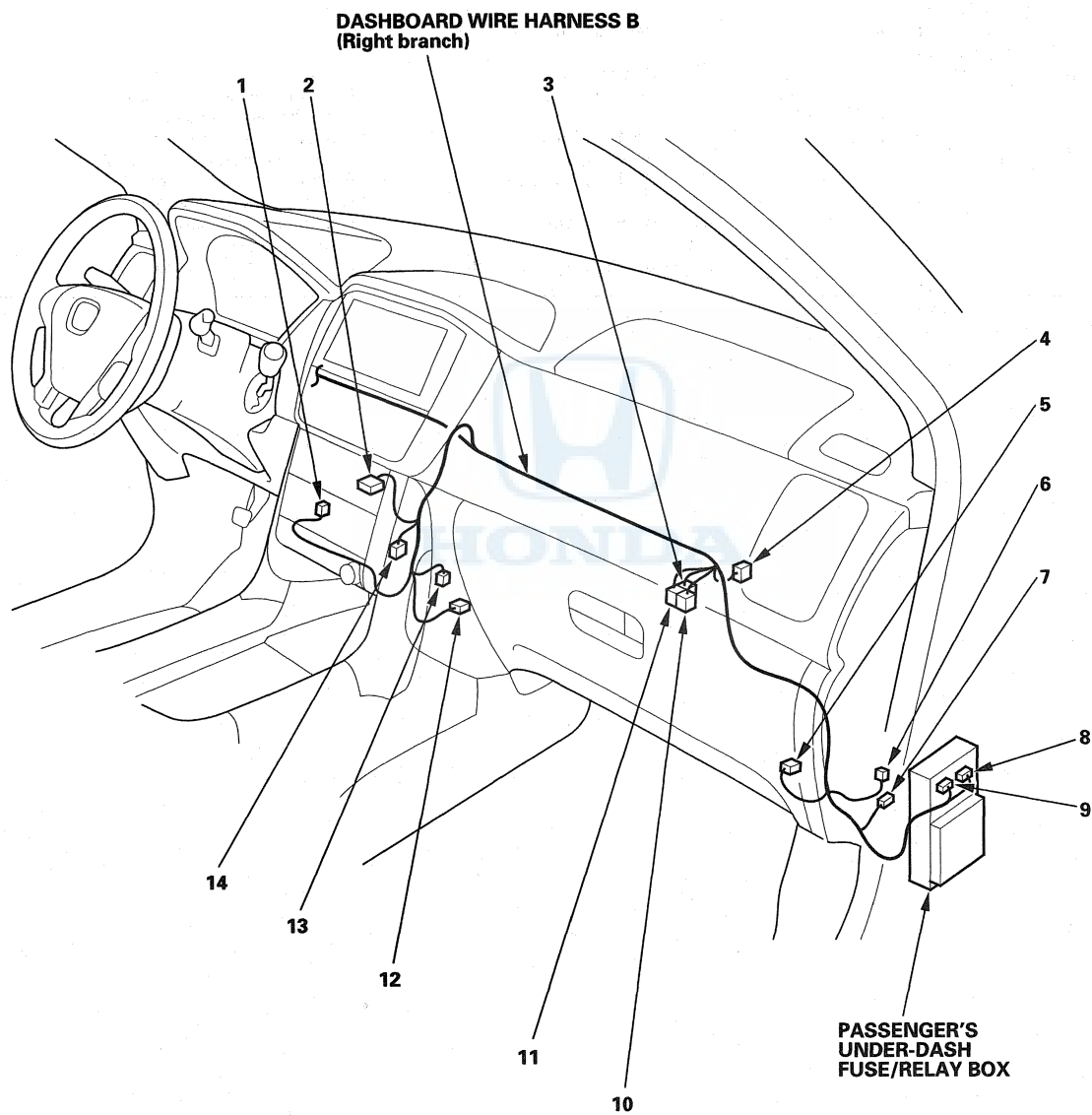
* 2: LX and LX-VP models

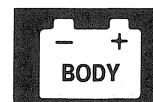


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Connectors and Harnesses

Connector to Harness Index (cont'd)





Dashboard Wire Harness A (Left branch)

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
Audio unit connector A	8	20	Middle of dash		* 4
Audio unit connector A	16	20	Middle of dash		* 1
Audio unit connector B	9	14	Middle of dash		* 2
Audio unit connector B	15	14	Middle of dash		* 1
Audio unit connector B	9	5	Middle of dash		LX
Audio unit connector C	11	14	Middle of dash		* 4
Audio unit connector C	17	14	Middle of dash		* 1
Audio unit connector D	10	40	Middle of dash		* 2
Cable reel connector A	27	4	Under left side of dash		
Driver's multiplex control unit connector B	42	22	Under left side of dash		
Driver's seat heater switch	18	6	Middle of dash		EXL
Driver's under-dash fuse/relay box connector B (see page 22-68)	36	2	Under left side of dash		
Driver's under-dash fuse/relay box connector J (see page 22-68)	41	18	Under left side of dash		
Driver's under-dash fuse/relay box connector K (see page 22-68)	40	18	Under left side of dash		
DVD player unit connector	13	22	Middle of dash		* 2
Front passenger's airbag first and second inflators	14	4	Behind glove box		
Front passenger's airbag cutoff indicator	7	7	Middle of dash		2WD
Gauge control module connector A	4	20	Behind gauge assembly		
Gauge control module connector B	3	36	Behind gauge assembly		
Hazard warning switch	6	10	Middle of dash		
Interior light switch	29	6	Left side of dash		
Left tweeter	45	2	Left side of dash		* 5
Memory erase signal (MES) connector	33	2	Under left side of dash		
Moonroof switch	28	6	Left side of dash		* 3
Navigation display unit	12	20	Middle of dash		* 1
Parking brake switch	30	1	Under left side of dash		
Sunlight sensor	5	2	Middle of dash		* 6
VTM-4 lock switch/front passenger's airbag cutoff indicator	7	7	Middle of dash		4WD
Yaw rate-lateral acceleration sensor	22	5	Under middle of dash		

* 1: With navigation

* 2: With rear entertainment system

* 3: With moonroof

* 4: Without navigation

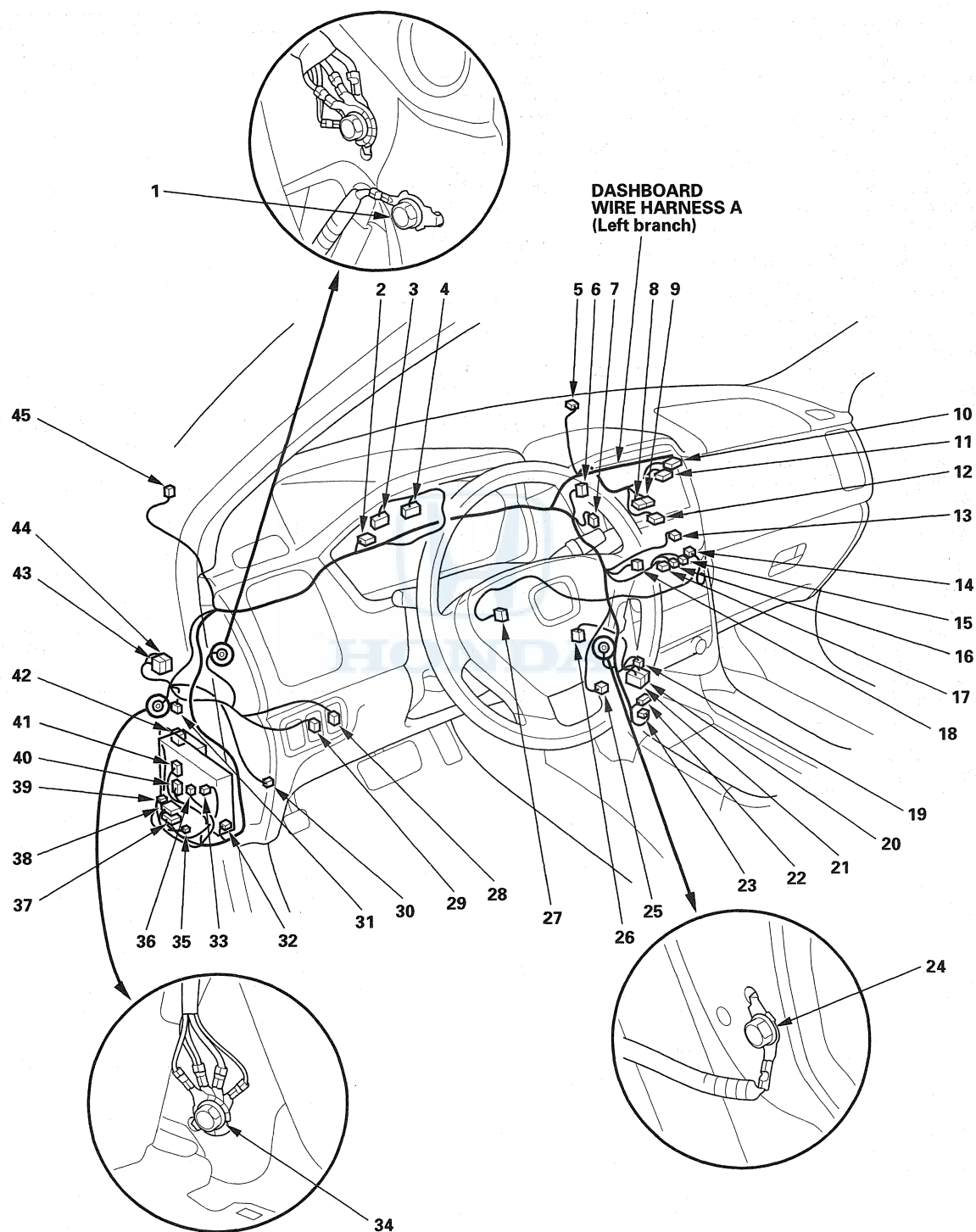
* 5: Except LX model

* 6: Except LX and LX-VP models

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Connectors and Harnesses

Connector to Harness Index (cont'd)





Dashboard Wire Harness A (Left branch) (cont'd)

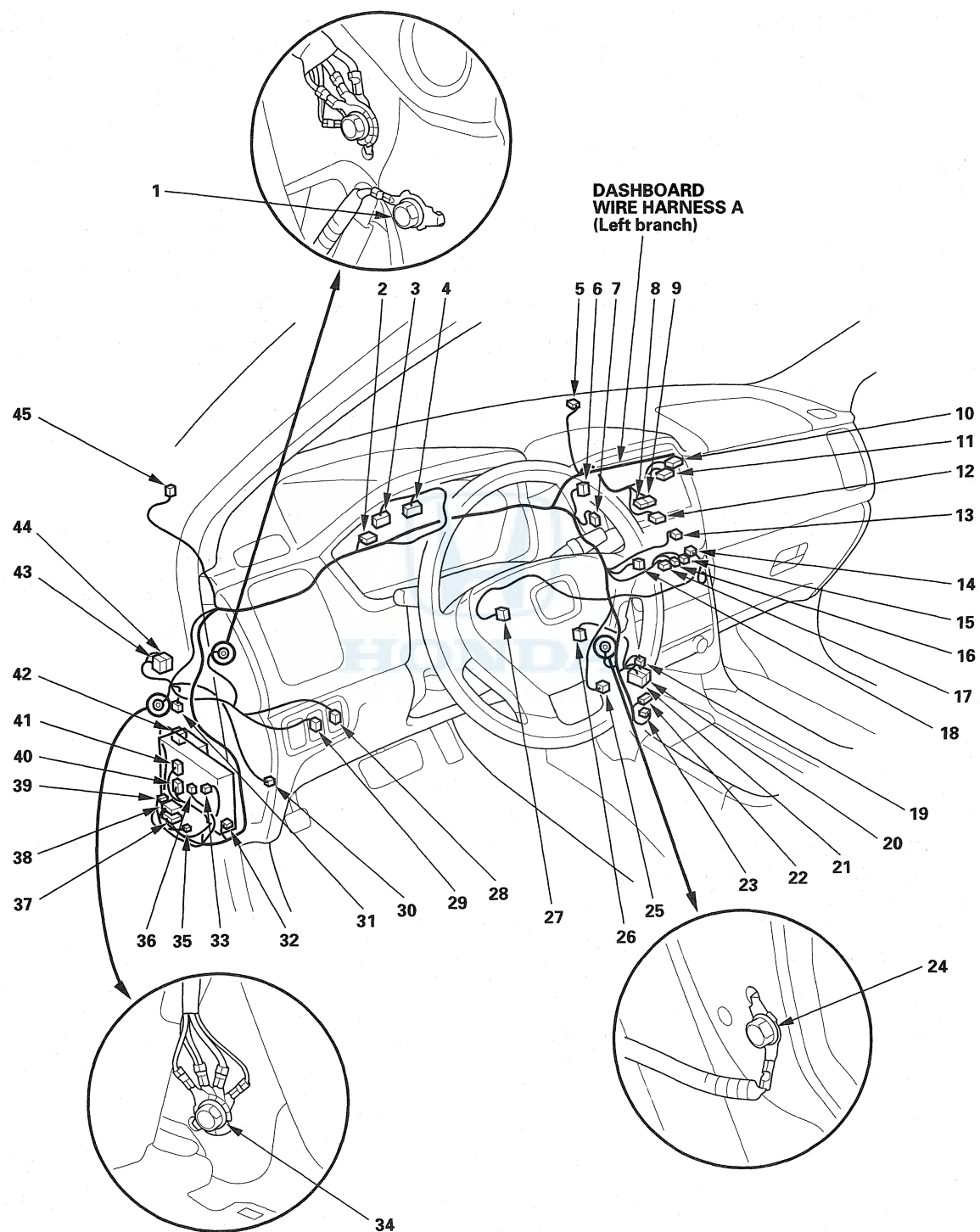
Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
C303	38	18	Behind left kick panel	Left engine compartment wire harness (see page 22-31)	
C304	39	4	Behind left kick panel	Left engine compartment wire harness (see page 22-31)	
C306 (Junction connector)	2	22	Behind gauge control module		
C323 (Keyless connector)	32	2	Under left side of dash		
C401	43	34	Under left side of dash	Dashboard wire harness B (see page 22-33)	
C402	44	14	Under left side of dash	Dashboard wire harness B (see page 22-33)	
C404	26	2	Under left side of dash	Dashboard wire harness B (see page 22-33)	* 5
C502	21	14	Under middle of dash	Rear A/C wire harness (see page 22-53)	* 2
C502	21	8	Under middle of dash	Rear A/C wire harness (see page 22-53)	* 3, * 4
C503	19	2	Under middle of dash	Rear A/C wire harness (see page 22-53)	
C504	20	21	Under middle of dash	Rear A/C wire harness (see page 22-53)	* 2
C504	20	13	Under middle of dash	Rear A/C wire harness (see page 22-53)	* 3
C552	37	16	Behind left kick panel	Roof wire harness (see page 22-55)	* 1
C602	35	20	Behind left kick panel	Left side wire harness (see page 22-45)	4WD
C602	35	10	Behind left kick panel	Left side wire harness (see page 22-45)	2WD
C701	31	4	Under left side of dash	Driver's door wire harness (see page 22-58)	
C801	23	3	Under middle of dash	SRS harness (see page 22-51)	* 6
C801	23	10	Under middle of dash	SRS harness (see page 22-51)	* 7
C821	25	28	Under middle of dash	SRS subharness (see page 22-51)	
G501	34		Under left side of dash	Body ground, via dashboard wire harness A	
G502	1		Under left side of dash	Body ground, via dashboard wire harness A	
G504	24		Under middle of dash	Body ground, via dashboard wire harness A	

- * 1: With rear entertainment system
- * 2: With climate control and rear entertainment system
- * 3: With climate control and without rear entertainment system
- * 4: Without climate control
- * 5: With AC power outlet
- * 6: LX and LX-VP models
- * 7: Except LX and LX-VP models

(cont'd)

Connectors and Harnesses

Connector to Harness Index (cont'd)





Dashboard Wire Harness A (Right branch)

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
Cigarette lighter connector	3	4	Under middle of dash		Option
Climate control unit connector A	1	20	Under middle of dash		* 5
Engine mount control unit	26	20	Under middle of dash		2WD
Front accessory power socket	24	2	Under middle of dash		
Front passenger's seat heater switch	2	6	Middle of dash		* 1
Front passenger's seat heater switch	2	8	Middle of dash		* 2
Glove box light	20	2	Behind glove box		
Keyless receiver unit	18	7	Behind glove box		
Passenger's multiplex control unit connector B	14	22	Behind right kick panel		
Passenger's under-dash fuse/relay box connector G (see page 22-69)	10	18	Behind right kick panel		
Passenger's under-dash fuse/relay box connector H (see page 22-69)	11	18	Behind right kick panel		
Right tweeter	6	2	Right side of dash		* 6
C204	19	20	Behind glove box	Right engine compartment wire harness (see page 22-27)	
C205	9	14	Behind glove box	Right engine compartment wire harness (see page 22-27)	
C206	7	2	Behind glove box	Right engine compartment wire harness (see page 22-27)	
C207 (Junction connector)	5	22	Behind glove box		
C208 (Junction connector)	8	12	Behind glove box		* 2
C403	4	18	Behind center of dash	Dashboard wire harness B (see page 22-37)	
C551	13	20	Behind right kick panel	Roof wire harness (see page 22-55)	
C554	12	4	Behind right kick panel	Roof wire harness (see page 22-55)	
C651	15	23	Behind right kick panel	Right side wire harness (see page 22-47)	
C652	16	6	Behind right kick panel	Right side wire harness (see page 22-47)	* 4
C901	23	34	Right side of center console	Navigation wire harness (see page 22-62)	* 2
C951	22	2	Right side of center console	Console accessory power socket subharness (see page 22-54)	
C961	25	2	Under middle of dash	Front console light subharness	
G503	17		Behind glove box	Body ground, via dashboard wire harness A	
G505	21		Right side of center console	Body ground, via dashboard wire harness A	2WD

Front Console Light Subharness

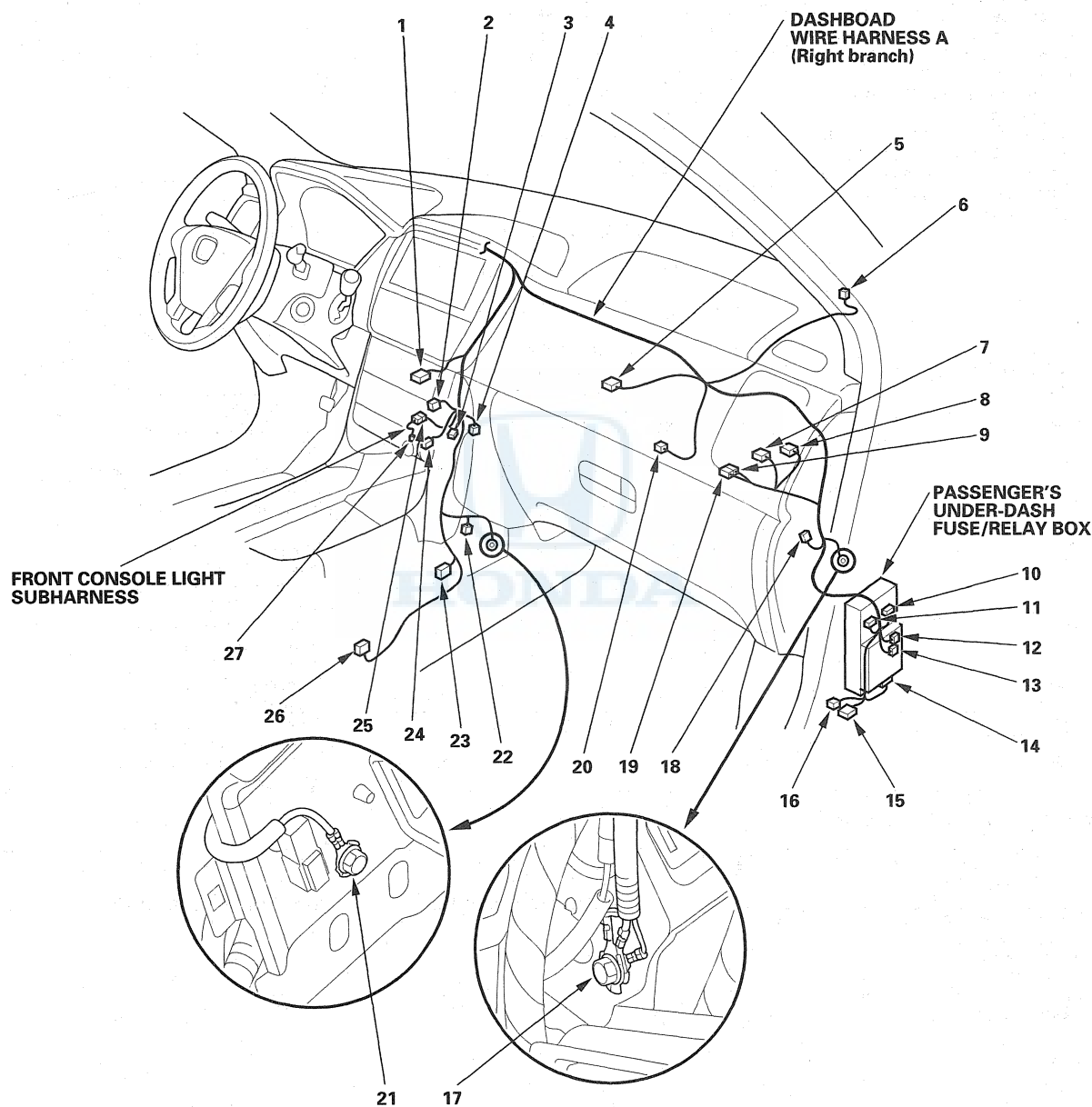
Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
Front console light	27		Under middle of dash		
C961	26	2	Under middle of dash	Dashboard wire harness A	

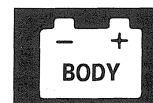
- * 1: Without navigation
- * 2: With navigation
- * 3: With moonroof
- * 4: With XM
- * 5: Except LX and LX-VP models
- * 5: Except LX model

(cont'd)

Connectors and Harnesses

Connector to Harness Index (cont'd)





Left Side Wire Harness

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
Cargo area accessory power socket	6	2	Left side of cargo area		
Driver's door switch	18	1	Left B-pillar		
Driver's under-dash fuse/relay box connector E (see page 22-68)	21	10	Under left side of dash		
Driver's under-dash fuse/relay box connector F (see page 22-68)	22	14	Under left side of dash		
Driver's seat belt tensioner	16	2	Left B-pillar		
EVAP canister vent shut valve	23	2	Under left side of floor		
Fuel tank unit	10	5	Middle of floor		
Fuel tank pressure (FTP) sensor	24	3	Under left side of floor		
Left rear door switch	12	1	Left C-pillar		
Left rear TPMS initiator	13	3	Front of left rear wheelwell		
Left rear wheel sensor	3	2	Under rear floor		
Left side impact sensor (2nd)	11	2	Left C-pillar		
Right rear wheel sensor	2	2	Under rear floor		
VTM-4 control unit connector A	8	22	Left side of cargo area		4WD
VTM-4 control unit connector B	7	12	Left side of cargo area		4WD
C601	19	18	Behind left kick panel	Dashboard wire harness B (see page 22-33)	4WD
C601	19	8	Behind left kick panel	Dashboard wire harness B (see page 22-33)	2WD
C602	20	20	Behind left kick panel	Dashboard wire harness A (see page 22-39)	4WD
C602	20	10	Behind left kick panel	Dashboard wire harness A (see page 22-39)	2WD
C603	5	4	Left side of cargo area	Right side wire harness (see page 22-47)	
C604	15	10	Left B-pillar	Left rear door wire harness (see page 22-60)	* 2
C604	15	8	Left B-pillar	Left rear door wire harness (see page 22-60)	* 1
C608	4	2	Under rear floor	Rear differential subharness B (see page 22-57)	4WD
C609	1	6	Under rear floor	Rear differential subharness A (see page 22-57)	4WD
C657	17	4	Under driver's seat	SRS harness (see page 22-51)	
G601	14		Left side of floor	Body ground, via left side wire harness	
G602	9		Left side of cargo area	Body ground, via left side wire harness	

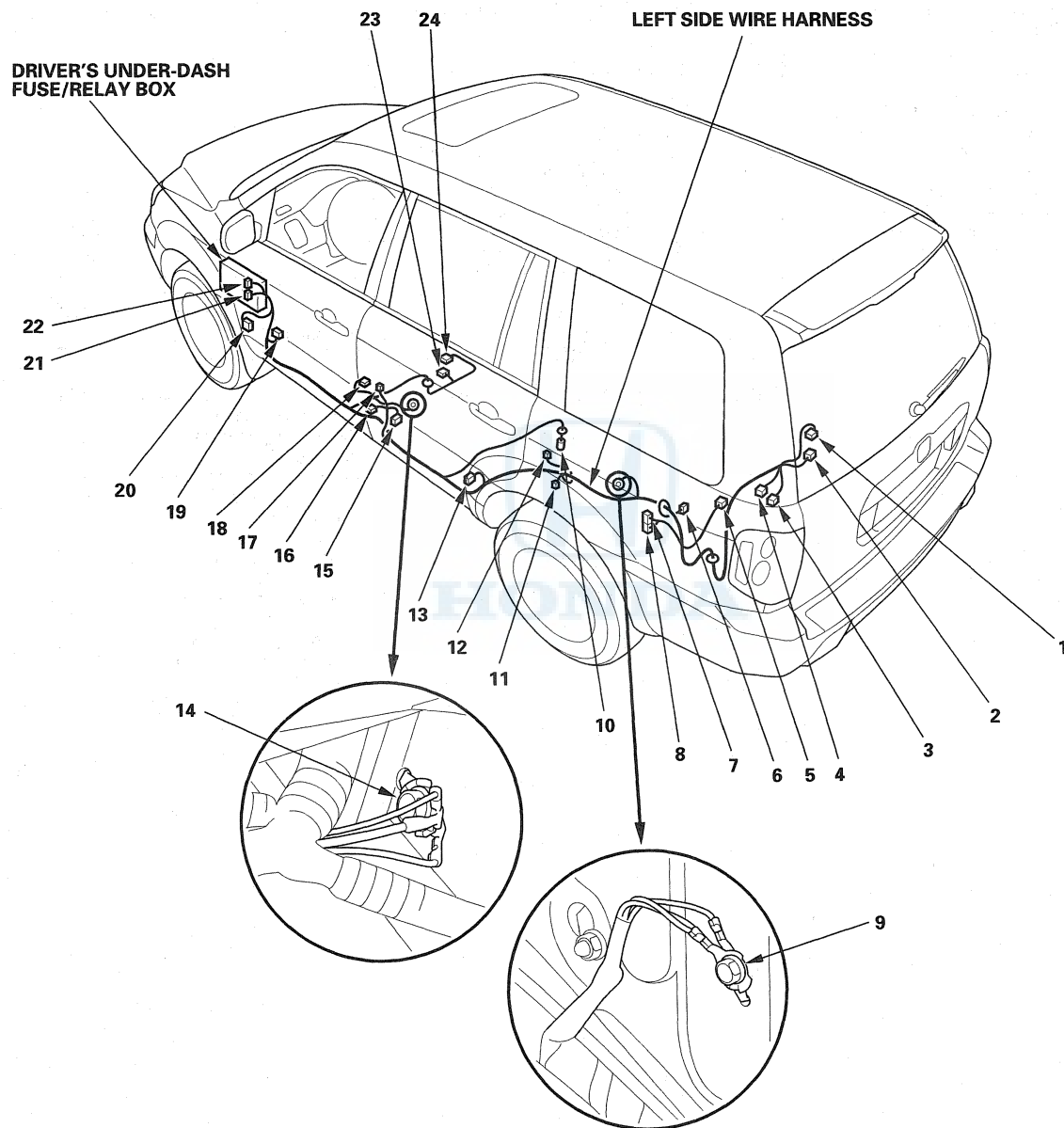
* 1: LX and LX-VP models

* 2: Except LX and LX-VP models

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Connectors and Harnesses

Connector to Harness Index (cont'd)





Right Side Wire Harness

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
Brake light failure sensor	19	6	Right side of cargo area		
Front passenger's door switch	10	1	Right B-pillar		
Imoes unit	24	5	Rear side of cargo area		'08 models
Left taillight assembly	23	4	Behind left taillight assembly		
Navigation unit connector D	9	7	Under front passenger's seat		EXL
Passenger's under-dash fuse/relay box connector C (see page 22-69)	6	20	Behind right kick panel		
Rear window defogger noise condenser	3	2	Behind tailgate upper trim		
Rear safing sensor	22	2	Left side of cargo area		
Rear woofer	17	2	Right side of cargo area		* 4
Right rear door switch	12	1	Right C-pillar		
Right rear TPMS initiator	13	3	Front of right rear wheelwell		
Right side impact sensor (2nd)	14	2	Right C-pillar		
Right taillight assembly	18	4	Behind right taillight assembly		
Trailer lighting connector	20	6	Left side of cargo area		
XM receiver connector A	16	14	Right side of cargo area		* 1
C603	21	4	Left side of cargo area	Left side wire harness (see page 22-45)	
C651	8	23	Behind right kick panel	Dashboard wire harness A (see page 22-43)	
C652	7	6	Behind right kick panel	Dashboard wire harness A (see page 22-43)	* 1
C653	4	10	Right B-pillar	Right rear door wire harness (see page 22-61)	* 3
C653	4	8	Right B-pillar	Right rear door wire harness (see page 22-61)	* 2
C654	2	6	Upper side of tailgate	Tailgate wire harness (see page 22-49)	
C655	1	12	Upper side of tailgate	Tailgate wire harness (see page 22-49)	
C656	5	4	Right side of floor	SRS harness (see page 22-51)	
G651	11		Right side of floor	Body ground, via right side wire harness	
G652	15		Right side of cargo area	Body ground, via right side wire harness	

* 1: With XM

* 2: LX and LX-VP models

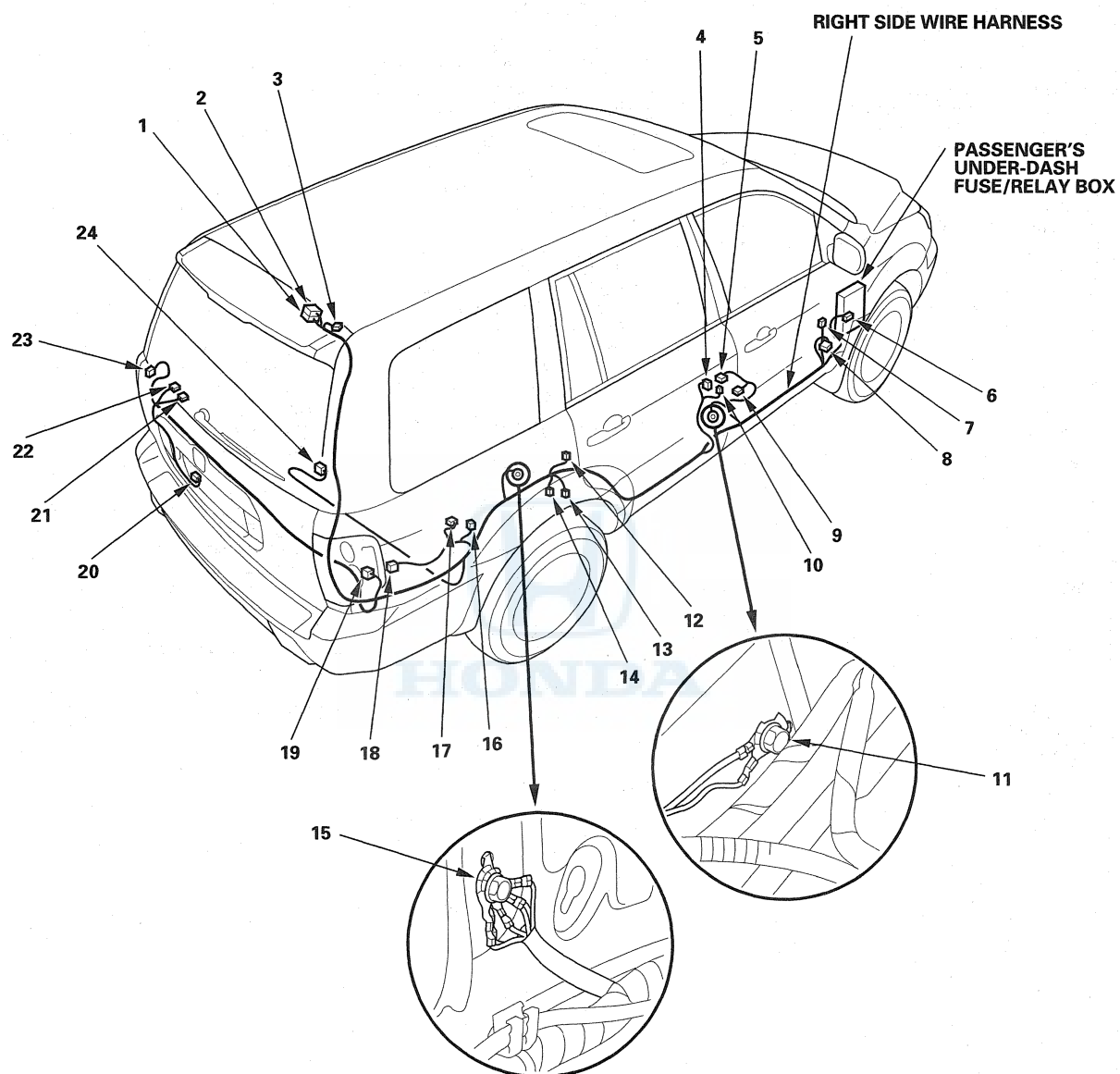
* 3: Except LX and LX-VP models

* 4: Except LX models

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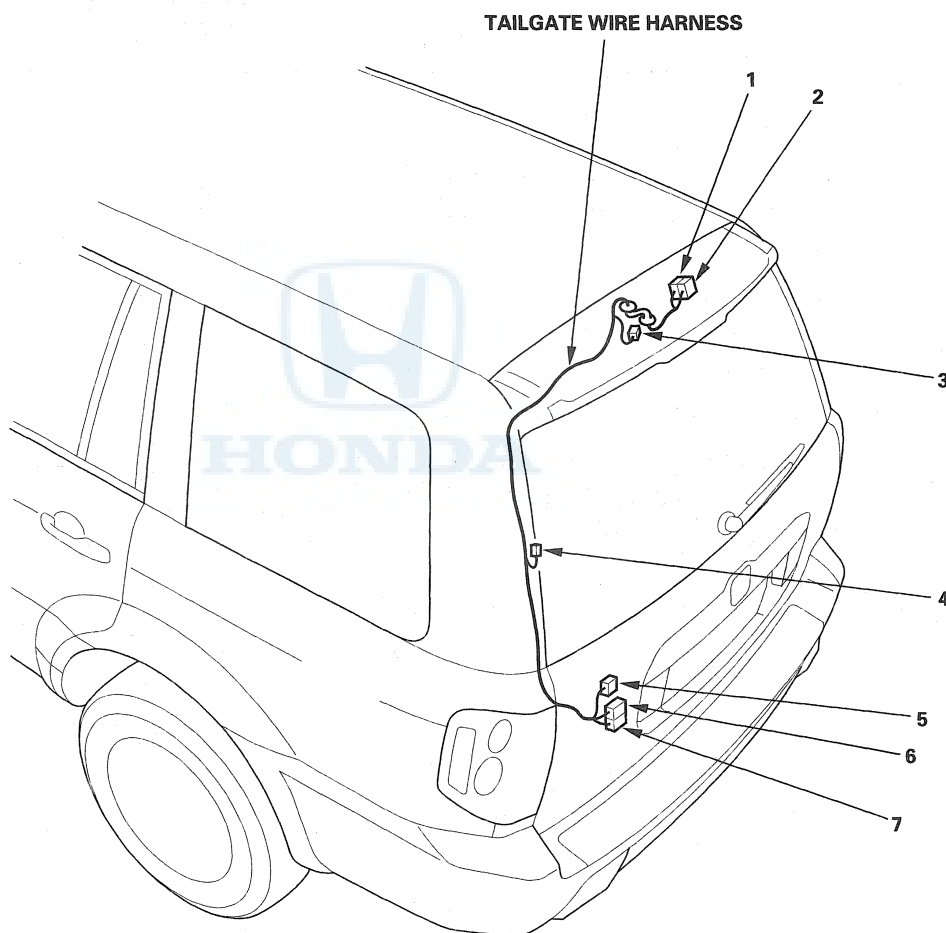
Connectors and Harnesses

Connector to Harness Index (cont'd)



Tailgate Wire Harness

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
High mount brake light	3	2	Top middle of tailgate		
Rear window defogger connector A	4	1	Left side of rear window		
C654	1	6	Behind tailgate upper trim	Right side wire harness (see page 22-47)	
C655	2	12	Behind tailgate upper trim	Right side wire harness (see page 22-47)	
C851	5	6	Behind tailgate trim panel	Tailgate subharness (see page 22-50)	
C852	6	2	Behind tailgate trim panel	Tailgate subharness (see page 22-50)	
C853	7	12	Behind tailgate trim panel	Tailgate subharness (see page 22-50)	



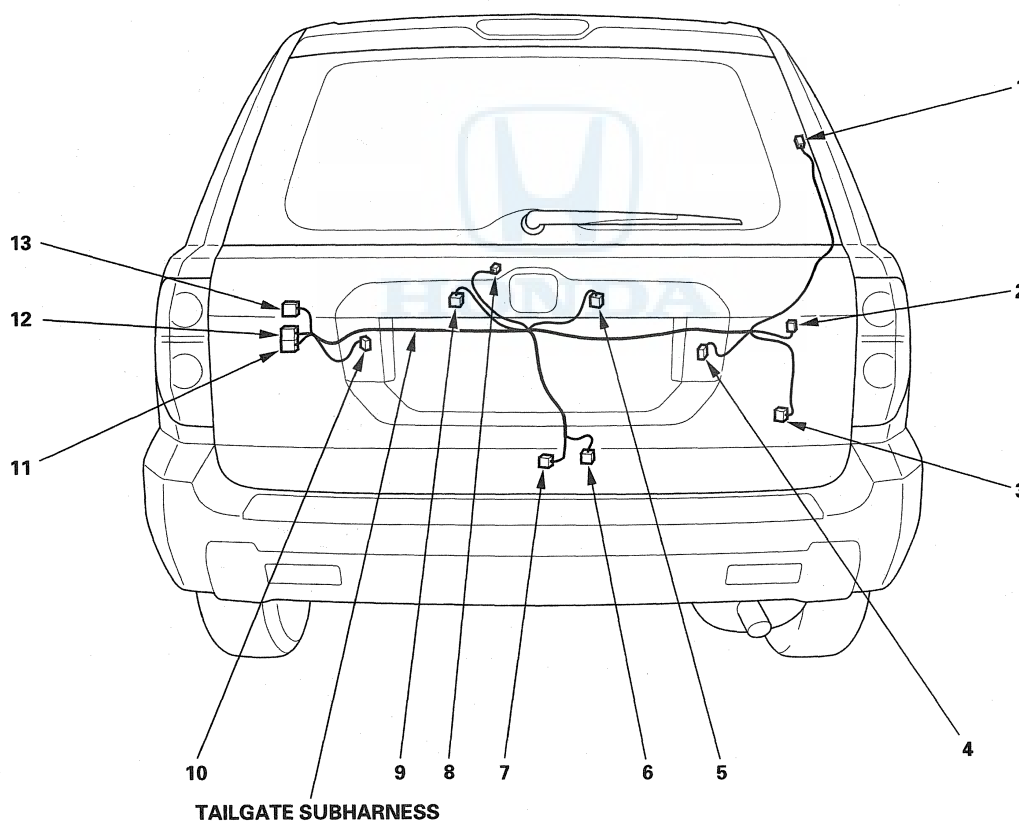
Connectors and Harnesses

Connector to Harness Index (cont'd)

Tailgate Subharness

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
Left back-up light	10	2	Behind tailgate trim panel		
Left license plate light	9	2	Behind tailgate trim panel		
Rear view camera	3	6	Behind tailgate trim panel		*
Rear window defogger connector B	1	1	Right side of rear window		
Rear window wiper motor	8	4	Behind tailgate trim panel		
Right back-up light	4	2	Behind tailgate trim panel		
Right license plate light	5	2	Behind tailgate trim panel		
Tailgate latch switch	6	2	Behind tailgate trim panel		
Tailgate lights	2	3	Behind tailgate trim panel		
Tailgate lock actuator	7	2	Behind tailgate trim panel		
C851	13	6	Behind tailgate trim panel	Tailgate wire harness (see page 22-49)	
C852	12	2	Behind tailgate trim panel	Tailgate wire harness (see page 22-49)	
C853	11	12	Behind tailgate trim panel	Tailgate wire harness (see page 22-49)	

*: With navigation





SRS Harness

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
Driver's seat belt switch	22	3	Under driver's seat		
Driver's side airbag inflator	21	2	Under driver's seat		
Left side impact sensor (1st)	19	2	Left B-pillar		
Front passenger's seat belt switch	6	3	Under front passenger's seat		* 2
Front passenger's seat belt tensioner	9	2	Right B-pillar		
Front passenger's side airbag inflator	11	2	Under front passenger's seat		
Right side impact sensor (1st)	8	2	Right B-pillar		
Roll rate sensor	15	2	Under middle of center console		
C605	17	2	Under driver's seat	Driver's seat position sensor subharness	* 1
C605	17	10	Under driver's seat	Driver's seat wire harness (see page 22-63)	* 2
C606	22	2	Under driver's seat	Driver's seat wire harness (see page 22-63)	* 2
C607	6	6	Under front passenger's seat	Front passenger's seat wire harness (see page 22-64)	EXL
C610	16	4	Under middle of center console		
C656	10	4	Right side of floor	Right side wire harness (see page 22-47)	
C657	20	4	Left side of floor	Left side wire harness (see page 22-45)	
C801	23	3	Under middle of dash	Dashboard wire harness A (see page 22-39)	* 1
C801	23	10	Under middle of dash	Dashboard wire harness A (see page 22-39)	* 2
C802	13	4	Under front passenger's seat	ODS unit harness	
C854	24	28	Under middle of dash	SRS subharness	
G801	14		Under middle of center console	Body ground, via SRS harness	

SRS Subharness

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
SRS unit connector A	1	28	Under middle of dash		
SRS unit connector B	2	28	Under middle of dash		
SRS unit connector C	3	28	Under middle of dash		
C821	4	28	Under middle of dash	Dashboard Wire Harness A (see page 22-39)	
C854	24	28	Under middle of dash	SRS harness	
G802	25		Under middle of dash	Body ground, via SRS subharness	

Driver's Seat Position Sensor Subharness (LX and LX-VP models)

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
Driver's seat position sensor	18	2	Under driver's seat		
C605	17	2	Under driver's seat	SRS harness	

ODS Unit Harness

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
Inner side front passenger's weight sensor	5	3	Under front passenger's seat		
ODS unit connector D	12	8	In front passenger's seat		
Outer side front passenger's weight sensor	7	2	Under front passenger's seat		
C802	13	4	Under front passenger's seat	SRS harness	

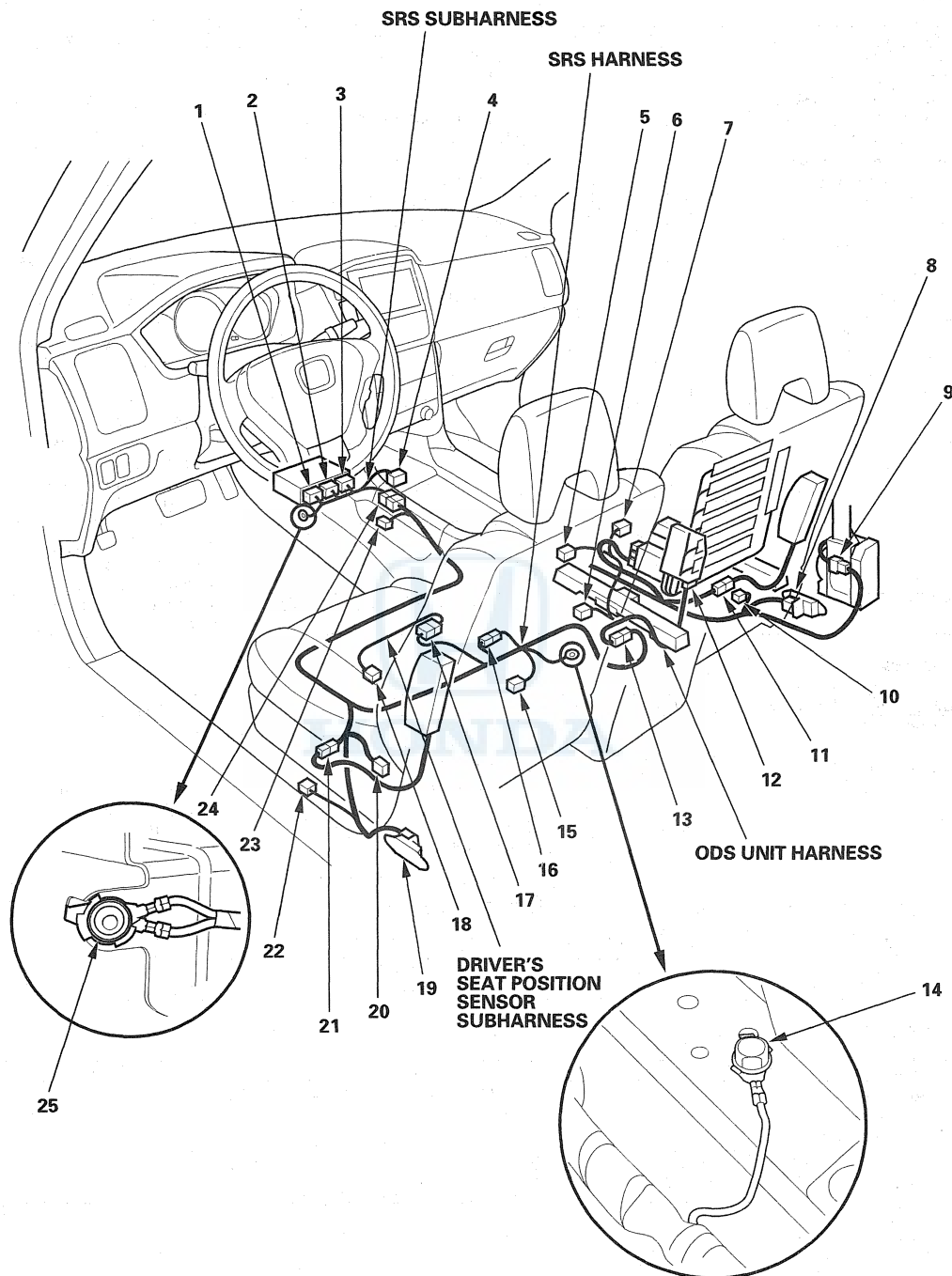
* 1: LX and LX-VP models

* 2: Except LX and LX-VP models

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Connectors and Harnesses

Connector to Harness Index (cont'd)





Rear A/C Wire Harness

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
Auxiliary jack assembly	4	16	Under center console		* 4
Power outlet	6	3	Under center console		* 6
Rear accessory power socket	5	2	Under center console		* 1
Rear air mix control motor	8	7	Under center console		* 2
Rear blower motor relay	11	4	Left side of center console		
Rear blower motor	1	2	Right side of center console		
Rear blower power transistor	9	4	Left side of center console		* 2
Rear blower motor resistor	10	5	Left side of center console		* 3
Rear heater-A/C control unit connector A	3	10	Under center console		
Rear heater-A/C control unit connector B	2	7	Under center console		* 3
Rear mode control motor	7	7	Under center console		* 2
Rear mode control motor	8	7	Under center console		* 3
C502	12	14	Under middle of dash	Dashboard wire harness A (see page 22-39)	* 4
C502	12	8	Under middle of dash	Dashboard wire harness A (see page 22-39)	* 3, * 5
C503	14	2	Under middle of dash	Dashboard wire harness A (see page 22-39)	
C504	13	21	Under middle of dash	Dashboard wire harness A (see page 22-39)	* 4
C504	13	13	Under middle of dash	Dashboard wire harness A (see page 22-39)	* 5

* 1: Without AC power outlet

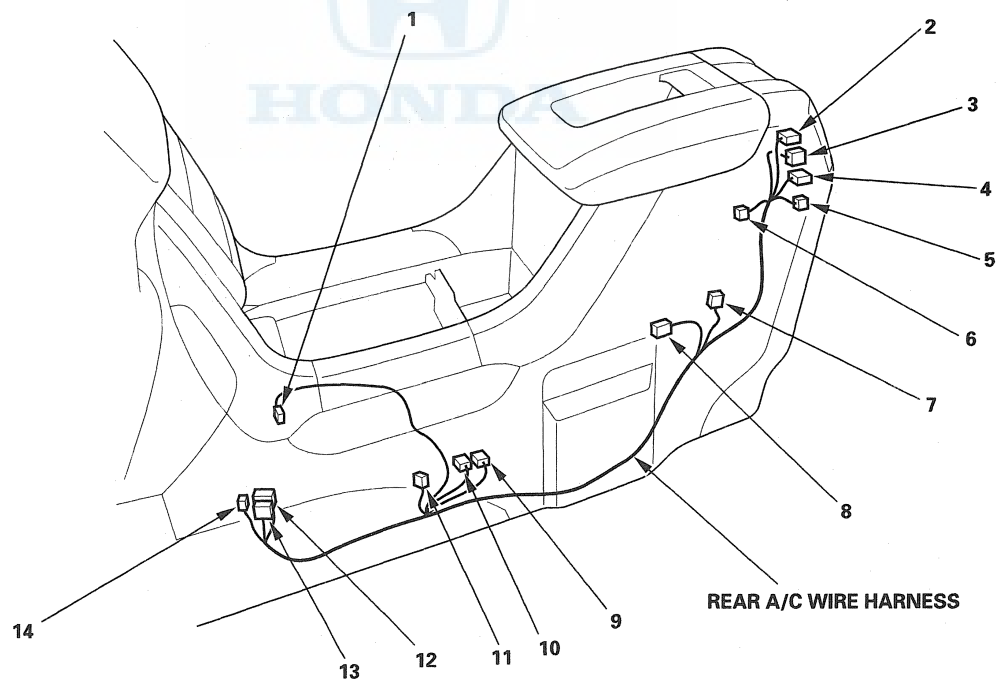
* 2: With climate control

* 3: Without climate control

* 4: With climate control and rear entertainment system

* 5: With climate control and without rear entertainment system

* 6: With AC power outlet

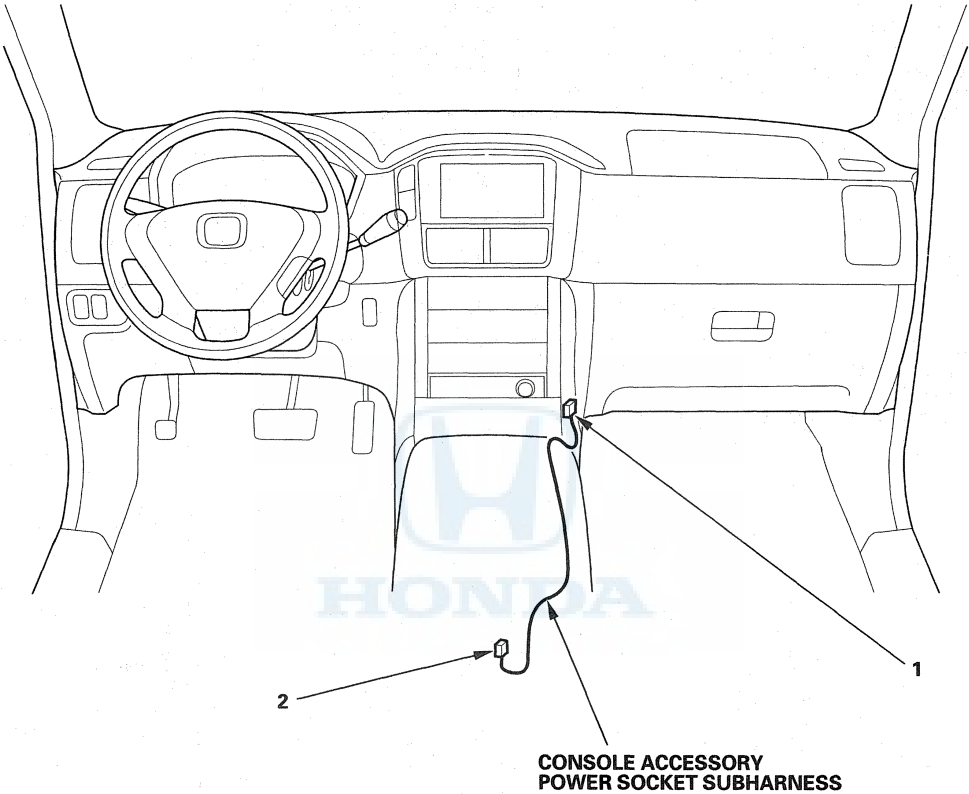


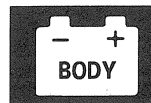
Connectors and Harnesses

Connector to Harness Index (cont'd)

Console Accessory Power Socket Subharness

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
Console accessory power socket C951	2	2	Behind center console	Dashboard wire harness A (see page 22-43)	
	1	2	Under middle of dash		





Roof Wire Harness

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
Ambient light	6	10	Front middle of roof		* 2
AM/FM antenna amplifier	18	3	Roof		
Antenna lead connector	8	3	Under middle of dash		
Automatic dimming inside mirror	3	2	Front middle of roof		Option
Driver's vanity mirror light	7	2	Driver's sunvisor mount		EXL ^{*3}
Electrical compass unit	5	7	Front middle of roof		
Front individual map lights	4	3	Front middle of roof		
Front passenger's vanity mirror light	15	2	Front passenger's sunvisor mount		
Left side curtain airbag	26	2	Left side of roof		
Moonroof close relay	2	5	Middle of roof		* 2
Moonroof limit switch	20	4	Middle of roof		* 2
Moonroof motor	19	2	Middle of roof		* 2
Moonroof open relay	1	5	Middle of roof		* 2
Rear active noise control microphone	23	5	Rear middle of roof		2WD
Rear controller and screen	17	26	Middle of roof		* 1
Rear individual map lights (2nd)	22	3	Middle of roof		
Rear individual map lights (3rd)	24	3	Rear middle of roof		
Right front TPMS initiator	10	3	Behind right fender		
Right side curtain airbag	25	2	Right side of roof		
Right side turn signal light	11	2	Behind right fender		
C551	13	20	Behind right kick panel	Dashboard wire harness A (see page 22-43)	
C552	9	16	Behind left kick panel	Dashboard wire harness A (see page 22-39)	* 1
C553	14	6	Behind right kick panel	Dashboard wire harness B (see page 22-37)	
C554	12	4	Behind right kick panel	Dashboard wire harness A (see page 22-43)	
G901	16	—	Right side of roof	Body ground, via roof wire harness	

* 1: With rear entertainment system

* 2: With moonroof

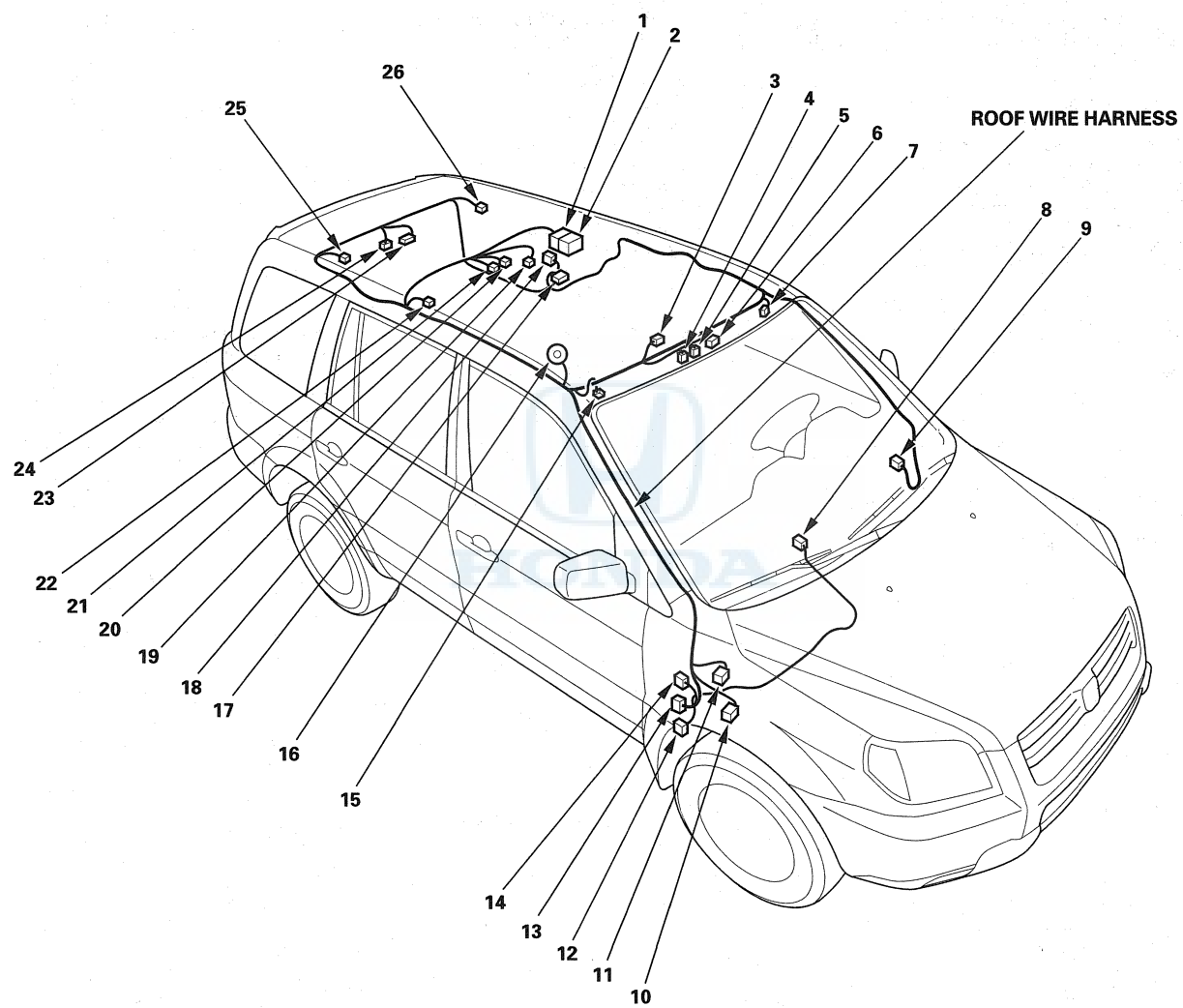
* 3: Without navigation

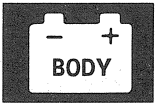
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Connectors and Harnesses

Connector to Harness Index (cont'd)



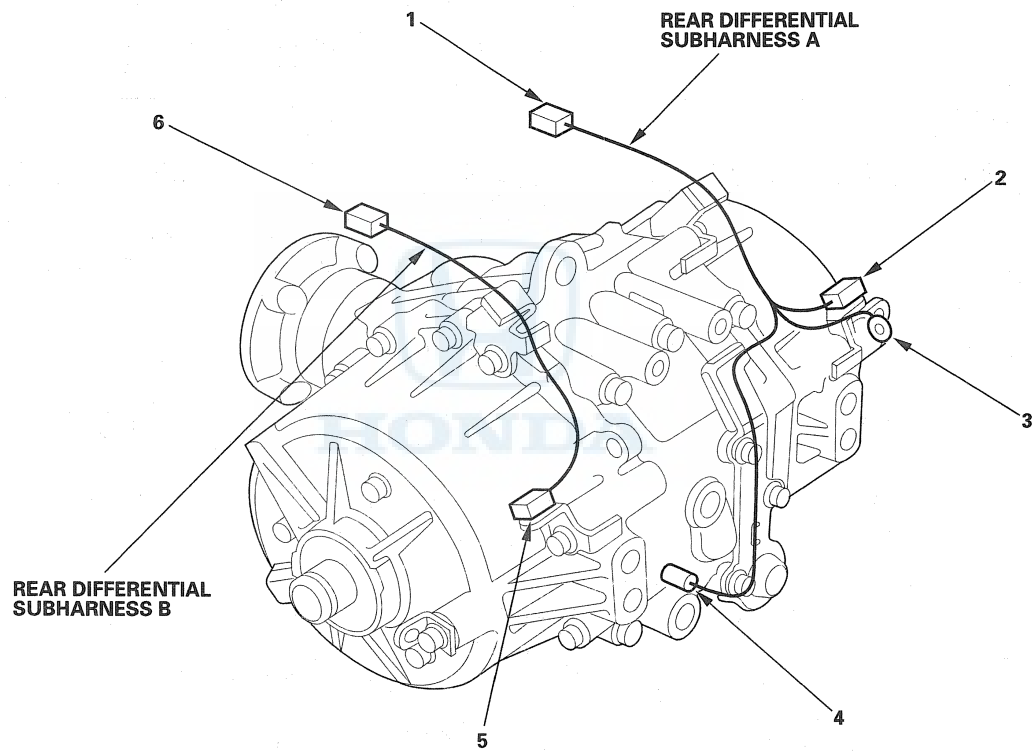


Rear Differential Subharness A

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
Rear differential fluid sensor	4	2	Rear differential	Left side wire harness (see page 22-45)	
Right clutch electromagnetic coil C609	2	2	Rear differential		
	1	6	Rear differential		
T6	3		Rear differential		

Rear Differential Subharness B

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
Left clutch electromagnetic coil C608	5	2	Rear differential	Left side wire harness (see page 22-45)	
	6	2	Rear differential		



Connectors and Harnesses

Connector to Harness Index (cont'd)

Driver's Door Wire Harness

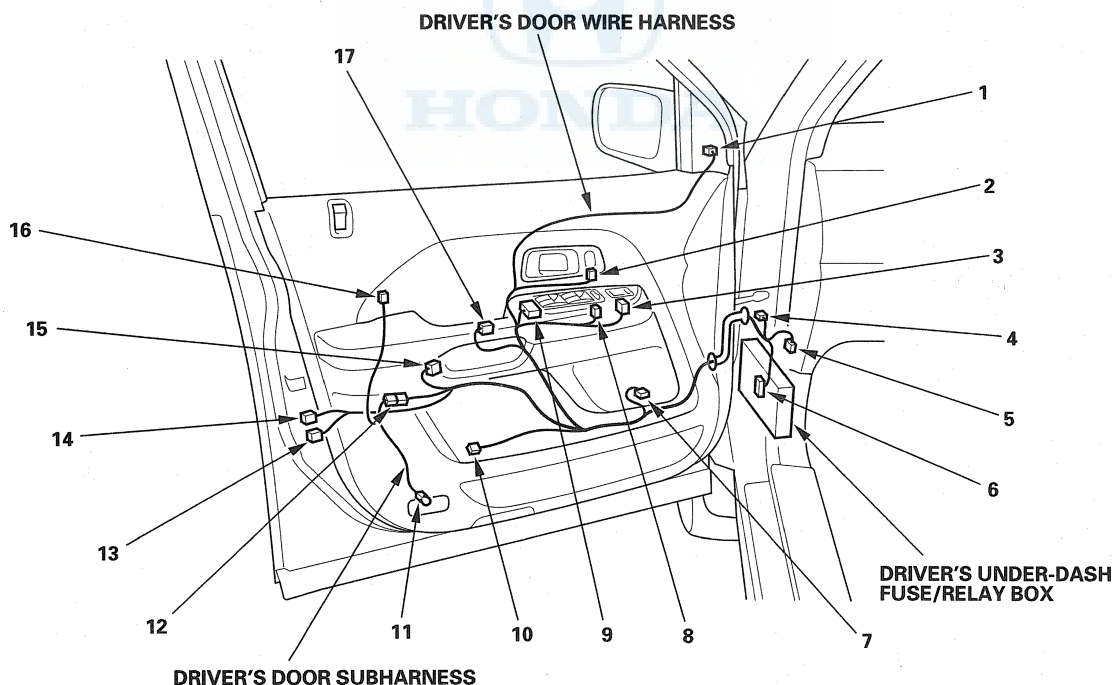
Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
Door multiplex control unit connector A	9	20	Driver's door		
Door multiplex control unit connector B	8	2	Driver's door		
Driver's door key cylinder switch	10	3	Driver's door		
Driver's door lock actuator	13	2	Driver's door		
Driver's door lock knob switch	14	3	Driver's door		
Driver's door lock switch	2	5	Driver's door		
Driver's door speaker	7	2	Driver's door		
Driver's window motor	17	6	Driver's door		
Driver's under-dash fuse/relay box connector H (see page 22-68)	6	18	Under left side of dash		
Left power mirror	1	8	Driver's door		
Power mirror switch	3	13	Driver's door		
Power window control unit	15	18	Driver's door		
C701	5	4	Under left side of dash	Dashboard wire harness A (see page 22-39)	
C702	12	6	Driver's door	Driver's door subharness	* 2
C702	12	4	Driver's door	Driver's door subharness	* 1
C710 (Security connector)	4	2	Under left side of dash	Driver's door subharness	* 1

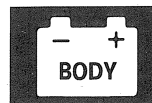
Driver's Door Subharness

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
Driver's door courtesy light	11	2	Driver's door		
Security indicator	16	2	Driver's door		* 2
C702	12	6	Driver's door	Driver's door wire harness	* 2
C702	12	4	Driver's door	Driver's door wire harness	* 1

* 1: LX and LX-VP models

* 2: Except LX and LX-VP models

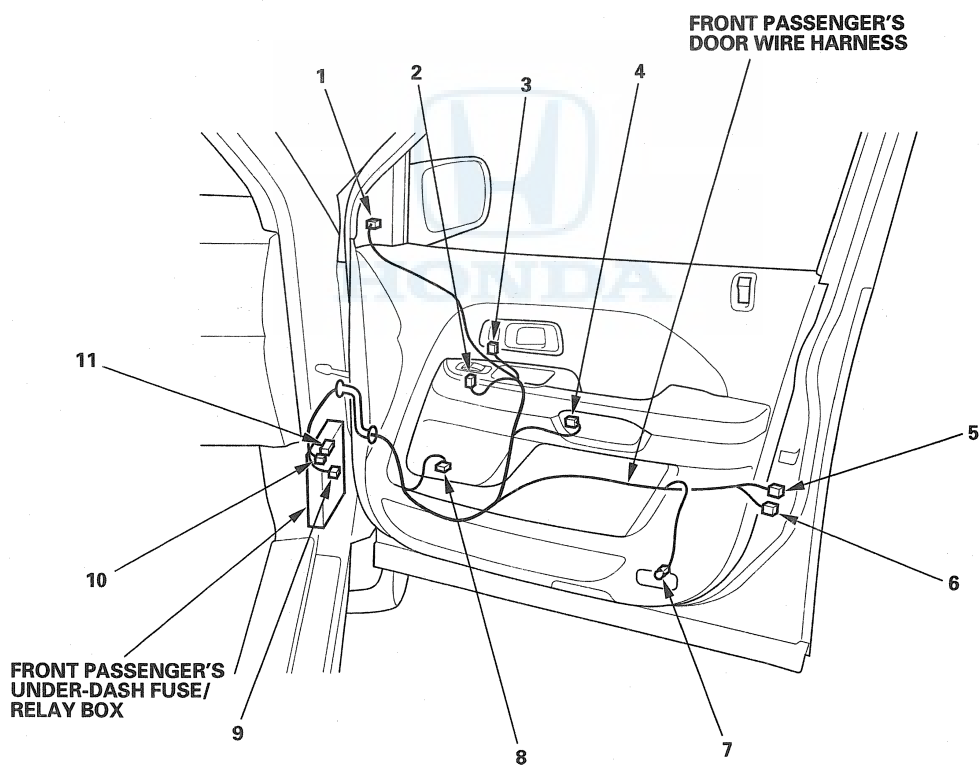




Front Passenger's Door Wire Harness

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
Front passenger's door courtesy light	7	2	Front passenger's door		
Front passenger's door lock actuator	6	2	Front passenger's door		
Front passenger's door lock knob switch	5	3	Front passenger's door		*
Front passenger's door lock switch	3	5	Front passenger's door		
Front passenger's door speaker	8	2	Front passenger's door		
Front passenger's window motor	4	2	Front passenger's door		
Front passenger's window switch	2	6	Front passenger's door		
Passenger's under-dash fuse/relay box connector D (see page 22-69)	9	4	Behind right kick panel		*
Passenger's under-dash fuse/relay box connector E (see page 22-69)	11	20	Behind right kick panel		
Passenger's under-dash fuse/relay box connector F (see page 22-69)	10	2	Behind right kick panel		*
Right power mirror	1	8	Front passenger's door		

* : Except LX and LX-VP models



Connectors and Harnesses

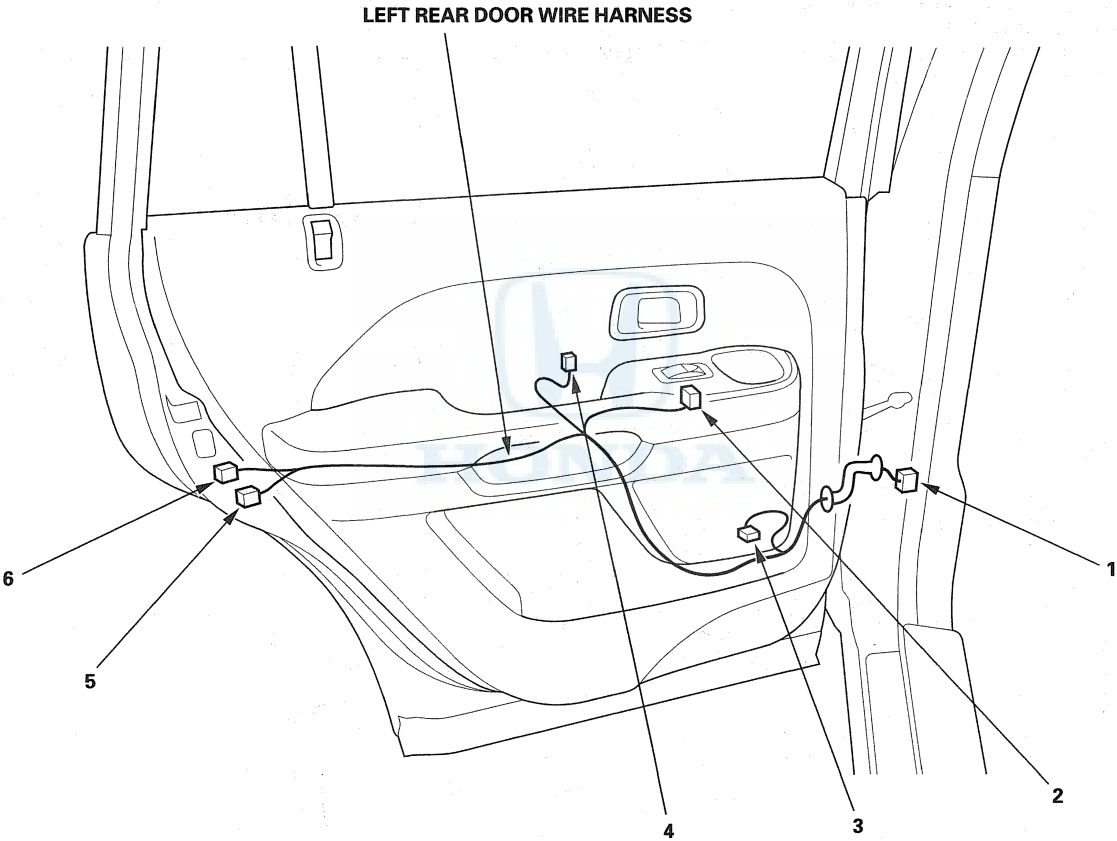
Connector to Harness Index (cont'd)

Left Rear Door Wire Harness

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
Left rear door speaker	3	2	Left rear door	Left side wire harness (see page 22-45) Left side wire harness (see page 22-45)	* 1
Left rear door lock actuator	5	2	Left rear door		
Left rear door lock knob switch	6	3	Left rear door		
Left rear window motor	4	2	Left rear door		
Left rear window switch	2	6	Left rear door		
C604	1	10	Left B-pillar		* 1
C604	1	8	Left B-pillar		* 2

* 1: Except LX and LX-VP models

* 2: LX and LX-VP models

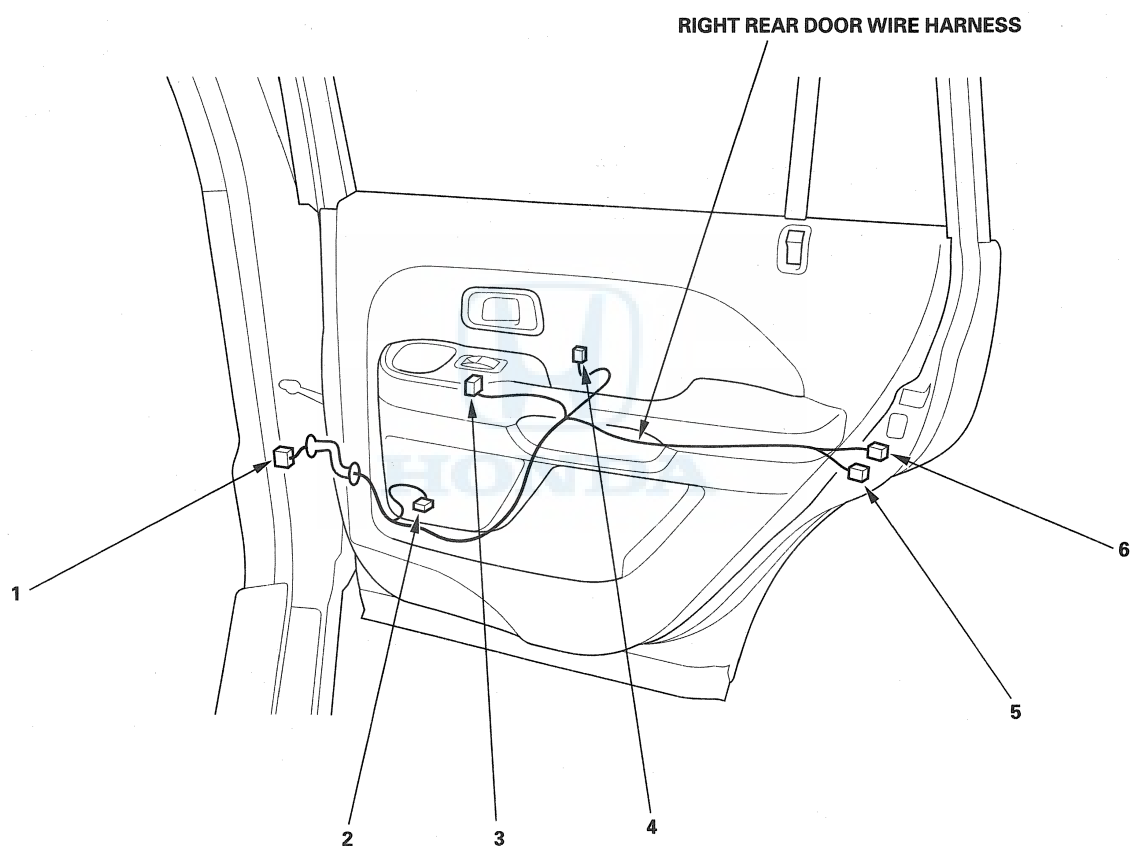


Right Rear Door Wire Harness

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
Right rear door speaker	2	2	Right rear door	Right side wire harness (see page 22-47)	* 1
Right rear door lock actuator	5	2	Right rear door		
Right rear door lock knob switch	6	3	Right rear door		
Right rear window motor	4	2	Right rear door		
Right rear window switch	3	6	Right rear door		
C653	1	10	Right B-pillar	Right side wire harness (see page 22-47)	* 1
C653	1	8	Right B-pillar		* 2

* 1: Except LX and LX-VP models

* 2: LX and LX-VP models

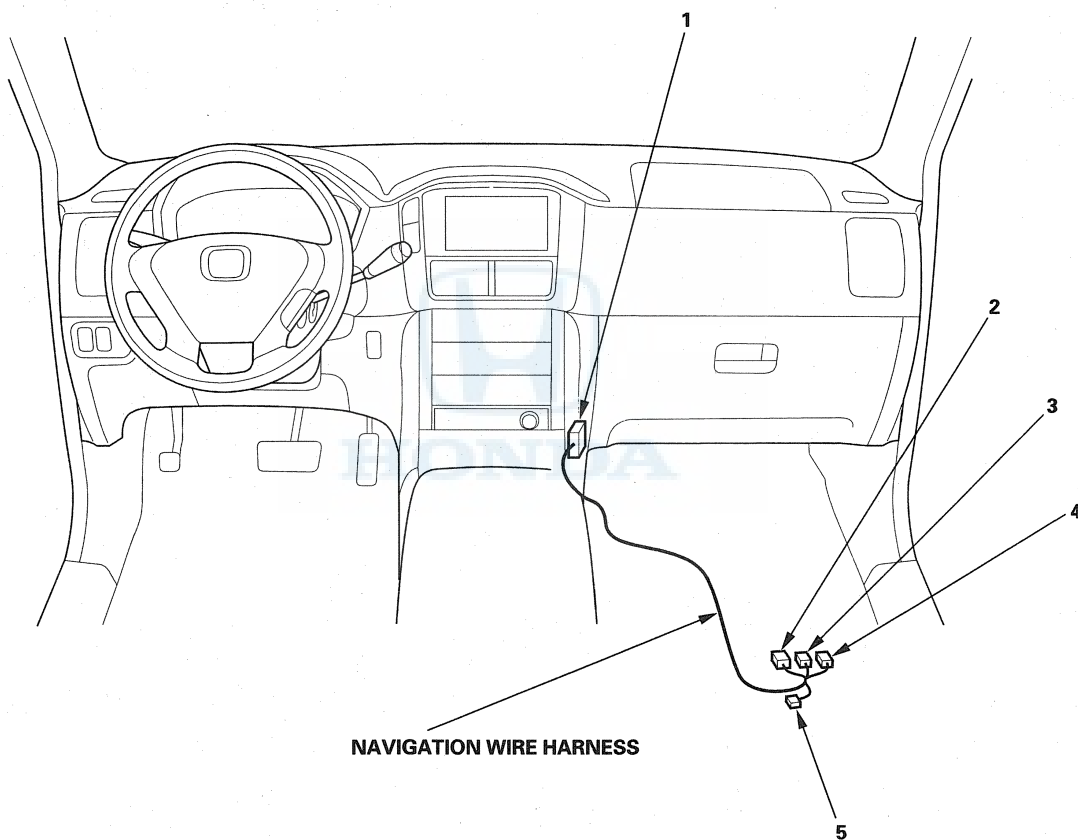


Connectors and Harnesses

Connector to Harness Index (cont'd)

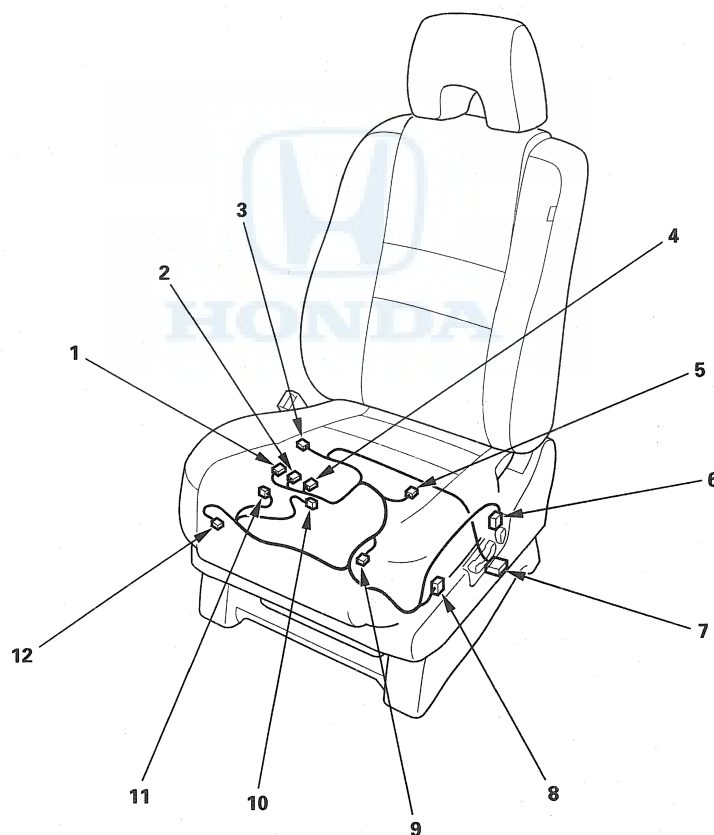
Navigation Wire Harness

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
Navigation unit connector A	3	20	Under front passenger's seat	Dashboard wire harness A (see page 22-43)	
Navigation unit connector B	4	14	Under front passenger's seat		
Navigation unit connector C	2	8	Under front passenger's seat		
Navigation service check connector C901	5	2	Under front passenger's seat		
	1	34	Right side of dash		



Driver's Seat Wire Harness (Except LX and LX-VP)

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
Driver's power seat adjustment switch connector A	8	6	Left side of driver's seat		
Driver's power seat adjustment switch connector B	6	6	Left side of driver's seat		
Driver's seat belt switch	1	3	Under driver's seat		
Driver's seat back heater	4	2	Under driver's seat		EXL
Driver's seat cushion heater	2	4	Under driver's seat		EXL
Driver's seat position sensor	5	2	Under driver's seat		
Front up-down motor	10	2	Under driver's seat		
Rear up-down motor	11	2	Under driver's seat		
Recline motor	9	2	Under driver's seat		
Slide motor	12	2	Under driver's seat		
C605	3	10	Under driver's seat	SRS harness (see page 22-51)	
C606	7	2	Under driver's seat	SRS harness (see page 22-51)	

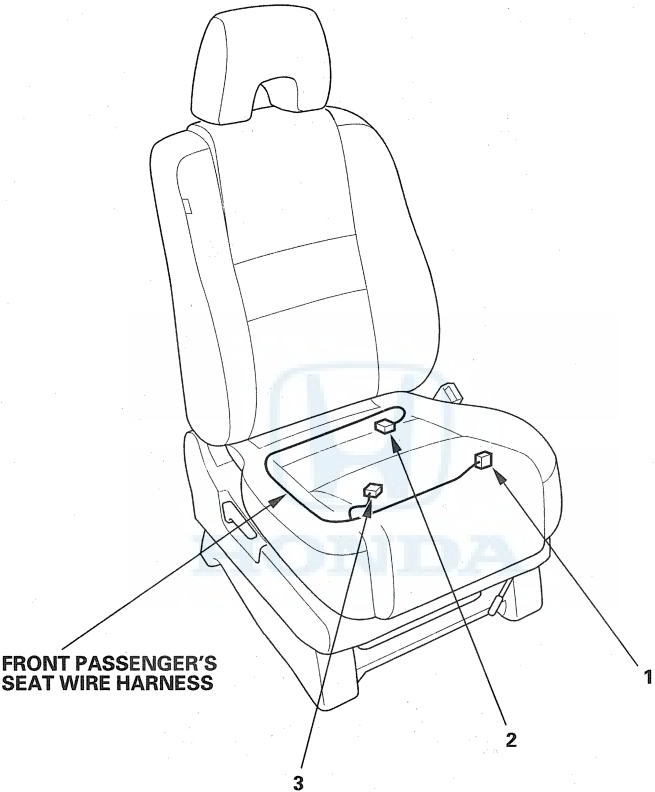


Connectors and Harnesses

Connector to Harness Index (cont'd)

Front Passenger's Seat Wire Harness (EXL)

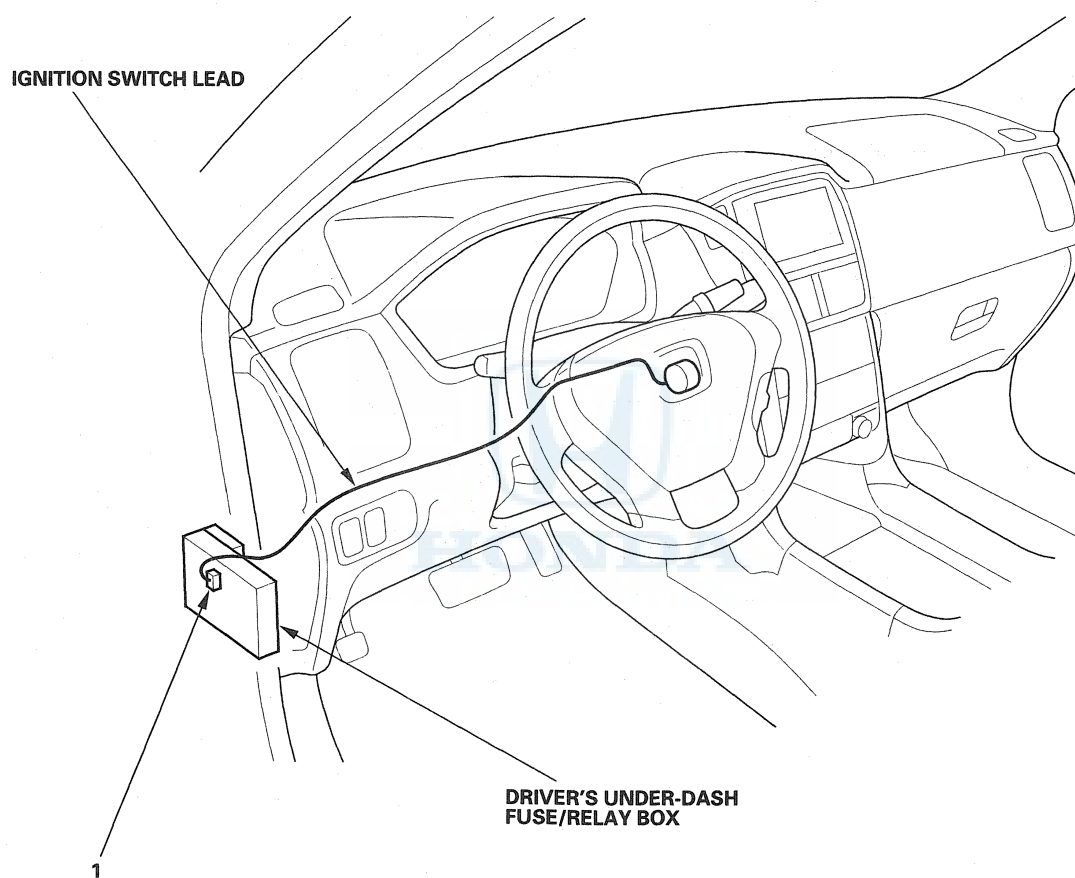
Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
Front passenger's seat belt switch	1	3	Under front passenger's seat	SRS harness (see page 22-51)	
Front passenger's seat cushion heater	3	4	Under front passenger's seat		
C607	2	6	Under front passenger's seat		





Ignition Switch Lead

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
Driver's under-dash fuse/relay box connector A (see page 22-68)	1	6	Under left side of dash		

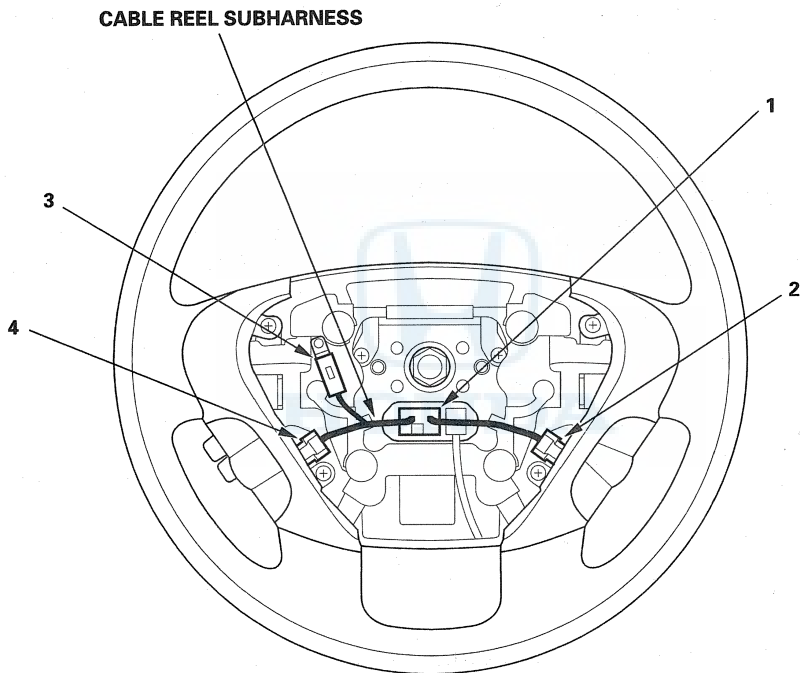


Connectors and Harnesses

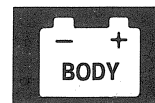
Connector to Harness Index (cont'd)

Cable Reel Subharness (With navigation)

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
Audio remote/voice control switch	4	5	Steering wheel		
Cable reel connector C	1	13	Steering wheel		
Cruise control set/resume/cancel switch	2	5	Steering wheel		
Horn switch positive terminal	3	1	Steering wheel		



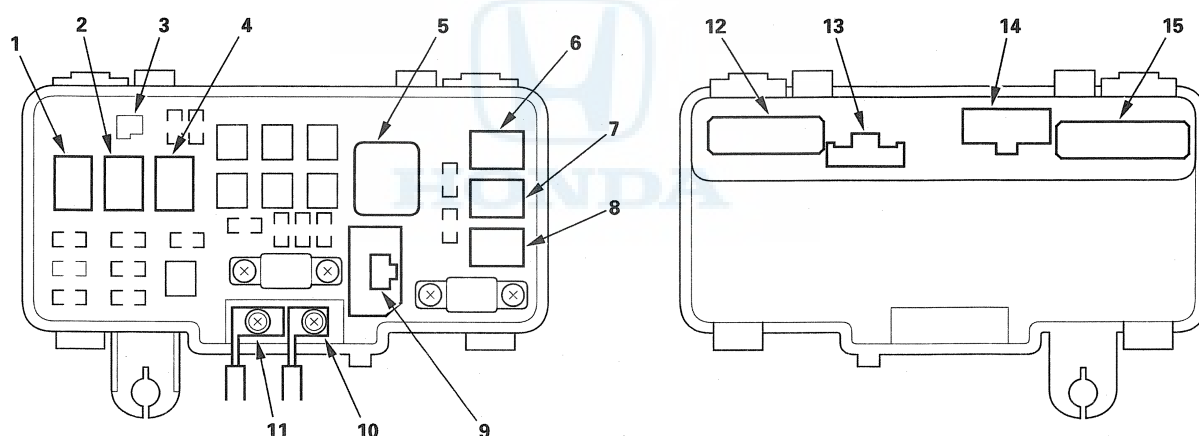
Fuse/Relay Boxes



Connector to Fuse/Relay Box Index

Under-hood Fuse/Relay Box

Socket	Ref	Terminal	Connects to
A	15	18	Right engine compartment wire harness (see page 22-27)
A/C compressor clutch relay	8	4	
A/C condenser fan relay	6	4	
B	14	7	Right engine compartment wire harness (see page 22-27)
C	13	3	Right engine compartment wire harness (see page 22-27)
D	12	16	Right engine compartment wire harness (see page 22-27)
Diode	3	—	Not used
ELD unit	9	3	Right engine compartment wire harness (see page 22-27)
Front blower motor relay	5	4	
Horn relay	4	4	
Headlight relay 1	1	4	
Headlight relay 2	2	4	
Radiator fan relay	7	4	
T1	11		Starter cable (see page 22-15)
T101	10		Alternator cable

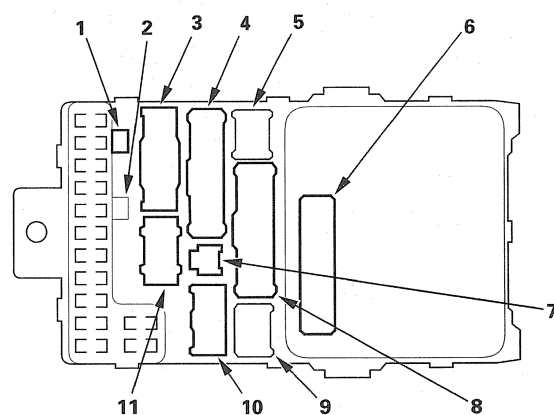


Fuse/Relay Boxes

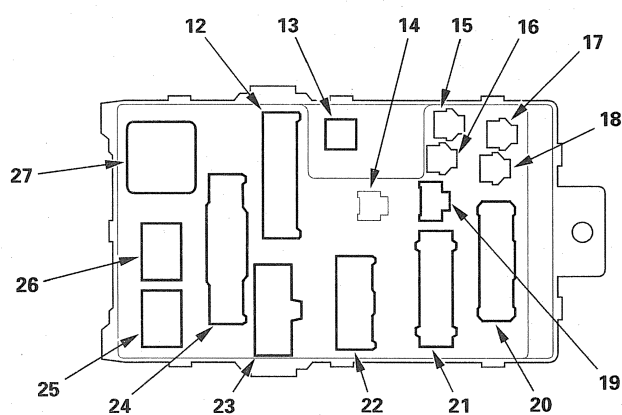
Connector to Fuse/Relay Box Index (cont'd)

Driver's Under-dash Fuse/Relay Box

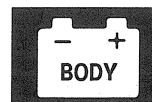
Socket	Ref	Terminal	Connects to
A	22	6	Ignition switch lead (see page 22-65)
A/T Reverse relay	26	4	
B	13	2	Dashboard wire harness A (see page 22-39)
C	10	5	Left engine compartment wire harness (see page 22-31)
D	4	20	Left engine compartment wire harness (see page 22-31)
Diode	1	—	Driver's door courtesy light
Diode	2	—	Not used
Driver's multiplex control unit connector A	6	24	(Plugs directly into the fuse box)
E	11	10	Left side wire harness (see page 22-45)
F	3	14	Left side wire harness (see page 22-45)
G	5	6	Optional fog light connector
H	8	18	Driver's door wire harness (see page 22-58)
I	9	—	Optional fog light connector
J	20	18	Dashboard wire harness A (see page 22-39)
K	21	18	Dashboard wire harness A (see page 22-39)
L	24	22	Dashboard wire harness B (see page 22-33)
M	12	20	Dashboard wire harness B (see page 22-33)
N	23	7	Dashboard wire harness B (see page 22-33)
P	19	3	Dashboard wire harness B (see page 22-33)
R	18	1	Optional connector
S	17	1	Optional connector
Starter cut relay	25	4	
T	16	1	Optional connector
Turn signal/hazard relay	27	4	
U	15	1	Optional connector
V	14	—	Not used
W	7	—	Memory erase signal (MES) connector



(View of front side)

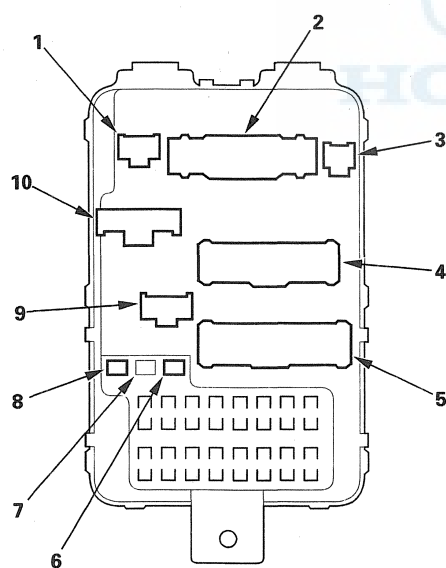


(View of back side)

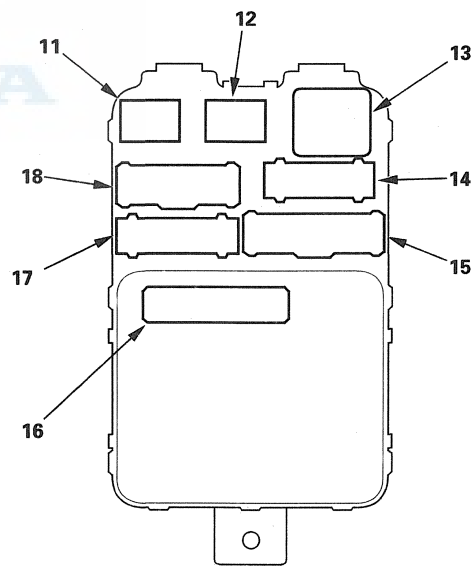


Passenger's Under-dash Fuse/Relay Box

Socket	Ref	Terminal	Connects to
A	10	3	Right engine compartment wire harness (see page 22-27)
Accessory power socket relay	12	4	
B	4	18	Right engine compartment wire harness (see page 22-27)
C	5	20	Right side wire harness (see page 22-47)
D	9	4	Front passenger's door wire harness (see page 22-59)
Dimmer relay diode	6	—	Dimmer relay
Diode	7	—	Not used
Diode	8	—	Front passenger's door courtesy light
E	2	20	Front passenger's door wire harness (see page 22-59)
F	3	2	Front passenger's door wire harness (see page 22-59)
G	15	18	Dashboard wire harness A (see page 22-43)
H	17	18	Dashboard wire harness A (see page 22-43)
I	14	16	Dashboard wire harness B (see page 22-37)
J	18	16	Dashboard wire harness B (see page 22-37)
K	1	3	Right engine compartment wire harness (see page 22-27)
Passenger's multiplex control unit connector A	16	24	(Plugs directly into the fuse box)
Power window relay	11	4	
Rear window defogger relay	13	4	



(View of front side)



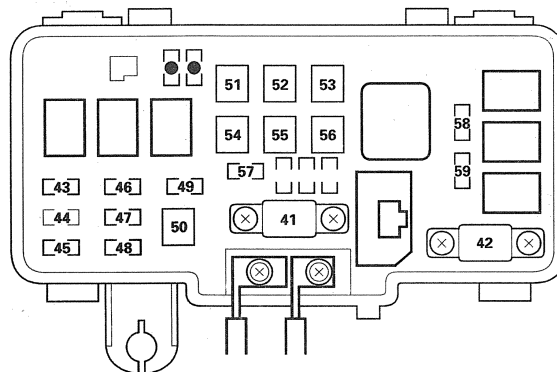
(View of back side)

Power Distribution

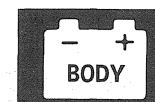
Fuse to Components Index

Under-hood Fuse/Relay Box

Fuse Number	Amps	Wire Color	Component(s) or Circuit(s) Protected
41	120 A	—	Battery, Power distribution
42	50 A	WHT	Ignition switch, Optional keyless connector
43	20 A	RED/GRN	Combination light switch, Daytime running lights control unit (Canada models), Right headlights
44	—	—	Not used
45	20 A	RED/YEL	Combination light switch, Daytime running lights control unit (Canada models), Left headlights, High beam indicator light, Optional fog light connector
46	15 A	WHT/GRN	Data link connector (DLC), PGM-FI main relay 1 (FI MAIN), PGM-FI main relay 2 (FUEL PUMP) (via PGM-FI main relay 1 (FI MAIN))
47	20 A	WHT/YEL internal connection	Ignition key light, Brake pedal position switch, Horn relay Horns
48	20 A	WHT	Audio unit, DVD player unit (rear entertainment system), Rear controller and screen (rear entertainment system)
49	15 A	WHT/GRN	Hazard warning lights
50	—	—	Not used
51	40 A	WHT/BLU	No. 1 fuse (in the passenger's under-dash fuse/relay box), Power window relay
52	40 A	YEL/GRN	No. 2, 3, 4 and 6 fuses (in the passenger's under-dash fuse/relay box)
53	30 A	WHT/GRN	Noise condenser, Rear window defogger
54	40 A	YEL	No. 9, 10, 11, 12 and 13 fuses (in the passenger's under-dash fuse/relay box)
55	30 A	RED	Rear blower motor (via rear blower motor relay)
56	40 A	YEL/BLK	Front blower motor (via front blower motor relay)
57	30 A	BLU/BLK	Radiator fan motor (via radiator fan relay)
58	30 A	BLU/YEL	A/C condenser fan motor (via A/C condenser fan relay)
59	7.5 A	RED	A/C compressor clutch (via A/C compressor clutch relay)



●: Spare fuse



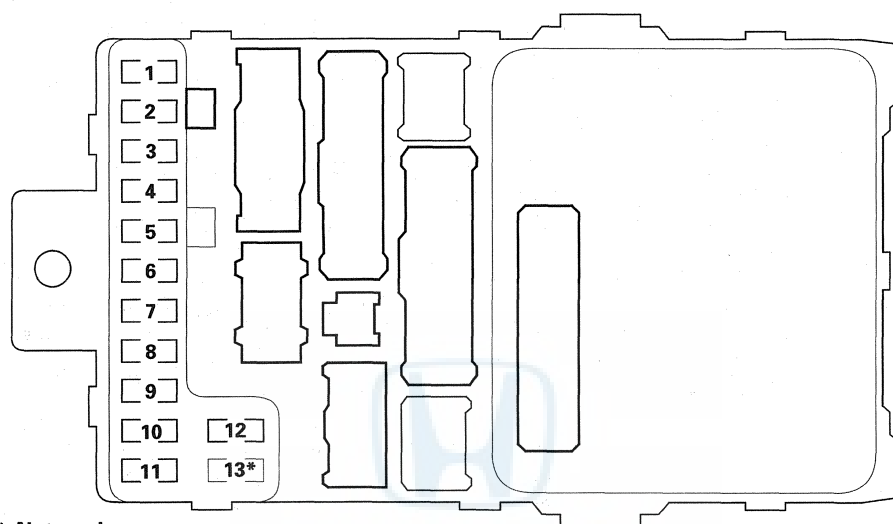
Driver's Under-dash Fuse/Relay Box

Fuse Number	Amps	Wire Color	Component(s) or Circuit(s) Protected
1	15 A	RED/WHT	Fuel pump (via FGM-FI main relay 2 (FUEL PUMP)), Immobilizer control unit-receiver, Imoes unit, PCM, SRS unit (VA)
2	10 A	BLK/WHT	SRS unit (VB)
3	7.5 A	BLK/YEL	A/C compressor clutch relay, Climate control unit, Front blower motor relay, Heater control panel, PCM (via A/C compressor clutch relay), Recirculation control motor, Rear blower motor relay, Rear mode motor, Rear window defogger relay, Seat heater relay
4	7.5 A	ORN	AC inverter unit, Power mirror actuator, Power mirror defogger
		Fuse/relay box socket	Optional connector
5	10 A	YEL/RED	Daytime running lights control unit (Canada models)
6	15 A	BLK/YEL	Alternator, Brake pedal position switch, Cruise control main switch indicator light, EVAP canister purge valve, Gauge control module, PCM, VSA modulator-control unit
7	7.5 A	YEL/GRN	Electrical compass mirror, ODS unit, Passenger's airbag cutoff indicator, Optional automatic dimming inside mirror connector, Passenger's multiplex control unit (via rear window intermittent wiper relay), Rear window wiper/washer switch, Rear window wiper motor
		Fuse/relay box socket	Optional fog light connector
8	7.5 A	YEL/BLK	Active control engine mount (ACM) control relay (2WD), Accessory power socket relay, Active noise control rear microphone (2WD), Active noise control unit (2WD), Gauge control module, Optional keyless connector, Key interlock solenoid (via ATP P relay), Rear accessory power socket relay
		Fuse/relay box socket	Optional connector
9	10 A	YEL	Active noise control unit (2WD), A/T reverse relay, Back-up lights, Brake light failure sensor, Gauge control module, Keyless receiver unit, Navigation unit, Optional automatic dimming inside mirror connector, Optional security connector, Passenger's multiplex control unit, Shift lock solenoid, VTM-4 lock switch indicator light (4WD), TPMS control unit
		Fuse/relay box socket	Driver's multiplex control unit
10	7.5 A	YEL/RED	Turn signal/hazard relay
11	7.5 A	YEL	VTM-4 control unit (4WD)
12	30 A	GRN/BLK	Driver's multiplex control unit (via intermittent wiper relay), Front windshield washer motor (via front washer motor relay), Front windshield wiper motor, Rear window washer motor (via rear washer motor relay), Windshield intermittent wiper circuit (in the driver's multiplex control unit)
13	—	—	Not used

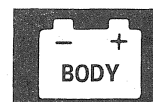
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Power Distribution

Fuse to Components Index (cont'd)



*: Not used



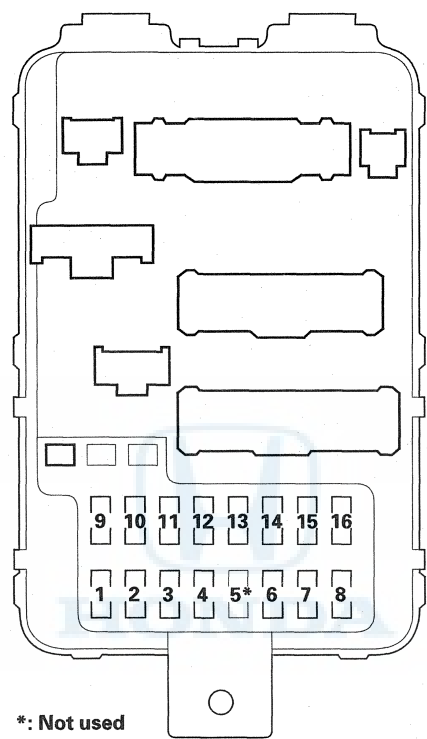
Passenger's Under-dash Fuse/Relay Box

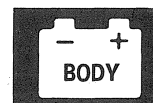
Fuse Number	Amps	Wire Color	Component(s) or Circuit(s) Protected
1	20 A	GRN	Power window control unit
2	20 A	RED	Driver's power seat front up-down motor (EXL), Driver's power seat slide motor (EXL) Driver's power seat rear up-down motor (Except EXL), Driver's power seat recline motor (Except EXL)
3	20 A	WHT/GRN	Front seat heaters
4	20 A	BLU	Driver's power seat rear up-down motor (EXL), Driver's power seat recline motor (EXL) Driver's power seat front up-down motor (Except EXL), Driver's power seat slide motor (Except EXL)
5	—	—	Not used
6	10 A	RED/BLU	Daytime running lights control unit (Canada models)
7	20 A	WHT/YEL	Left rear power window motor (via power window motor switch), Power window master switch, Power window control unit
8	20 A	BLU/BLK	Front passenger's power window motor (via power window motor switch)
9	15 A	WHT/RED	Audio unit, DVD player unit (with rear entertainment system), Console accessory power socket, Front accessory power socket, Navigation unit, Navigation display unit, Optional cigarette lighter connector
10	15 A	RED/GRN	Audio unit light, Auxiliary jack assembly light (with rear entertainment system), Cruise control main switch light, Climate control unit light, DVD player unit (with rear entertainment system), Driver's multiplex control unit, Front parking lights, Front side marker lights, Front console light, Front door lock switches light, Gauge control module lights, Glove box light, Hazard warning switch light, Heater control panel lights, Interior lights switch light, License plate lights, Moonroof switch light, Navigation display unit, Navigation unit, Optional cigarette lighter connector, Optional connector (driver's under-dash fuse/relay box), Optional fog light connector (driver's under-dash fuse/relay box), Power mirror switch light, Rear heater-A/C control unit light, Rear controller and screen (with rear entertainment system), Roof console light, Seat heater switches light, Taillight relay, Taillights, Trailer lighting connector, VTM-4 lock switch light
11	10 A	WHT/BLU	Front individual map lights, Front door courtesy lights, HomeLink, Interior lights relay, Navigation display unit, Navigation unit, Rear individual map lights, Tailgate light, Vanity mirror lights
12	20 A	Fuse relay box socket	Passenger's multiplex control unit
13	7.5 A	WHT/RED	Driver's multiplex control unit, Door multiplex control unit, Gauge control module, Immobilizer control unit-receiver, Immobilizer indicator, Keyless receiver unit, Optional security connector, Security indicator
		Fuse relay box socket	Passenger's multiplex control unit
14	7.5 A	GRN	Moonroof close relay, Moonroof open relay
15	20 A	BLU	Moonroof close relay, Moonroof motor, Moonroof open relay
16	20 A	WHT/BLK	Right rear window motor (via right rear window switch)

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Power Distribution

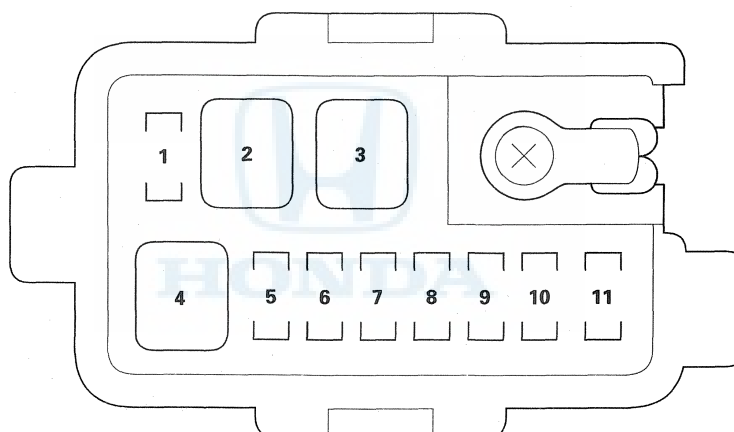
Fuse to Components Index (cont'd)





Auxiliary Under-hood Fuse Box

Fuse Number	Amps	Wire Color	Component(s) or Circuit(s) Protected
1	20 A	GRN	AC inverter unit
2	40 A	WHT/GRN	VSA modulator-control unit (+B FSR)
3	30 A	WHT	VSA modulator-control unit (+B MTR)
4	20 A	WHT/RED	VTM-4 control unit (4WD)
5	10 A	RED/BLU	Engine mount control unit (2WD) (via active control engine mount (ACM) control relay)
6	15 A	BLU/ORN	Console accessory power socket, Rear accessory power socket
7	15 A	WHT/GRN	PCM (via electronic throttle control system (ETCS) control relay)
8	15 A	BLU/ORN	PCM, Ignition coils, Ignition coils (via ignition coil relay)
9	15 A	WHT/RED	Front A/F sensor, Front secondary HO2S, Rear A/F sensor, Rear secondary HO2S, ELD unit, EVAP canister vent shut valve
10	7.5 A	RED	TPMS control unit
11	20 A	BLK/GRN	Fog lights, Gauge control module, Optional fog light connector, Optional fog light switch connector



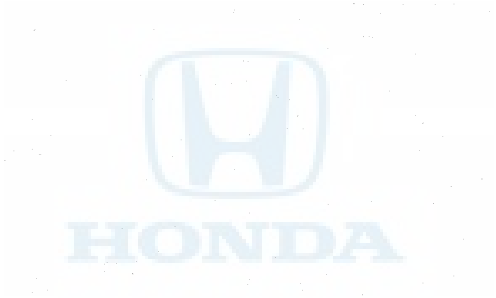
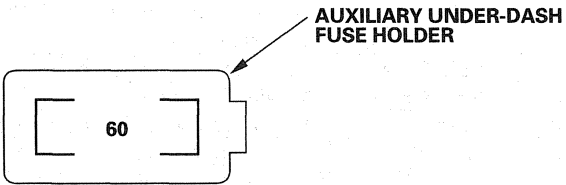
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Power Distribution

Fuse to Components Index (cont'd)

Auxiliary Under-dash Fuse Holder

Fuse Number	Amps	Wire Color	Component(s) or Circuit(s) Protected
60	7.5 A	YEL/BLK	Radiator fan relay



Ground Distribution



Ground to Components Index

Ground	Component or circuit grounded
G1	Battery, Transmission housing
G2	Engine block
G101, G102	PCM (PG1 and PG2 are BLK; LG1 and LG2 are BRN/YEL) BLK: A/T clutch pressure control solenoid valve A, A/T clutch pressure control solenoid valve B, A/T clutch pressure control solenoid valve C, EGR valve position sensor, Ignition coils, Rocker arm oil control solenoid (VTEC solenoid valve) (2WD), Shift control solenoid valve A, Shift control solenoid valve B, Shift control solenoid valve C, TCC solenoid valve, Transmission range switch BRN/YEL: CMP sensor, CKP sensor A/B, Rocker arm oil pressure switch (VTEC oil pressure switch) (4WD) Shielding between the PCM and these components have BRN/YEL wires: Knock sensor, Front A/F sensor, Front secondary HO2S, Rear A/F sensor, Rear secondary HO2S, Throttle body
G201	ELD unit, Fan control relay, Front blower motor relay, Power steering pressure (PSP) switch, Rear window intermittent wiper relay, Rear window washer motor, Rear window washer relay, Right front side marker light, Right front parking light, Right front turn signal light, Right headlight (low), Seat heater relay, Washer fluid level switch (Canada models), Windshield intermittent wiper relay
G202	Hood switch, Radiator fan motor, Right fog light
G301	Brake fluid level switch, Left fog light, Left headlight (low), Left front side marker light, Left front turn signal light, Left front parking light, Windshield wiper motor
G302	VSA modulator-control unit (2 wires)
G401	AC inverter unit, Active noise control unit (2WD), Climate control unit, Combination light switch, Cruise control main switch, Data link connector (DLC), Daytime running lights control unit (2 wires) (Canada models), Driver's door key cylinder switch, Driver's door lock switch, Driver's door lock knob switch, Driver's and door multiplex control units, Headlights (high), Heater control panel, Ignition key switch (2 wires), Interior light relay, Multiplex control inspection connector, Optional security connector, Optional front fog light connector, Park pin switch, Power transistor, Rear accessory power socket relay, Right side signal light, Turn signal/hazard relay, TPMS control unit, Wiper/washer switch, Windshield washer motor relay (2 wires)
G501	Navigation display unit (with navigation), Driver's multiplex control unit, DVD player unit (with rear entertainment system), Interior lights switch, Memory erase signal (MES) connector, Moonroof switch, Navigation unit, Rear blower motor relay, Rear heater-A/C control switch (2 wires), Rear mode control motor, Rear accessory power socket, Rear power transistor Shielding between the PCM and these components have BRN wires: VTM-4 control unit (4WD), VSA modulator-control unit
G502	Gauge control module (2 wires)
G503	Console accessory power socket, Engine mount control unit (2WD), Front accessory power socket, Front individual map lights (without moonroof), Glove box light, Keyless receiver unit, Left side turn signal light, Optional automatic dimming inside mirror connector (without moonroof), Optional cigarette lighter connector, Passenger's multiplex control unit, Vanity mirror lights (without moonroof)
G504	Audio unit, Auxiliary jack assembly (with rear entertainment system)
G505	Engine mount control unit (2 wires) (2WD)

(cont'd)

Ground Distribution

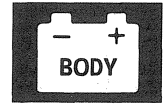
Ground to Components Index (cont'd)

Ground	Component or circuit grounded
G601	Door multiplex control unit (2 wires), Fuel pump (FP), Left mirror defogger, Left rear door lock knob switch (with security), Power mirror switch, Power window control unit, Rear accessory power socket
G602	BLK: Rear Differential, Cargo area accessory power socket, VTM-4 control unit (4WD), Shielding between the VTM-4 control unit and clutch electromagnetic coils BRN/YEL: VTM-4 control unit (2 wires)
G651	Accessory power socket relay, Front passenger's door lock switch, Front passenger's door lock knob switch (with security), Passenger's multiplex control unit, Power window relay, Right mirror defogger, Right rear door lock knob switch (with security)
G652	Back-up lights, Brake lights failure sensor, High mount brake light, Left taillight/left rear side marker light, License plate lights, Noise condenser, Rear window defogger, Rear window wiper motor, Right taillight/right rear side marker light, Tailgate latch switch, Trailer lighting connector
G801	Driver's seat belt buckle switch, Driver's seat heater, Front passenger's seat belt buckle switch, Front passenger's seat heater, Power seat adjustment switch (2 wires), ODS unit
G802	SRS unit (2 wires)
G901*	Electrical compass unit, Front individual map lights, Moonroof motor, Optional automatic dimming inside mirror connector, Rear controller and screen (with rear entertainment system), Vanity mirror lights

* : With moonroof



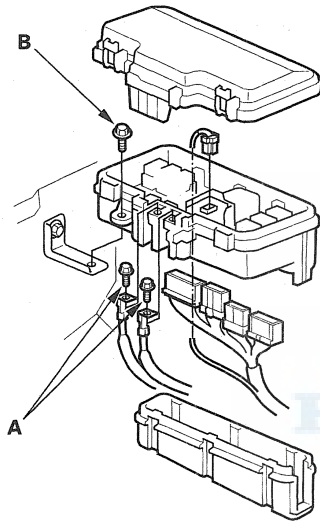
Under-hood Fuse/Relay Box



Removal and Installation

Removal

1. Make sure you have the anti-theft codes for the audio system and the navigation system (if equipped), then write down the audio presets.
2. Disconnect the negative battery cable, then disconnect the positive cable, and wait at least 3 minutes.
3. Remove the screws (A) for the alternator and battery cable terminals from the under-hood fuse/relay box.



4. Remove the mounting bolt (B) from the under-hood fuse/relay box.
5. Remove the bottom cover from the under-hood fuse/relay box.
6. Disconnect the connectors from the under-hood fuse/relay box.
7. If replacing the fuse/relay box, carefully remove the relays by prying under the base of the relay.

NOTE: Do not use pliers. Pliers will damage the relays, which could cause the engine to stall or not start.

Installation

1. Install the relays and connect the connectors to the under-hood fuse/relay box, then install the under-hood fuse/relay box in the reverse order of removal.
2. Install the removed parts in the reverse order of removal.
3. Connect both the positive and negative cables to the battery.
4. Do the power window control unit reset procedure (see page 22-255).
5. Enter the anti-theft codes for the audio system and the navigation system (if equipped), then enter the audio presets.
Set the clock (on vehicles without navigation).
6. Confirm that all systems work properly.

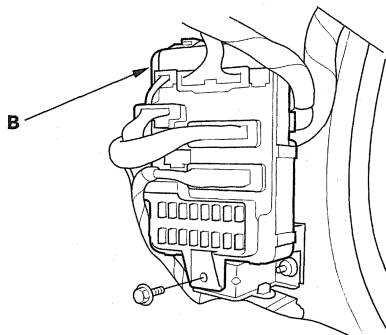
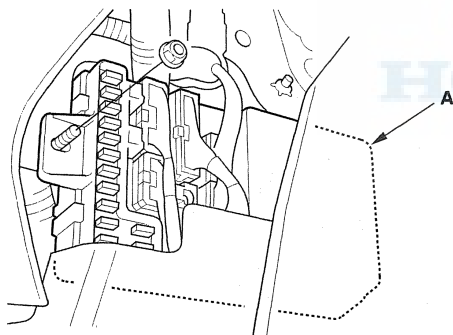
Under-dash Fuse/Relay Box

Removal and Installation

SRS components are located in this area. Review the SRS component locations (see page 23-17) and the precautions and procedures (see page 23-19) before performing repairs or service.

Removal

1. Make sure you have the anti-theft codes for the audio system and navigation system (if equipped), and write down the audio presets.
2. Disconnect the negative battery cable, then disconnect the positive cable, and wait at least 3 minutes.
3. Driver's fuse box: Remove the left kick panel (see page 20-65) and dashboard lower cover (see page 20-90).
Passenger's fuse box: Remove the right kick panel (see page 20-65) and glove box (see page 20-95).
4. Remove the mounting nut or bolt, and pull the driver's under-dash fuse/relay box (A) or passenger's under-dash fuse/relay box (B) away from the body.



5. Disconnect the driver's or passenger's under-dash fuse/relay box connectors, and remove the driver's or passenger's under-dash fuse/relay box.

NOTE: The dashboard wire harness A (driver's under-dash fuse/relay box connector B) 2P connector for SRS is a spring-loaded lock type (see page 23-23).

Installation

1. Connect the connectors to the driver's or passenger's under-dash fuse/relay box, then install the driver's or passenger's under-dash fuse/relay box in the reverse order of removal.
2. Install the removed parts in the reverse order of removal.
3. Connect both the negative cable and positive cable to the battery, enter the anti-theft codes for the audio system and the navigation system (if equipped), then enter the audio presets, and set the clock (on vehicles without navigation).
4. Do the PCM idle learn procedure (see page 11-359).
5. Reset the power window control unit (see page 22-255).
6. Confirm that all systems work properly.



Battery Test

WARNING

A battery can explode if you do not follow the proper procedure, causing serious injury to anyone nearby. Follow all procedures carefully and keep sparks and open flames away from the battery.

Use either a JCI or Bear ARBST tester, and follow the manufacturer's procedures. If you don't have one of these computerized testers, follow this conventional test procedure:

1. Be sure the temperature of the electrolyte is between 70 °F (21 °C) and 100 °F (38 °C).
2. Inspect the battery case for cracks or leaks.
 - If the case is damaged, replace the battery. ■
 - If the case looks OK, go to step 3.
3. Check the indicator EYE.
 - If the EYE indicates the battery is charged, go to step 4.
 - If the EYE indicates a low charge, go to step 7.
4. Apply a 300 A load for 15 seconds to remove the surface charge.
5. Wait 15 seconds, then apply a test load of 280 A for 15 seconds.
6. Record battery voltage.
 - If voltage is above 9.6 V, the battery is OK. ■
 - If voltage is below 9.6 V, go to step 7.
7. Charge the battery on High (40 A) until the EYE shows the battery is charged, plus an additional 30 minutes. If the battery charge is very low, it may be necessary to bypass the charger's polarity protection circuitry.
 - If the EYE indicates the battery is charged within 3 hours, the battery is OK. ■
 - If the EYE indicates the battery is not charged within 3 hours, replace the battery. ■

Relays

Power Relay Test

Use this chart to identify the type of relay, then do the test listed for it.

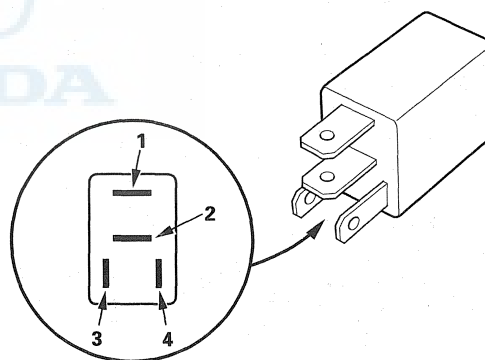
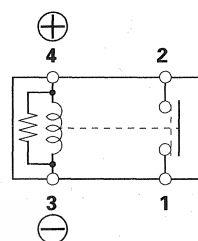
NOTE: For the turn signal/hazard relay input test (see page 22-152).

Relay	Test
Accessory power socket relay	Normally-open type A
ACM control relay	
A/C compressor clutch relay	
A/C condenser fan relay	
A/F sensor relay	
A/T reverse relay	
Dimmer relay	
ETCS control relay	
Headlight relay 1 (RIGHT)	
Headlight relay 2 (LEFT)	
Horn relay	
Ignition coil relay	
Interior light relay	
Park pin relay	
PGM-FI main relay 1	
PGM-FI main relay 2	
Power window relay	
Radiator fan relay	
Rear accessory power socket relay	
Seat heater relay	
Starter cut relay	
Taillight relay	
VTM-4 relay	
Front blower motor relay	Normally-open type B
Rear window defogger relay	
Rear blower motor relay	Normally-open type C
ATP P relay	Five-terminal type
Fan control relay	
Fog light relay	
Front washer motor relay	
Intermittent wiper relay	
Moonroof close relay	
Moonroof open relay	
Rear washer motor relay	
Rear window intermittent wiper relay	

Normally-open type A

Check for continuity between the terminals.

- There should be continuity between the No. 1 and No. 2 terminals when battery positive terminal is connected to the No. 4 terminal, and battery negative terminal is connected to the No. 3 terminal.
- There should be no continuity between the No. 1 and No. 2 terminals when power is disconnected.

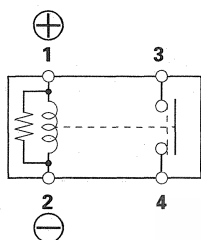




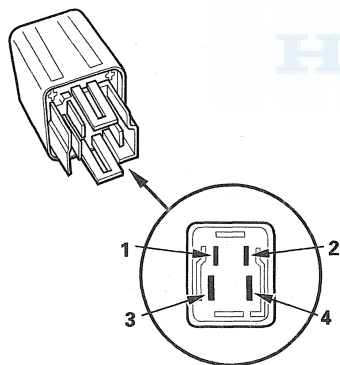
Normally-open type B

Check for continuity between the terminals.

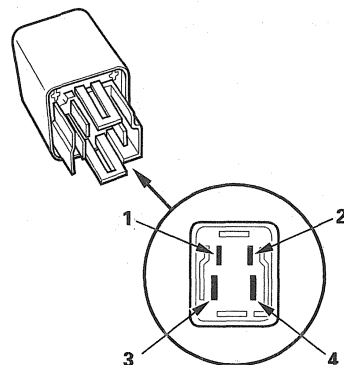
- There should be continuity between the No. 3 and No. 4 terminals when battery positive terminal is connected to the No. 1 terminal, and battery negative terminal is connected to the No. 2 terminal.
- There should be no continuity between the No. 3 and No. 4 terminals when power is disconnected.



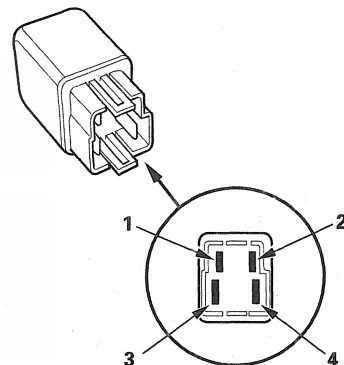
Rear window defogger relay



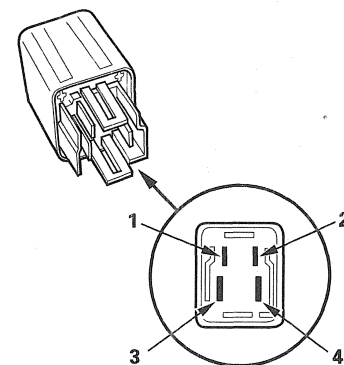
Front blower motor relay, type 1



Front blower motor relay, type 2



Front blower motor relay, type 3



(cont'd)

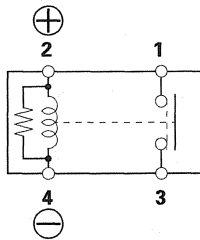
Relays

Power Relay Test (cont'd)

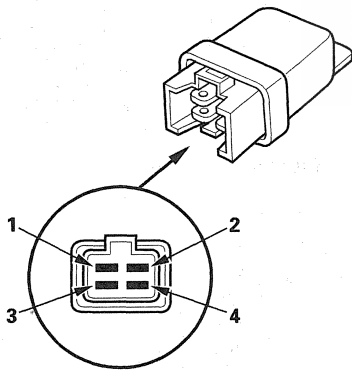
Normally-open type C

Check for continuity between the terminals.

- There should be continuity between the No. 1 and No. 3 terminals when battery positive terminal is connected to the No. 2 terminal, and battery negative terminal is connected to the No. 4 terminal.
- There should be no continuity between the No. 1 and No. 3 terminals when power is disconnected.



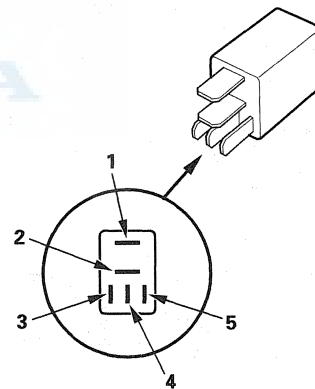
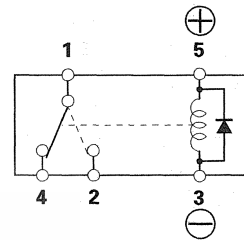
Rear blower motor relay



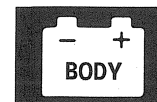
Five-terminal type

Check for continuity between the terminals.

- There should be continuity between the No. 1 and No. 2 terminals when battery positive terminal is connected to the No. 5 terminal, and battery negative terminal is connected to the No. 3 terminal.
- There should be continuity between the No. 1 and No. 4 terminals when power is disconnected.



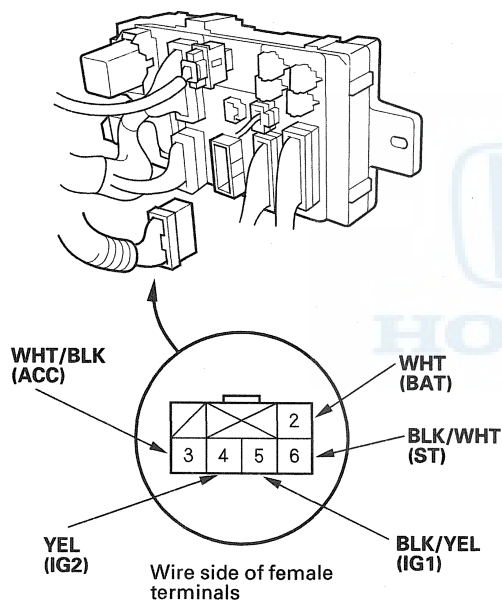
Ignition Switch



Test

SRS components are located in this area. Review the SRS component locations (see page 23-17) and the precautions and procedures (see page 23-19) before performing repairs or service.

1. Make sure you have the anti-theft codes for the audio system and navigation system (if equipped), then write down the audio presets.
2. Disconnect the negative battery cable.
3. Remove the driver's dashboard lower cover (see page 20-90).
4. Disconnect the 6P connector from the driver's under-dash fuse/relay box.

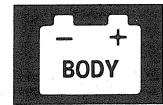


5. Check for continuity between the terminals in each switch position according to the table.

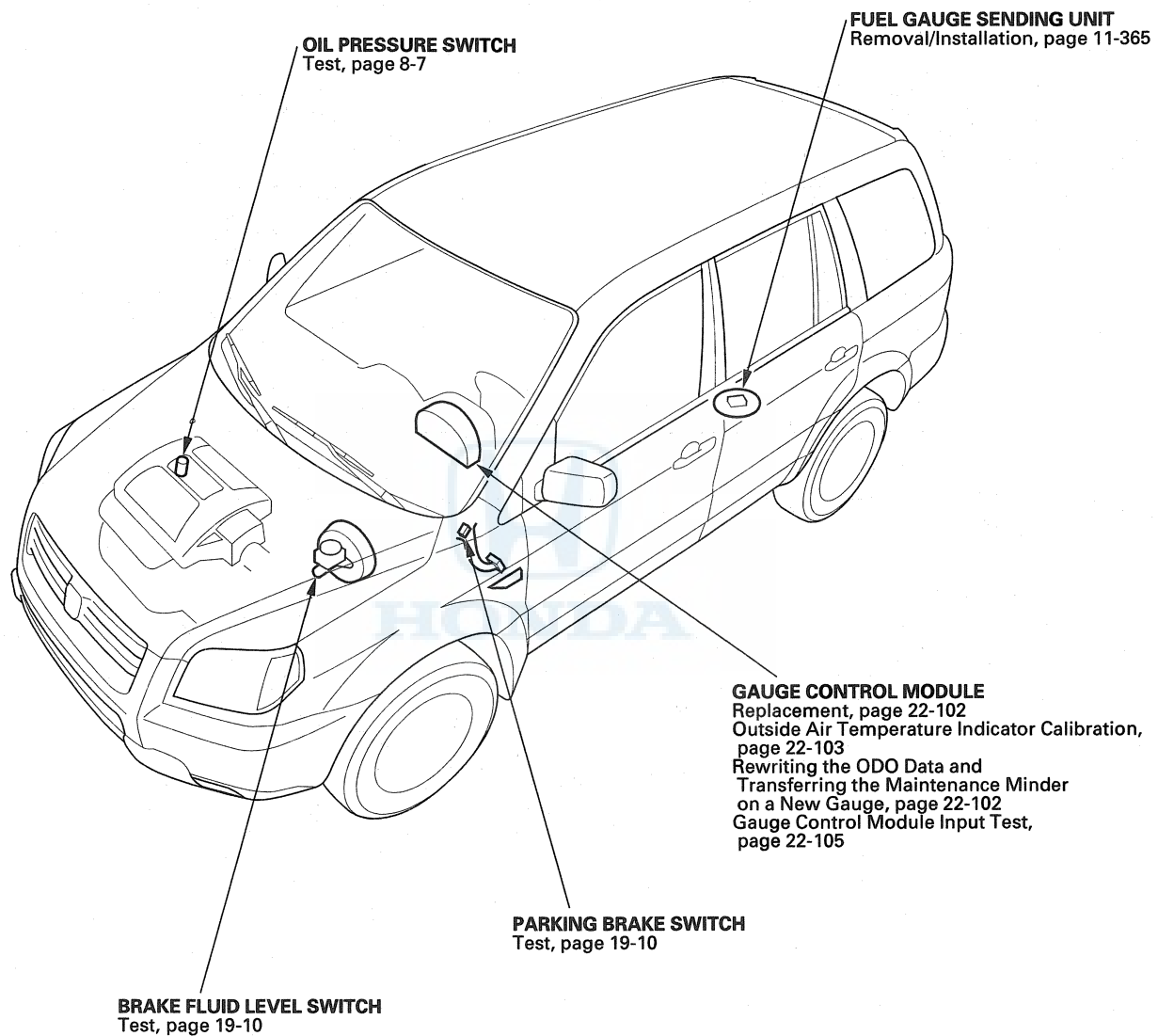
Terminal Position	WHT/ BLK (3)	WHT (2)	BLK/ YEL (5)	YEL (4)	BLK/ WHT (6)
O (LOCK)					
I (ACC)	○	○			
II (ON)	○	○	○	○	
III (START)		○	○	○	○

6. If the continuity checks do not agree with the table, replace the steering lock (see page 17-29).
7. After reconnecting the battery, enter the anti-theft codes for the audio system and the navigation system (if equipped), then enter the audio presets, and set the clock (on vehicles without navigation).
8. Reset the power window control unit (see page 22-255).





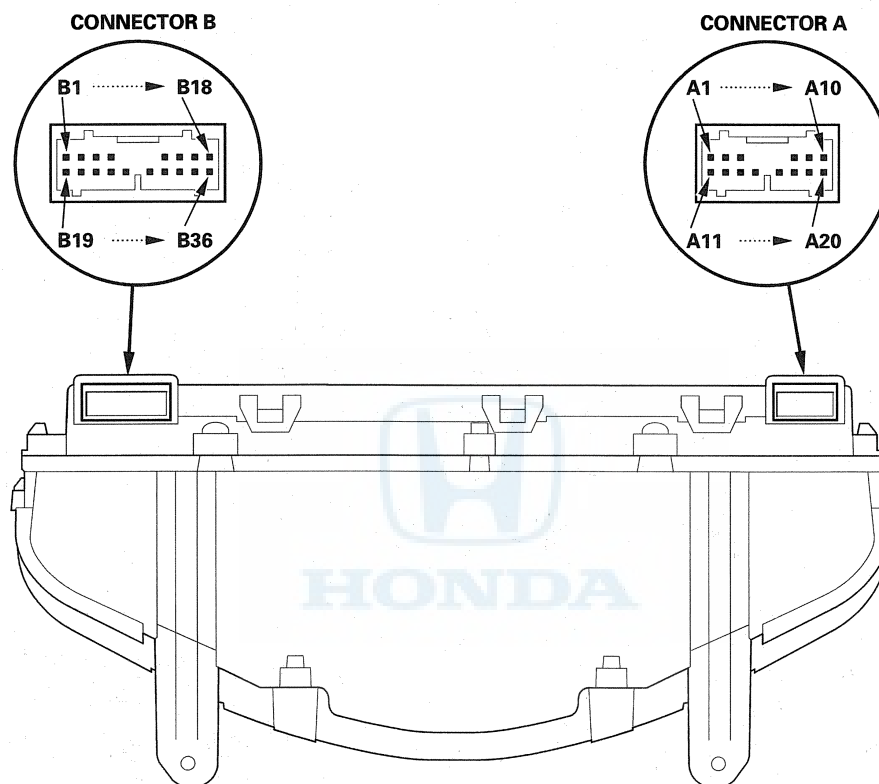
Component Location Index

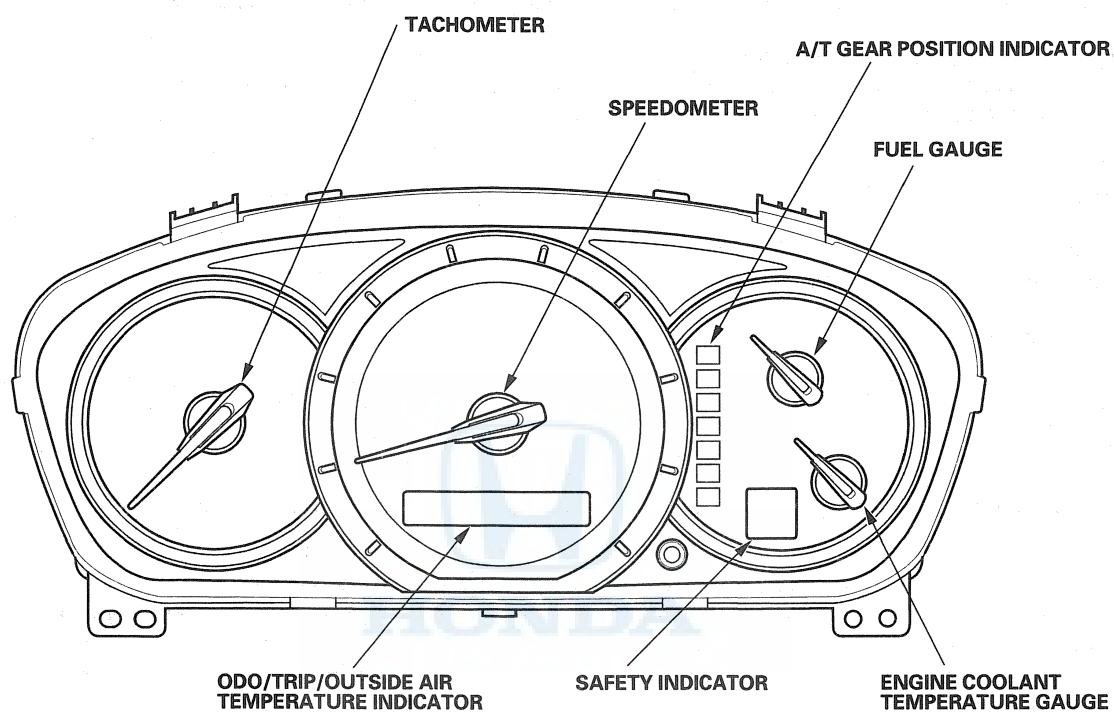
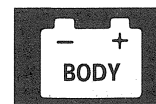


(cont'd)

Gauges

Component Location Index (cont'd)





Gauges

Self-diagnostic Function

The gauge control module has a self-diagnostic function.

- The beeper drive circuit check
- The indicator drive circuit check
- The LCD segments check
- The gauges drive circuit check (Speedometer, Tachometer, Fuel gauge, Coolant temperature gauge)
- The communication line check (the coolant temperature signal line between the gauge and PCM)

Entering the self-diagnostic function

Before doing the self-diagnostic function, check the No. 9 (10 A) fuse in the driver's under-dash fuse/relay box and No. 13 (7.5 A) fuse in the passenger's under-dash fuse/relay box.

With HDS

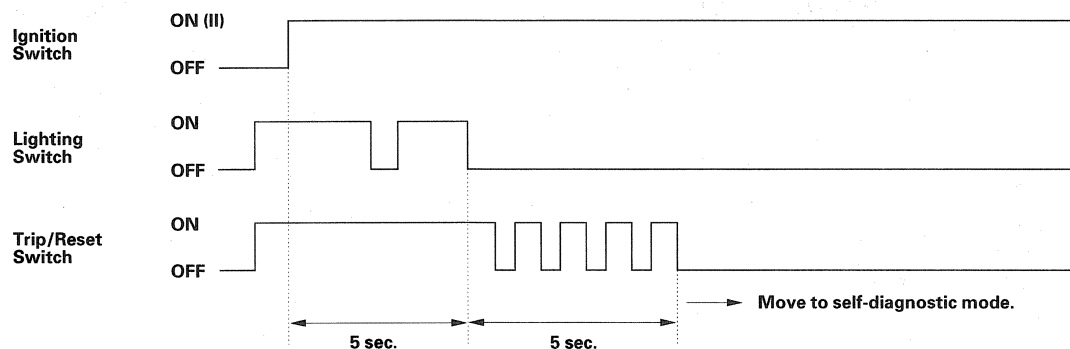
Select Body Electrical from the main menu, select functional test, then self-diagnostic function.

Without HDS

1. Push and hold the trip/reset button.
2. Turn the lighting switch ON.
3. Turn the ignition switch ON (II).
4. Within 5 sec., turn the lighting switch OFF, then ON and OFF again.
5. Within 5 sec., release the trip/reset button, then push and release the button four times repeatedly.

NOTE:

- While in the self-diagnostic mode, the dash lights brightness controller operates normally.
- While in the self-diagnostic mode, the trip/reset button is used to start the beeper drive circuit check and the gauge drive circuit check.
- If the vehicle speed exceeds 1.2 mph (2 km/h) or the ignition switch is turned OFF, the self-diagnostic mode ends.

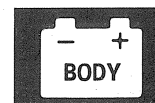


The Beeper Drive Circuit Check

When entering the self-diagnostic mode, the beeper sounds five times.

The Indicator Drive Circuit Check

ABS indicator, A/T fluid temperature indicator, A/T gear position indicator (except P, R, N), Brake system indicator, Charging system indicator, Cruise control indicator, Door/tailgate indicator, ECO indicator (2WD), Malfunction indicator lamp (MIL), Low fuel indicator, Low oil pressure indicator, Low tire pressure indicator, Maintenance required indicator, Seat belt reminder indicator, TPMS indicator, VSA activation indicator and VSA indicator, Washer fluid level indicator (Canada models).



Switch Input Check

After the intermittent beeper sounds at the initial stage of self-diagnostic, a beeper sounds continuously while any of the following switch inputs are switched from OFF to ON:

Parking brake switch, VSA OFF switch, cruise control master, SET, RESUME and CANCEL switches.

The LCD Segment Check

When entering the self-diagnostic mode, the odo/trip segment blinks five times.

The Gauge Drive Circuit Check

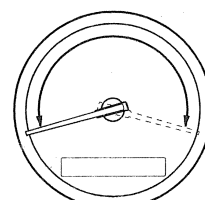
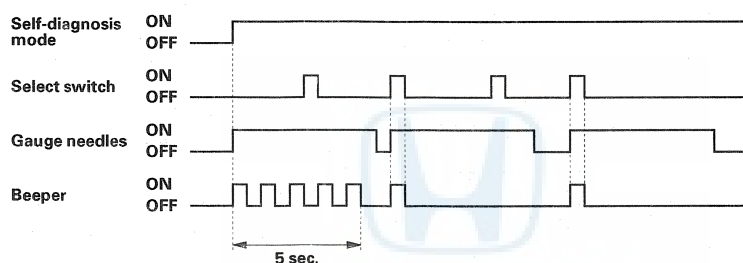
When entering the self-diagnostic mode, the speedometer and the tachometer, the fuel gauge, and the coolant temperature gauge needles sweep from the minimum position to maximum position, then return to the minimum position.

NOTE:

After the beeper stops sounding and the gauge needles return to the minimum position, pushing the trip/reset button starts the beeper drive circuit check (one beep), and the gauge drive circuit check again.

The check cannot be started until the needles return to the minimum position.

If the gauge needles fail to sweep, replace the gauge control module.



The needles sweep from the minimum position to the maximum position, then return to the minimum position.

The Communication Line Check

In the self-diagnostic mode, after the odo/trip LCD segments check, the self-diagnosis starts the communication line check.

If all segments come on, the communication line is OK.

If the word "Error" is indicated, check the PCM DTCs with the HDS. If U0073 and/or U0155 indicate, go to the PCM troubleshooting. If U0073 and/or U0155 does not indicate, check for loose or poor connections. If the connections are good, replace the gauge control module.

Normal



Faulty



Ending the self-diagnostic function

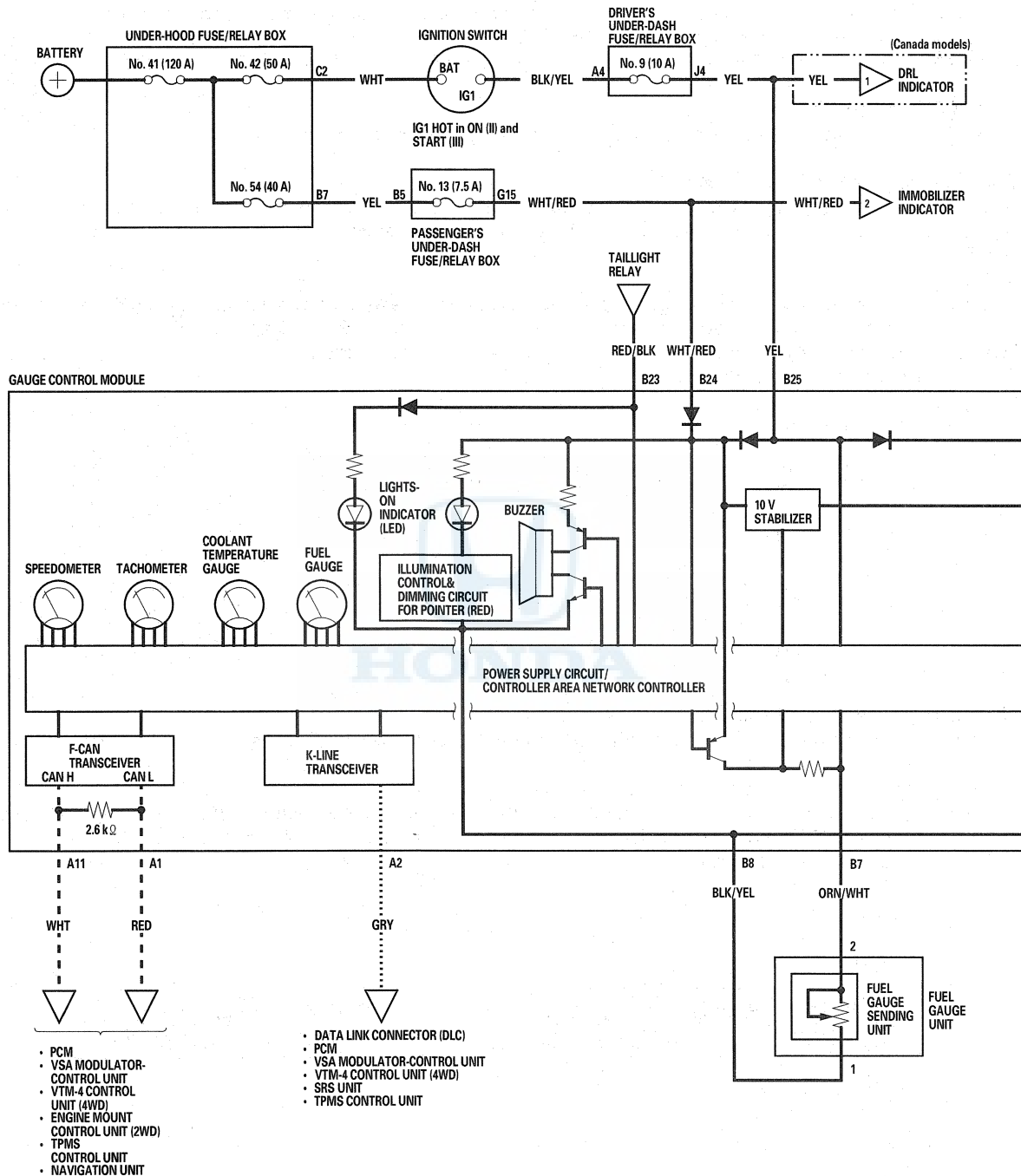
Turn the ignition switch OFF.

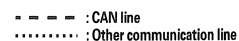
NOTE: If the vehicle speed exceeds 1.2 mph (2 km/h), the self-diagnostic function ends.

If any of the checks do not function as specified, replace the gauge control module.

Gauges

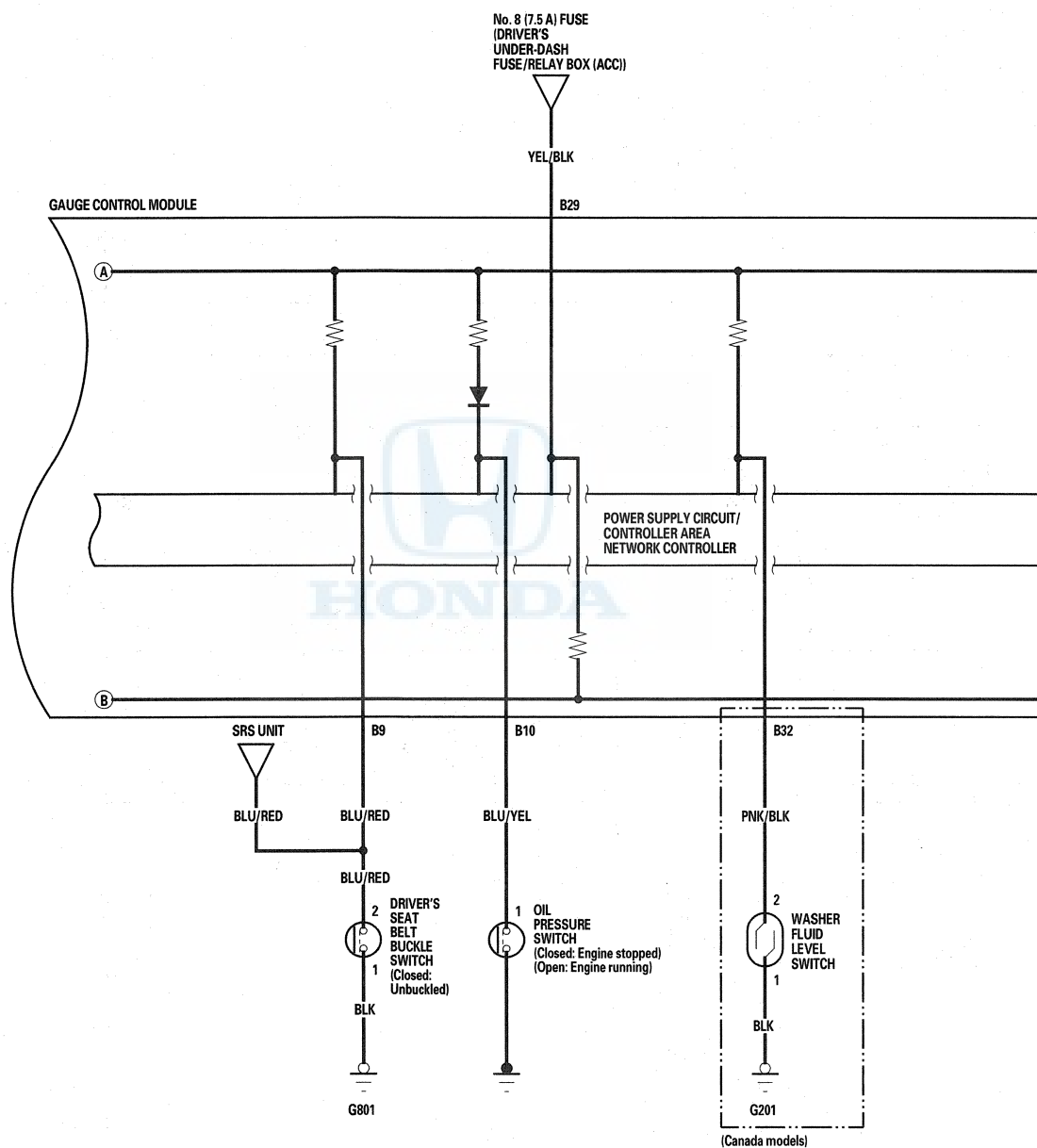
Circuit Diagram

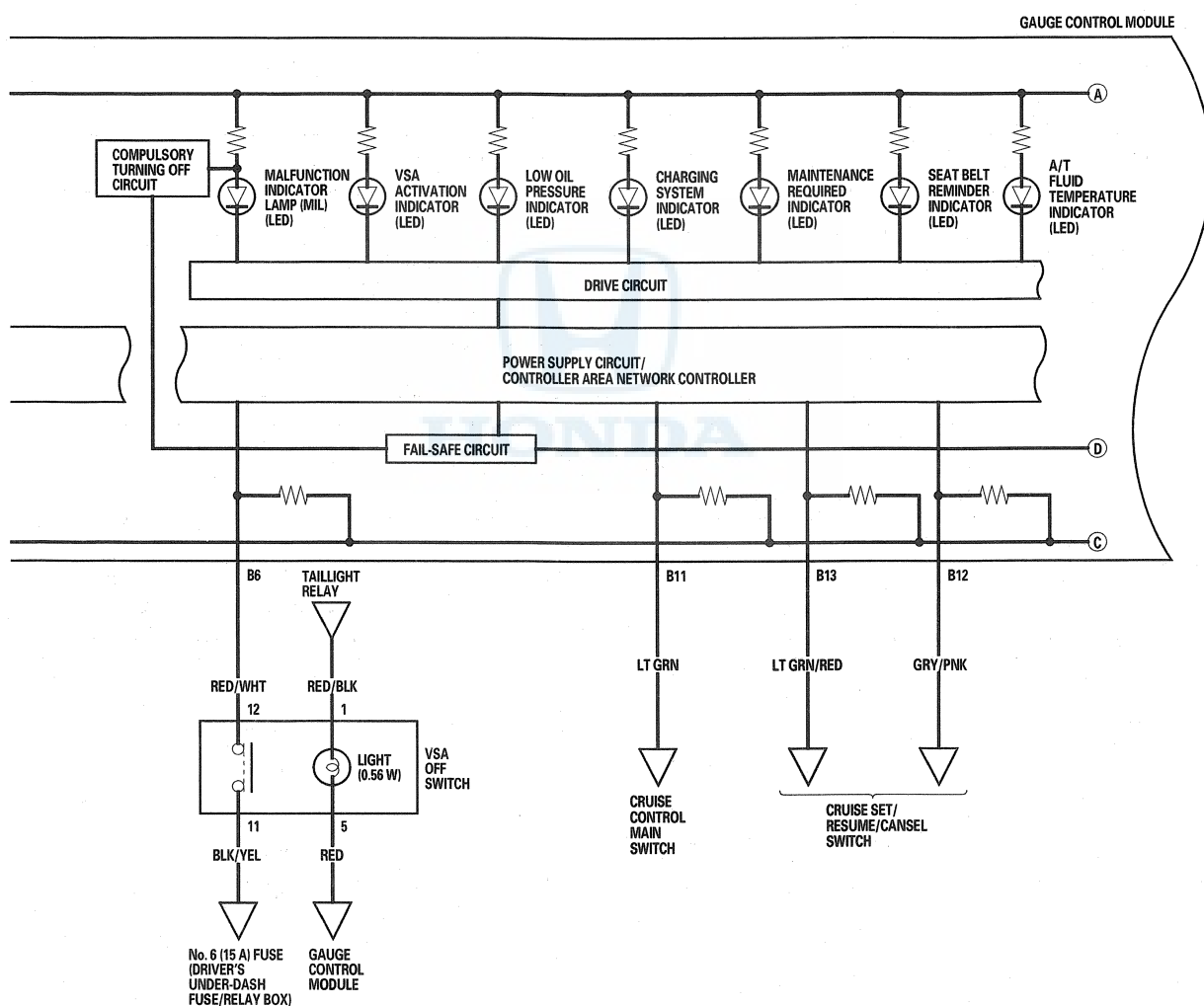
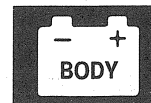




Gauges

Circuit Diagram (cont'd)

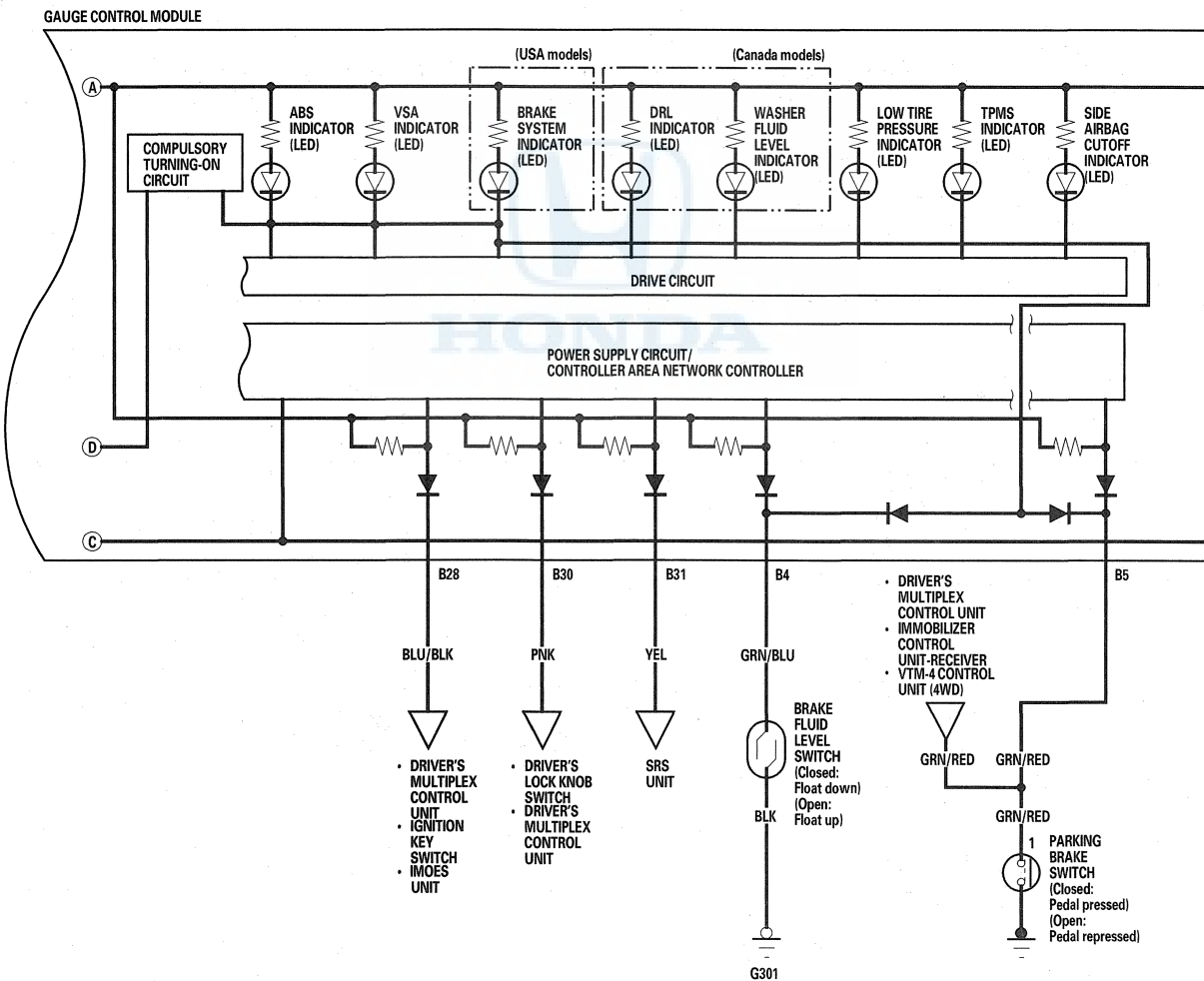




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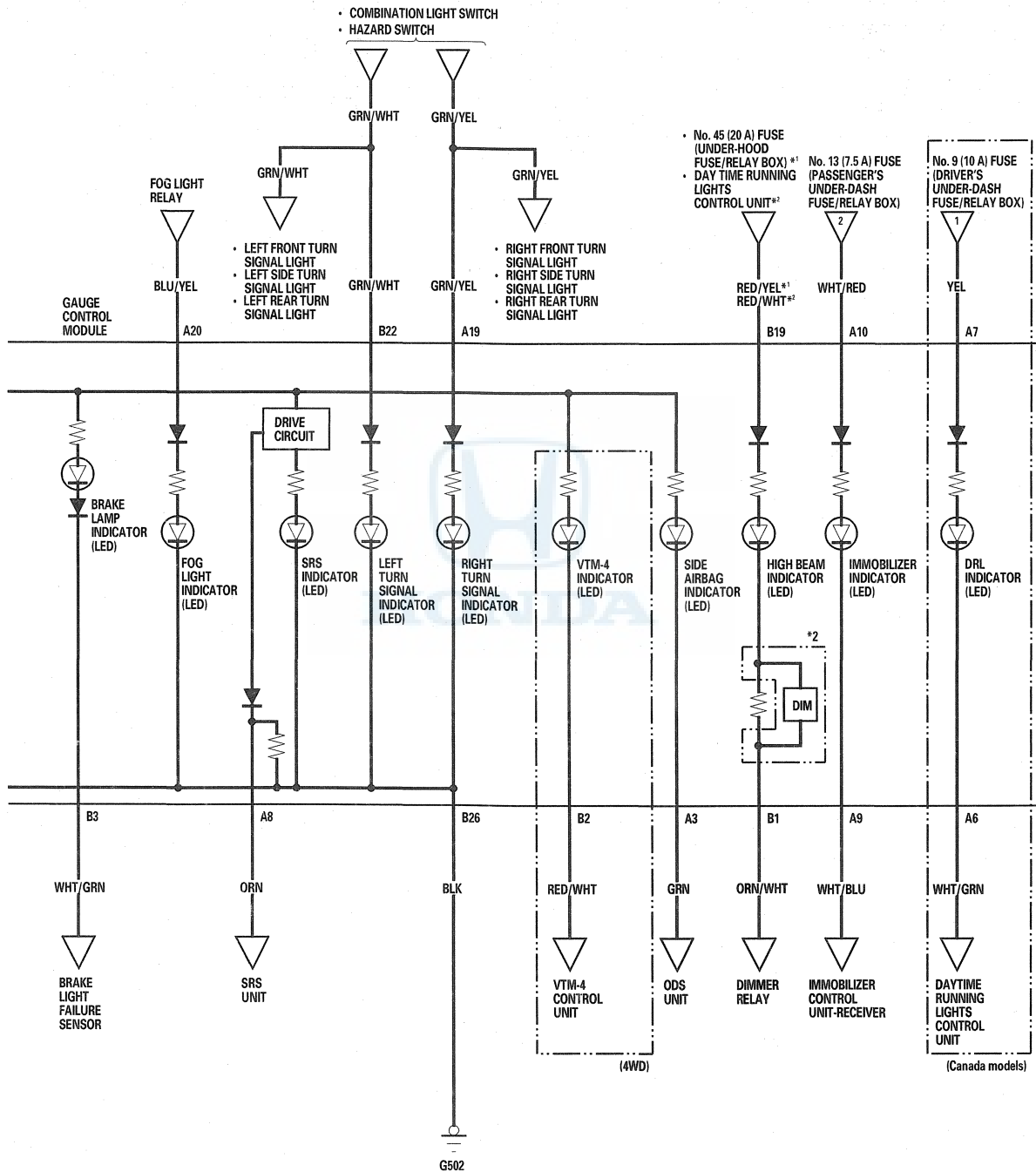
Gauges

Circuit Diagram (cont'd)





*1: USA models
*2: Canada models

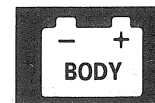


Gauges

DTC Troubleshooting Index

DTC	Description	ECU	DTC type	Page
B1152	Gauge Control Module EEPROM error	Gauge Control Module	Internal Error	(see page 22-99)
B1175	Fuel level sensor (Fuel gauge sending unit) signals input error	Gauge Control Module	Signal Error	(see page 22-99)
B1176	Fuel level sensor (Fuel gauge sending unit) circuit short	Gauge Control Module	Signal Error	(see page 22-100)
B1177	Battery voltage abnormal	Gauge Control Module	Signal Error	(see page 22-101)





DTC Troubleshooting

DTC B1152: Gauge Control Module EEPROM Error

1. Clear the DTCs with the HDS.
2. Start the engine.
3. Check for DTCs with the HDS.

Is DTC B1152 indicated?

YES—Go to step 4.

NO—Intermittent failure. The gauge control module is OK at this time. Check for loose or poor connections. If the connections are good, check the battery condition (see page 22-81), and the charging system. ■

4. Disconnect the gauge control module connectors, then reconnect them.
5. Check for DTCs with the HDS.

Is DTC B1152 still indicated?

YES—Faulty gauge control module; replace the gauge control module (see page 22-102). ■

NO—Intermittent failure. The gauge control module is OK at this time. Check for loose or poor connections. If the connections are good, check the battery condition (see page 22-81), and the charging system. ■

DTC B1175: Fuel Level Sensor (Fuel Gauge Sending Unit) Signals Input Error

1. Clear the DTCs with the HDS.
2. Turn the ignition switch OFF, and then back ON (II).
3. Check for DTCs with the HDS.

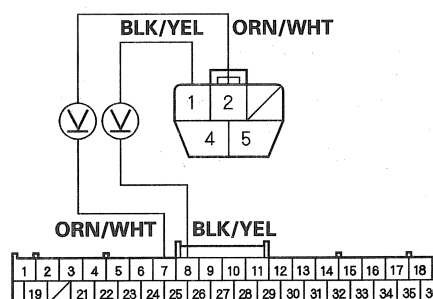
Is DTC B1175 indicated?

YES—Go to step 4.

NO—Intermittent failure, the fuel level sensor circuit is OK at this time. Check for loose or poor connections. ■

4. Disconnect the fuel pump 5P connector and gauge control module connector B (14P) and check for loose or damaged terminals.
5. Turn the ignition switch ON (II).
6. Reconnect the connectors that were disconnected, measure the voltage between the No. 7 and No. 8 terminals of gauge control module connector B (36P) and No. 1 and No. 2 terminals of the fuel tank unit 5P connector.

FUEL TANK UNIT 5P CONNECTOR
Wire side of female terminals



GAUGE CONTROL MODULE CONNECTOR B (36P)
Wire side of female terminals

Is there less than 1 V?

YES—Go to step 7.

NO—Repair the loose connection or open in the ORN/WHT or BLK/YEL wire between the gauge control module and fuel tank unit. ■

7. Turn the ignition switch OFF.

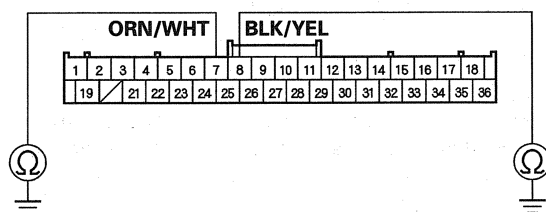
(cont'd)

Gauges

DTC Troubleshooting (cont'd)

8. Disconnect the gauge control module connector B (36P).
9. Check for continuity between gauge control module connector B (36P) No. 7 and No. 8 terminals and body ground.

GAUGE CONTROL MODULE CONNECTOR B (36P)



Wire side of female terminals

Is there continuity?

YES—Go to step 10.

NO—Repair the short to ground in the wire between the gauge control module and the fuel gauge sending unit. ■

10. Do the fuel gauge sending unit test (see page 11-389).

Is the fuel gauge sending unit OK?

YES—Replace the gauge control module. ■

NO—Replace the fuel tank unit. ■

DTC B1176: Fuel Level Sensor (Fuel Gauge Sending Unit) Circuit Short

1. Clear the DTCs with the HDS.
2. Turn the ignition switch OFF, and then back ON (II).
3. Check for DTCs with the HDS.

Is DTC B1176 indicated?

YES—Go to step 4.

NO—Intermittent failure, the fuel level sensor circuit is OK at this time. Check for loose or poor connections. ■

4. Do the fuel gauge sending unit test (see page 11-389).

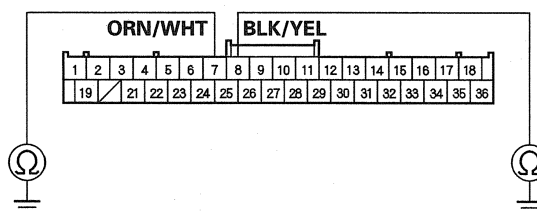
Is the fuel gauge sending unit OK?

YES—Go to step 5.

NO—Replace the fuel gauge sending unit. ■

5. Disconnect the fuel tank unit 5P connector.
6. Disconnect the gauge control module connector B (36P).
7. Check for continuity between gauge control module connector B (36P) No. 7 and No. 8 terminals and body ground.

GAUGE CONTROL MODULE CONNECTOR B (36P)

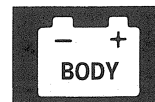


Wire side of female terminals

Is there continuity?

YES—Repair short to ground in the wire. ■

NO—Replace the gauge control module. ■



DTC B1177: Battery Voltage Abnormal

1. Clear the DTCs with the HDS.
2. Turn the ignition switch OFF, and then back ON (II).
3. Check for DTCs with the HDS.

Is DTC B1177 indicated?

YES—Go to step 8.

NO—Go to step 4.

4. Clear the DTCs with the HDS.
5. Turn the ignition switch OFF, and then back ON (II).
6. Crank the engine.
7. Check for DTCs with the HDS.

Is DTC B1177 indicated?

YES—Go to step 8.

NO—Intermittent failure. The gauge control module and power supply voltage (IG1) that is supplied to the gauge control module are OK at this time. The battery may have been discharged, and recovered. ■

8. Check the battery (see page 22-81) and the charging system.

Is the battery condition normal and the charging system OK?

YES—Go to step 9.

NO—The battery needs a recharge or replacement, or the charging system needs to be repaired. ■

9. Turn the ignition switch ON (II).

10. With the gauge control module 36P connector still connected, measure the voltage between the body ground and gauge control module 36P connector B (36P) No. 25 terminal.

Is the voltage above 7.5 V?

YES—Replace the gauge control module. ■

NO—Repair an open or high resistance in the YEL wire between the ignition switch and the gauge control module. ■

Gauges

Rewriting the ODO Data and Transferring the Maintenance Minder on a New Gauge Control

NOTE:

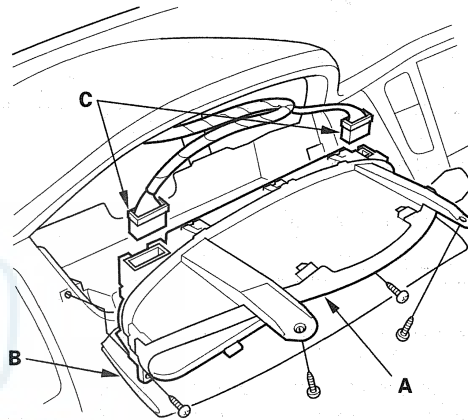
- If the HDS retrieves the ODO data from the gauge control module, the ODO value on the multi-information display will appear as “— — —”, making the ODO function unusable, and the HDS will be unable to retrieve additional ODO values.
- Rewriting is not possible on a gauge control module that does not communicate.
- Obtain a new gauge control module before starting the rewriting process.

1. Before replacing the gauge control module, connect the HDS to the data link connector.
2. Select GAUGES from the BODY ELECTRICAL SYSTEM SELECT menu display.
3. Select “GAUGE CONTROL MODULE REPLACEMENT (ODO rewrite)” from the ADJUSTMENT MENU, and follow the instructions on the display to retrieve the ODO value.
4. Replace the gauge control module.
5. Follow the instructions on the display to write the new ODO value to the new gauge control module.

Gauge Control Module Replacement

NOTE: Before replacing the gauge control module, do the “Rewriting the ODO Data and the Transferring the Maintenance Minder on a New Gauge Control Module” (see page 22-102).

1. Remove the instrument panel (see page 20-90).
2. Remove the screws from the gauge control module (A), and spread a protective cloth (B) on the upper column cover.



3. Disconnect the connectors (C), and remove the gauge control module.
4. Install the gauge in the reverse order of removal.



Outside Air Temperature Indicator Calibration

With Climate Control

NOTE: The outside air temperature sensor test (see page 21-121).

The outside air temperature sensor for the indicator is mounted behind the front bumper. Because of the location of the sensor, the temperature reading can be affected by heat reflection from the road, engine heat, and even exhaust from the surrounding traffic. These conditions can heat soak the sensor and cause inaccurate readings. To prevent abnormal or fluctuating outside air temperature indicator readings, the display uses a specific logic as shown.

The outside air is warmer than when the ignition switch was turned OFF (ACC or LOCK position):

- If the ignition switch was turned OFF for more than 2 hours, the displayed temperature when you turn the ignition switch to ON (II) stays at the ignition switch-off temperature until the vehicle has gone faster than 19 mph (30 km/h) for 30 seconds, then the display immediately updates to the measured outside air temperature.
- If the ignition switch was turned OFF for 2 hours or less, the displayed temperature when you turn the ignition switch to ON (II) and vehicle is traveling faster than 19 mph (30 km/h) for 90 seconds, will rise 1 degree every minute until the outside air temperature is reached.

The outside air is cooler than when the ignition switch was turned OFF (ACC or LOCK position):

- If the ignition switch was turned OFF for less than 2 hours, the displayed temperature when you turn the ignition switch to ON (II) is the ignition switch-off temperature. The displayed temperature then drops 1 degree every 2 seconds until the reading matches the outside air temperature.
- If the ignition switch was turned OFF for 2 hours or more, the displayed temperature is the measured outside air temperature.

Forced Display

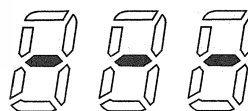
You can also force the indicator to display the measured temperature.

1. Turn the ignition switch to LOCK (0).
2. Removed the No. 13 (7.5 A) fuse from the passenger's under-dash fuse/relay box for 60 seconds, then reinstall it.
3. Turn the ignition switch ON (II).

NOTE: After this procedure, reset the power window control unit (see page 22-255).

Troubleshooting

If the indicator displays “— — —” for more than 2 seconds after selecting the outside air temperature display mode, check for an open in the BRN/WHT wire between the gauge and the outside air temperature sensor, the YEL/GRN wire between the climate control unit and the outside air temperature sensor or the GRY wire between the gauge control module and the climate control unit.



(cont'd)

Gauges

Outside Air Temperature Indicator Calibration (cont'd)

Calibration

The outside air temperature indicator's displayed temperature can be recalibrated $\pm 3^{\circ}\text{F}$ to meet the customer's expectations.

NOTE: This procedure must be done after the temperature sensor stabilizes.

1. Turn the ignition switch ON (II), and make sure the outside air temperature is displayed.
2. Press the trip/reset switch button for 10 seconds. While you continue to hold the button, the display will scroll through temperature settings from $+5^{\circ}$ to -5°F as shown.

→ 0 1 2 3 4 5 -5 -4 -3 -2 -1

3. When the desired correction value appears on the display, release the button, and the recalibrated outside air temperature will be displayed.

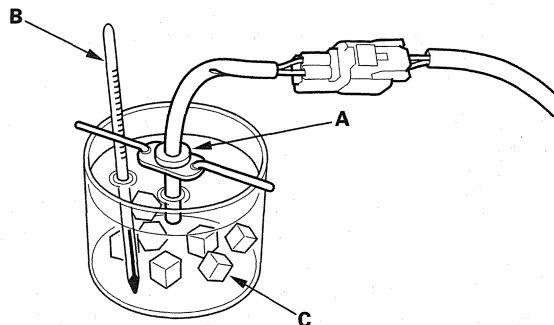
Each time a desired correction value is entered, it replaces the previous value.

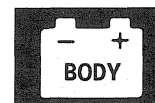
Example:

Incorrect value = 68 °F
Desired correction value = +2 °F
Corrected value = 70 °F

Desired correction value = -2 °F
Corrected value = 66 °F

NOTE: To recalibrate the display to the true temperature, remove the outside air temperature sensor (A), but leave it connected. Submerge the sensor and a thermometer (B) in a container of ice water (C). Select the calibration mode as described above, then recalibrate the display to the true temperature.



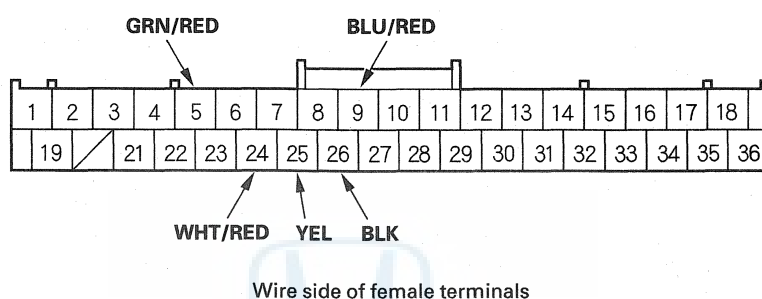


Gauge Control Module Input Test

NOTE: If there is malfunction of the parking brake reminder and speedometer function simultaneously, troubleshooting the vehicle speed signal circuit first.

1. Remove the gauge control module and disconnect the 36P connector B from the gauge control module (see page 22-102).
2. Inspect the connector and socket terminals to be sure they are all making good contact.
 - If the terminals are bent, loose or corroded, repair them as necessary, and recheck the system.
 - If the terminals look OK, go to step 3.

GAUGE CONTROL MODULE CONNECTOR B (36P)



(cont'd)

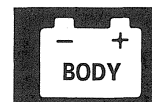
Gauges

Gauge Control Module Input Test (cont'd)

3. Reconnect the connectors to the gauge control module, and make these input tests at the connector.

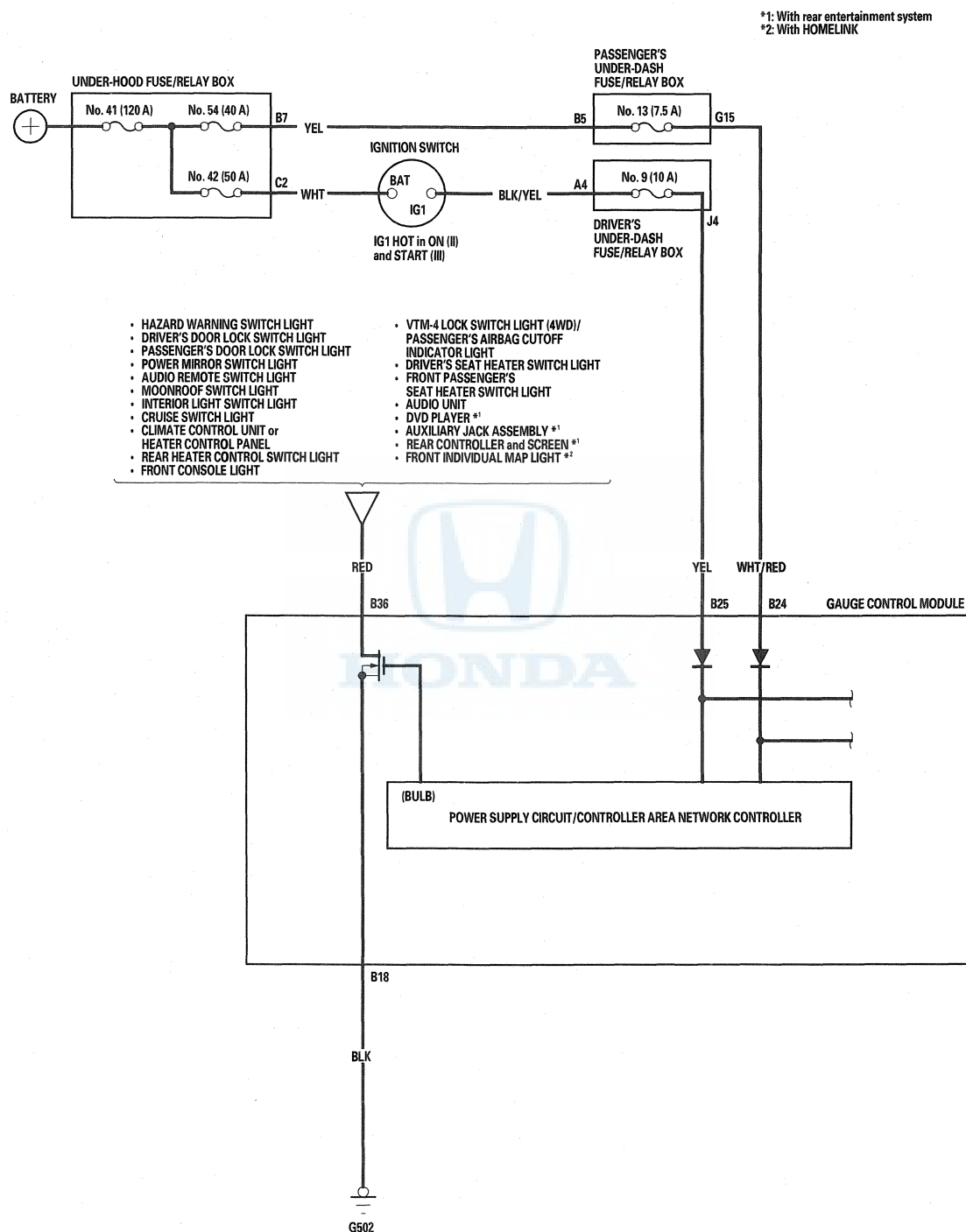
- If any test indicates a problem, find and correct the cause, then recheck the system.
- If all the input tests prove OK, the gauge internal circuit must be faulty; replace the gauge control module.

Cavity	Wire	Test condition	Test: Desired result	Possible cause if result is not obtained
B24	WHT/RED	Under all conditions	Measure the voltage to ground: There should be battery voltage.	<ul style="list-style-type: none"> • Blown No. 13 (7.5 A) fuse in the passenger's under-dash fuse/relay box • An open in the wire
B25	YEL	Ignition switch ON (II)	Measure the voltage to ground: There should be battery voltage.	<ul style="list-style-type: none"> • Blown No. 9 (10 A) fuse in the driver's under-dash fuse/relay box • An open in the wire
B26	BLK	Under all conditions	Measure the voltage to ground: There should be less than 1 V.	<ul style="list-style-type: none"> • Poor ground (G502) • An open in the wire
B9	BLU/RED	Ignition switch ON (II), driver's seat belt unbuckled	Measure the voltage to ground: There should be less than 1 V.	<ul style="list-style-type: none"> • Poor ground (G801) • Faulty driver's seat belt switch • An open in the wire
		Ignition switch ON (II), driver's seat belt buckled	Measure the voltage to ground: There should be 5 V or more.	<ul style="list-style-type: none"> • Faulty driver's seat belt switch • A short to ground in the wire
B5	GRN/RED	Ignition switch ON (II), parking brake set	Measure the voltage to ground: There should be less than 1 V.	<ul style="list-style-type: none"> • Poor ground • Faulty parking brake switch • An open in the wire
		Ignition switch ON (II), parking brake released	Measure the voltage to ground: There should be battery voltage.	<ul style="list-style-type: none"> • Faulty parking brake switch • A short to ground in the wire



Dash Lights Brightness Controller

Circuit Diagram

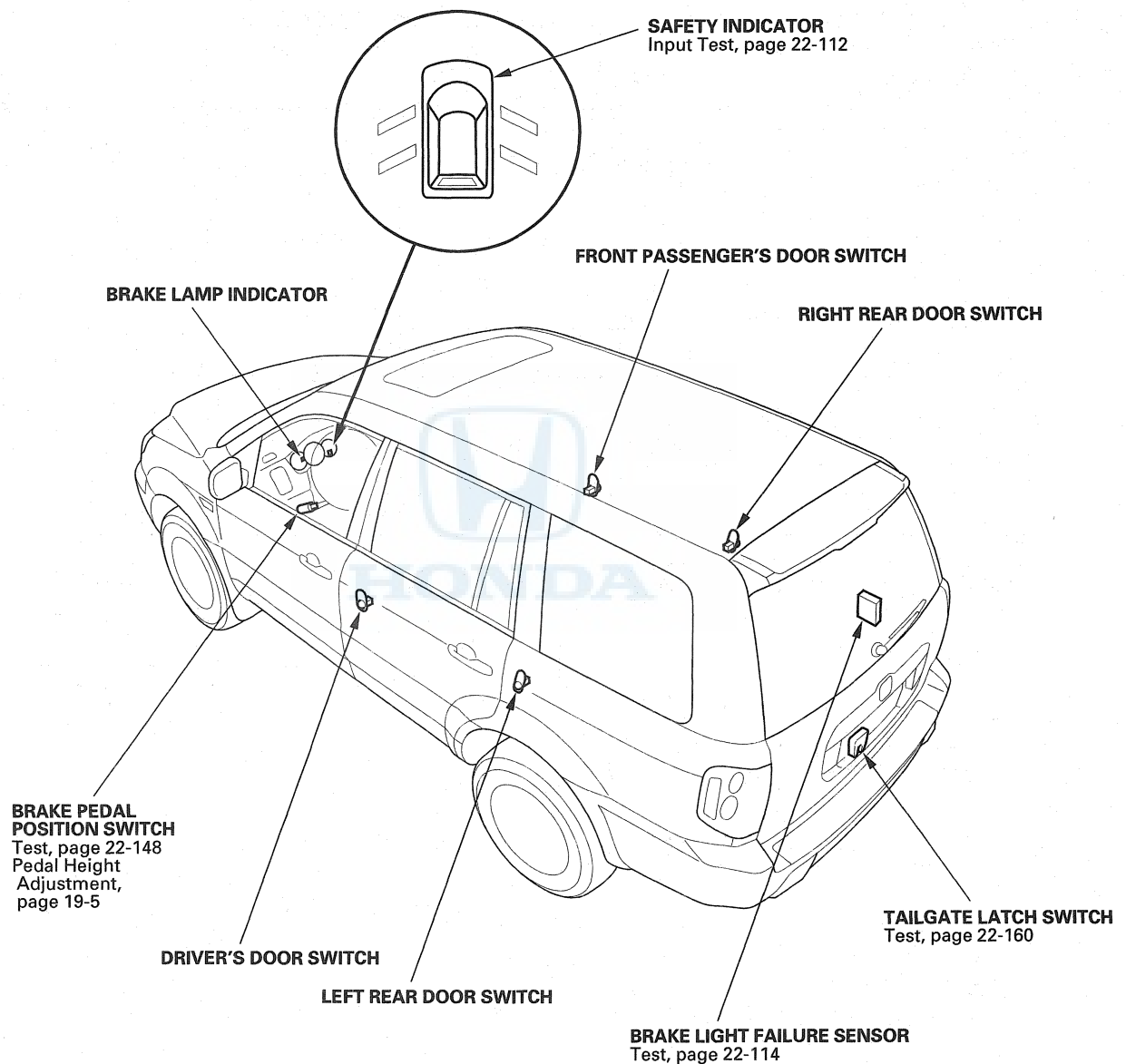




Safety Indicator System

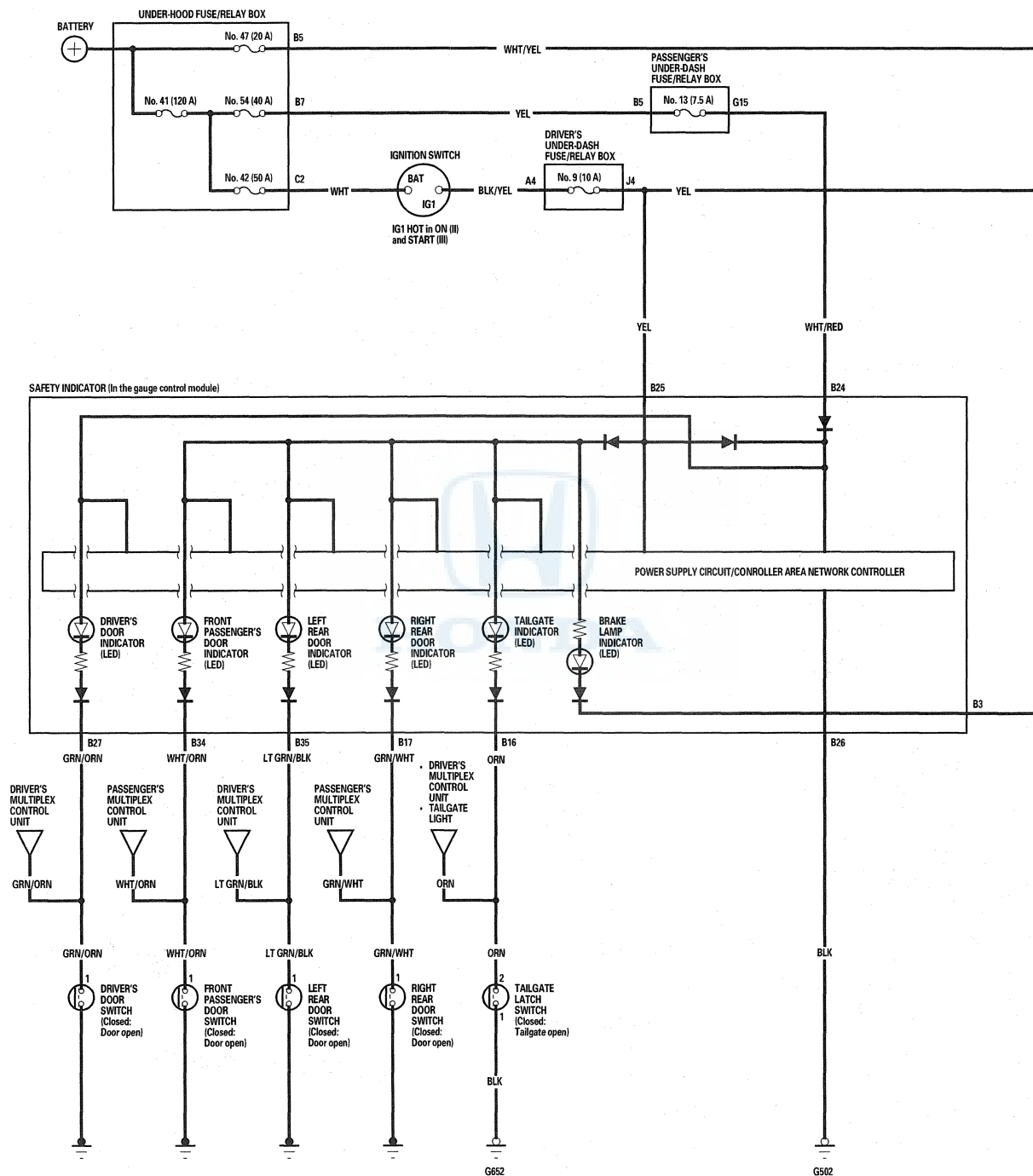


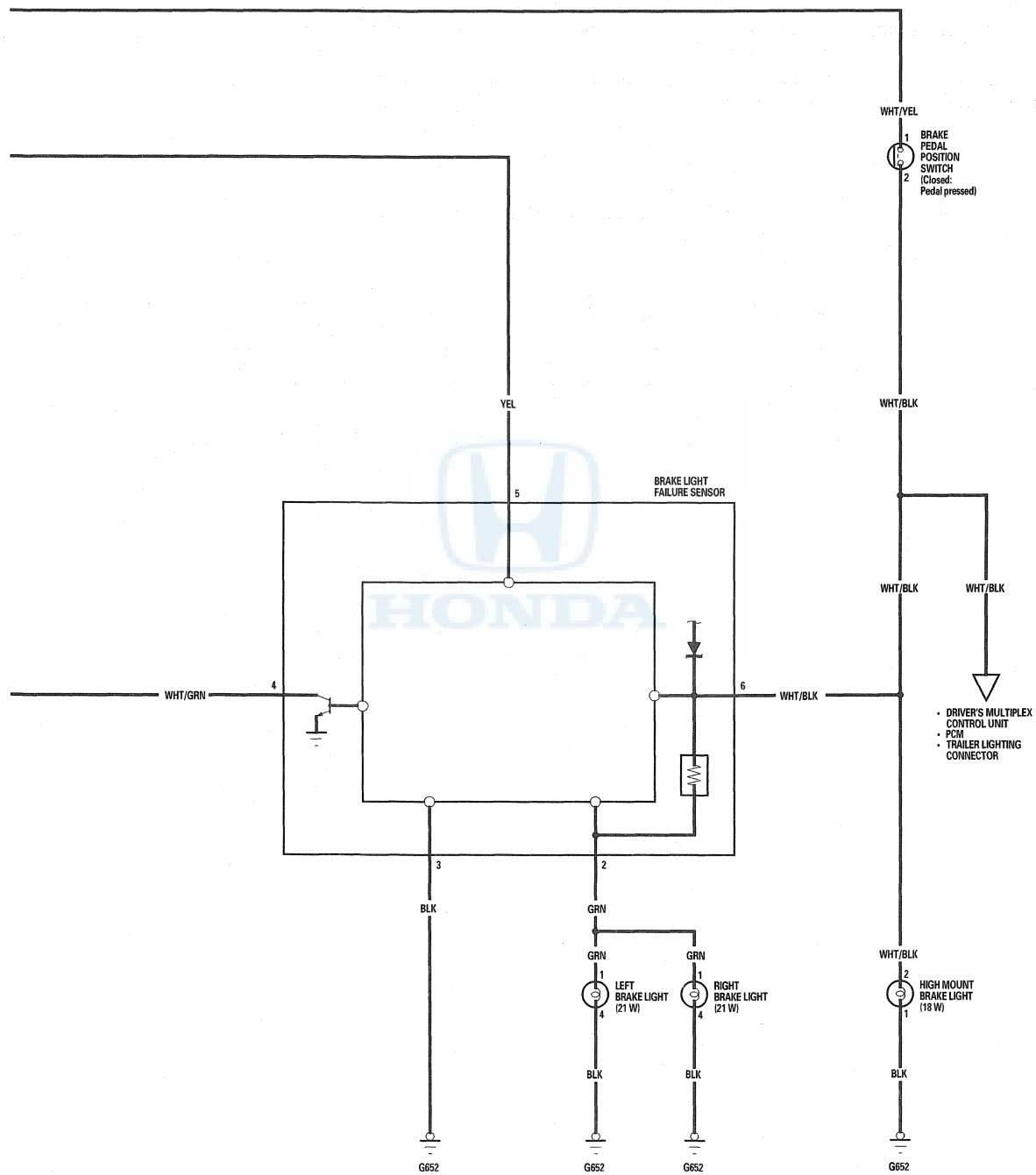
Component Location Index



Safety Indicator System

Circuit Diagram

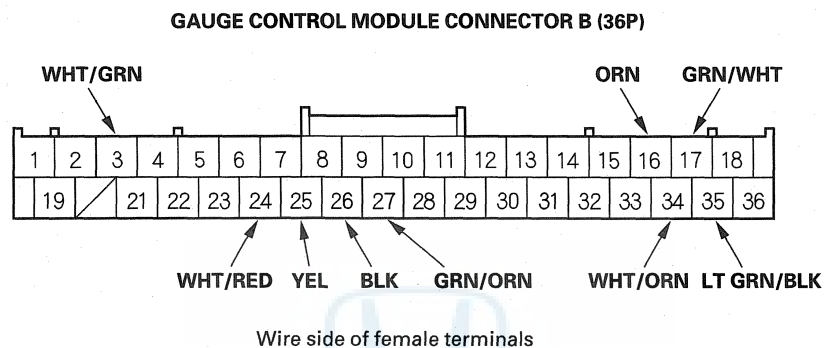


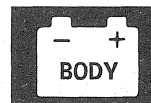


Safety Indicator System

Safety Indicator Input Test

1. Remove the gauge control module (see page 22-102).
2. Disconnect 36P connector B from the gauge control module.
3. Inspect the connector and socket terminals to be sure they are all making good contact.
 - If the terminals are bent, loose or corroded, repair them as necessary, and recheck the system.
 - If the terminals look OK, go to step 4.





4. Reconnect the connectors to the gauge control module, and make the following input tests at the appropriate connector.

- If any test indicates a problem, find and correct the cause, then recheck the system.
- If all the input tests prove OK, go to step 5.

Cavity	Wire	Test condition	Test: Desired result	Possible cause if result is not obtained
B26	BLK	Under all conditions	Measure the voltage to ground: There should be less than 1 V.	<ul style="list-style-type: none"> • Poor ground (G502) • An open in the wire
B24	WHT/RED	Under all conditions	Measure the voltage to ground: There should be battery voltage.	<ul style="list-style-type: none"> • Blown No. 13 (7.5 A) fuse in the passenger's under-dash fuse/relay box • An open in the wire
B25	YEL	Ignition switch ON (II)	Measure the voltage to ground: There should be battery voltage.	<ul style="list-style-type: none"> • Blown No. 9 (10 A) fuse in the driver's under-dash fuse/relay box • An open in the wire
B35	LT GRN/ BLK	Left rear door open	Measure the voltage to ground: There should be less than 1 V.	<ul style="list-style-type: none"> • Faulty left rear door switch • An open in the wire
		Left rear door closed	Measure the voltage to ground: There should be 5 V or more.	<ul style="list-style-type: none"> • Faulty left rear door switch • A short to ground in the wire
B27	GRN/ORN	Driver's door open	Measure the voltage to ground: There should be less than 1 V.	<ul style="list-style-type: none"> • Faulty driver's door switch • An open in the wire
		Driver's door closed	Measure the voltage to ground: There should be 5 V or more.	<ul style="list-style-type: none"> • Faulty driver's door switch • A short to ground in the wire
B16	ORN	Tailgate open	Measure the voltage to ground: There should be less than 1 V.	<ul style="list-style-type: none"> • Faulty tailgate latch switch • An open in the wire • Poor ground (G652)
		Tailgate closed	Measure the voltage to ground: There should be 5 V or more.	<ul style="list-style-type: none"> • Faulty tailgate latch switch • A short to ground in the wire
B34	WHT/ORN	Front passenger's door open	Measure the voltage to ground: There should be less than 1 V.	<ul style="list-style-type: none"> • Faulty front passenger's door switch • An open in the wire
		Front passenger's door closed	Measure the voltage to ground: There should be 5 V or more.	<ul style="list-style-type: none"> • Faulty front passenger's door switch • A short to ground in the wire
B17	GRN/WHT	Right rear door open	Measure the voltage to ground: There should be less than 1 V.	<ul style="list-style-type: none"> • Faulty right rear door switch • An open in the wire
		Right rear door closed	Measure the voltage to ground: There should be 5 V or more.	<ul style="list-style-type: none"> • Faulty right rear door switch • A short to ground in the wire

5. Disconnect connector B (36P) from the gauge control module, and make this input test at the connectors.

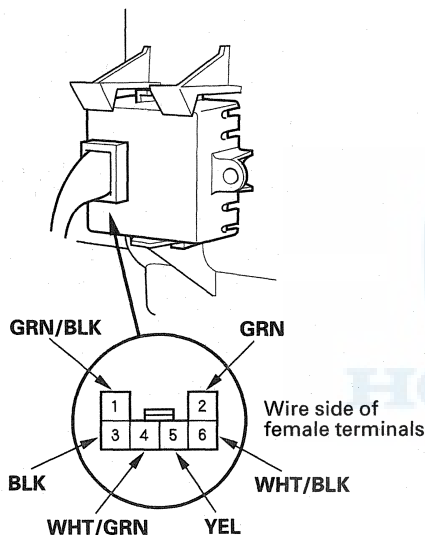
- If any test indicates a problem, find and correct the cause, then recheck the system.
- If all the input tests prove OK, the gauge internal circuit must be faulty; replace the gauge control module.

Cavity	Wire	Test condition	Test: Desired result	Possible cause if result is not obtained
B3	WHT/GRN	Under all conditions	Check for continuity between the B3 terminal and the brake light failure sensor No. 4 terminal: There should be continuity.	An open in the wire
		Ignition switch ON (II)	Measure the voltage to ground: There should be battery voltage.	A short to ground in the wire

Safety Indicator System

Brake Light Failure Sensor Test

1. First make sure the brake lights come on when the brake pedal is pressed.
 - If all the brake lights come on, go to step 2.
 - If one of the brake lights does not come on, check whether the bulb is blown. If the bulb is blown, replace it and recheck.
 - If none of the brake lights come on, check the brake pedal position switch (see page 22-148).
2. Open the tailgate, and remove the right rear side trim panel (see page 20-80). The brake light failure sensor is mounted on the back side of the right rear side trim panel.



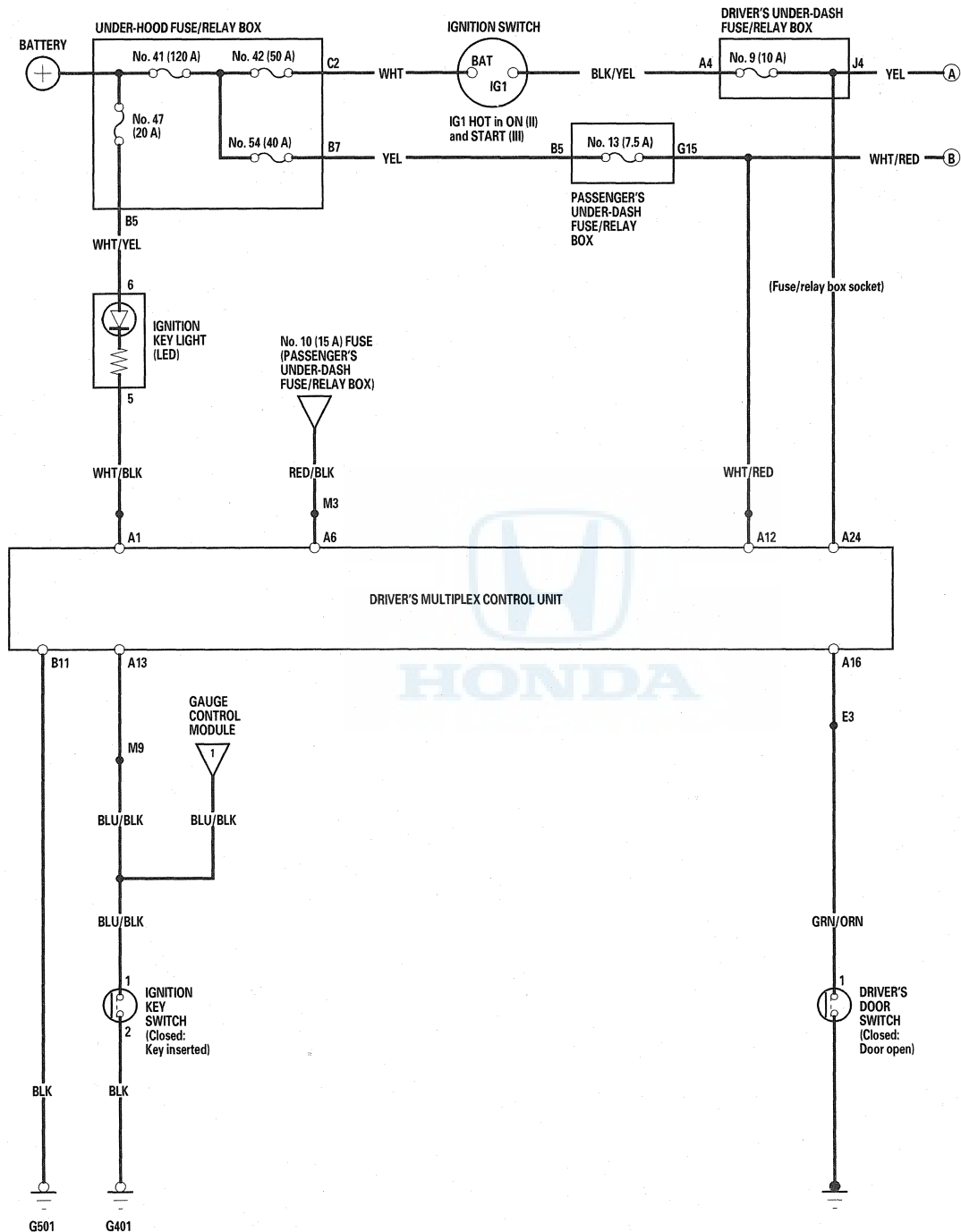
3. Make sure the BRAKE LAMP indicator does not come on and stay on when the brake light failure sensor connector is disconnected and the ignition switch is turned from OFF to engine running.
 - If the indicator comes on, check for:
 - A short to ground in the WHT/GRN wire between the safety indicator and the No. 4 terminal of the failure sensors.
 - A faulty safety indicator circuit in the gauge control module.
 - If the BRAKE LAMP indicator does not come on, go to step 4.

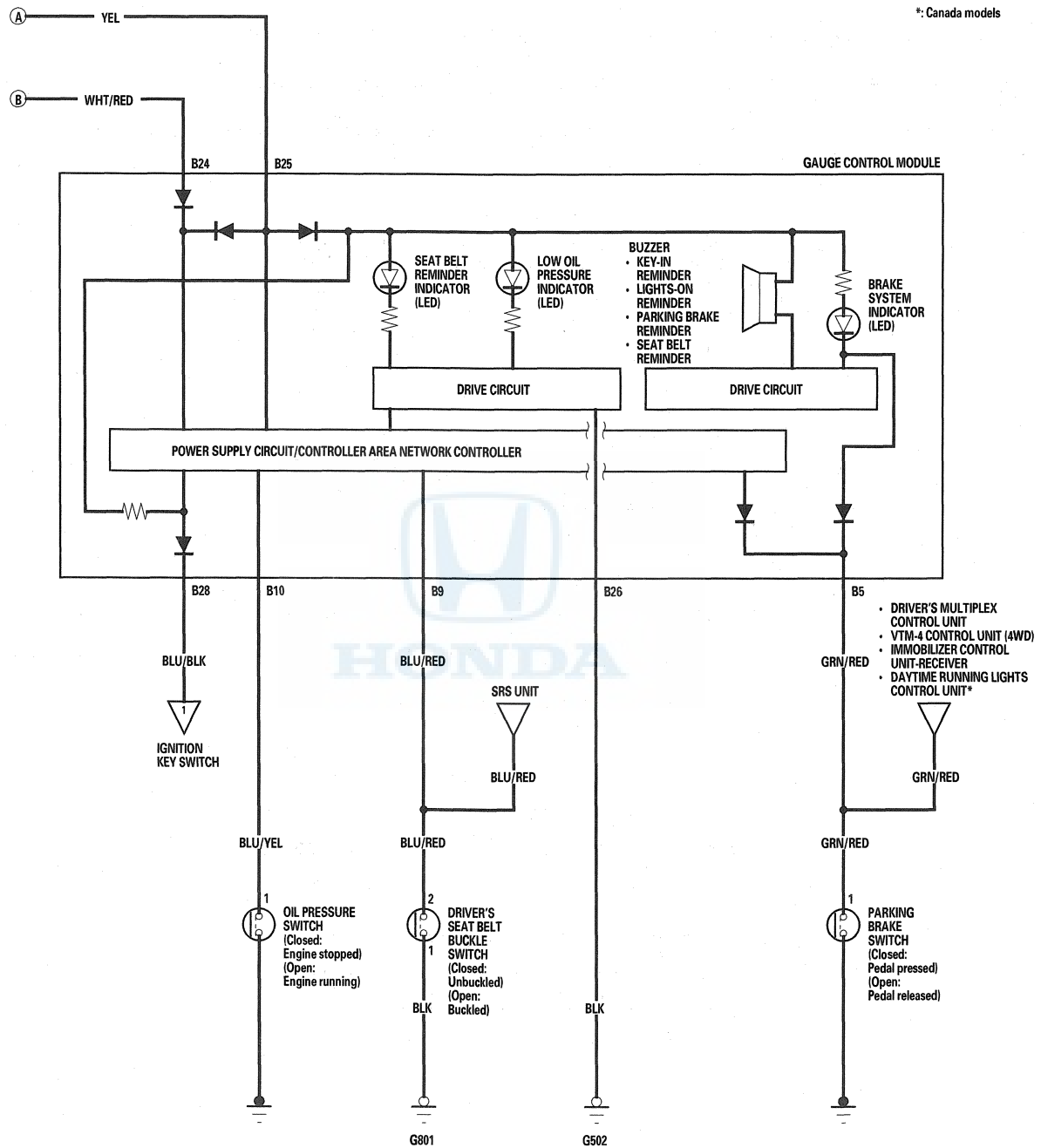
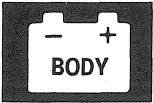
4. Measure the voltage at the No. 5 terminal of the 6P connector with the ignition switch ON (II).
 - If there is battery voltage, go to step 5.
 - If there is no voltage, check for an open in the YEL wire.
5. Reconnect the 6P connector.
6. Make sure the BRAKE LAMP indicator comes on and goes off when the No. 3 terminal of the 6P connector is grounded, the brake pedal is pressed, and the ignition switch is turned from OFF to ON (II).
 - If the BRAKE LAMP indicator comes on and stays on, substitute a known-good sensor.
 - If the BRAKE LAMP indicator goes off, check for:
 - A poor ground (G 652).
 - An open in the BLK wire.



Reminder Systems

Circuit Diagram



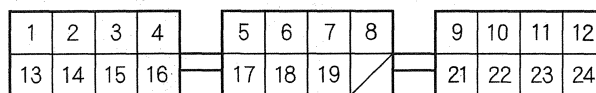


Reminder Systems

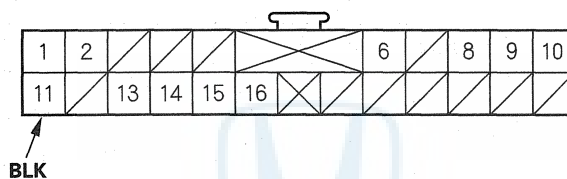
Control Unit Input Test

1. Before testing, troubleshoot the multiplex control system (see page 22-244).
2. Remove the driver's multiplex control unit from the driver's under-dash fuse/relay box.
3. Inspect the connector and socket terminals to be sure they are all making good contact.
 - If the terminals are bent, loose or corroded, repair them as necessary, and recheck the system.
 - If the terminals look OK, go to step 4.

**DRIVER'S UNDER-DASH FUSE/RELAY BOX SOCKET
(Driver's multiplex control unit connector A)**

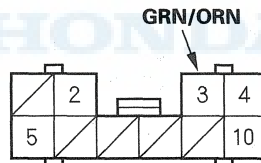


DRIVER'S MULTIPLEX CONTROL UNIT CONNECTOR B



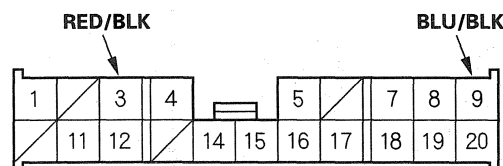
Wire side of female terminals

DRIVER'S UNDER-DASH FUSE/RELAY BOX CONNECTOR E



Wire side of female terminals

DRIVER'S UNDER-DASH FUSE/RELAY BOX CONNECTOR M



Wire side of female terminals



4. Reconnect the driver's multiplex control unit to the driver's under-dash fuse/relay box, and perform the following input tests at the appropriate connectors on the back of the driver's under-dash fuse/relay box. For driver's under-dash fuse/relay box connector socket location (see page 22-68).

- If any test indicates a problem, find and correct the cause, then recheck the system.
- If all the input tests prove OK, go to step 5.

Cavity	Wire	Test condition	Test: Desired result	Possible cause if result is not obtained
B11 ^{*1}	BLK	Under all conditions	Measure the voltage to ground: There should be less than 1 V.	<ul style="list-style-type: none"> • Poor ground (G501) • An open in the wire
E3	GRN/ORN	Driver's door open	Measure the voltage to ground: There should be less than 1 V.	<ul style="list-style-type: none"> • Faulty driver's door switch • An open in the wire
		Driver's door closed	Measure the voltage to ground: There should be 5 V or more.	<ul style="list-style-type: none"> • Faulty driver's door switch • A short to ground in the wire
M9	BLU/BLK	Ignition key is in the ignition switch	Measure the voltage to ground: There should be less than 1 V.	<ul style="list-style-type: none"> • Faulty ignition switch • Poor ground (G401) • An open in the wire
		Ignition key is out of the ignition switch	Measure the voltage to ground: There should be 5 V or more.	<ul style="list-style-type: none"> • Faulty ignition switch • A short to ground in the wire
M3	RED/BLK	Combination light switch ON	Measure the voltage to ground: There should be battery voltage.	<ul style="list-style-type: none"> • Blown No. 10 (15 A) fuse in the passenger's under-dash fuse/relay box • Faulty taillight relay • Faulty combination light switch • Faulty driver's under-dash fuse/relay box • An open in the wire

* 1: Multiplex control unit connector B

(cont'd)

Reminder Systems

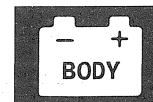
Control Unit Input Test (cont'd)

5. Remove the driver's multiplex control unit from the driver's multiplex control unit and make these input tests at the connector and driver's under-dash fuse/relay box sockets.

- If any test indicates a problem, find and correct the cause, then recheck the system.
- If all the input tests prove OK, go to gauge control module input test (see page 22-121).

Cavity	Wire	Test condition	Test: Desired result	Possible cause if result is not obtained
A24	Fuse/relay box socket	Ignition switch ON (II)	Measure the voltage to ground: There should be battery voltage.	<ul style="list-style-type: none">• Blown No. 9 (10 A) fuse in the driver's under-dash fuse/relay box• Faulty driver's fuse/relay box
A12		Under all conditions	Measure the voltage to ground: There should be battery voltage.	<ul style="list-style-type: none">• Blown No. 54 (40 A) fuse in the under-hood fuse/relay box• Blown No. 13 (7.5 A) fuse in the passenger's under-dash fuse/relay box• An open in the wire
A1		Under all conditions	Attach to ground: The ignition key light should come on.	<ul style="list-style-type: none">• Blown No. 47 (20 A) fuse in the under-hood fuse/relay box• Faulty ignition key light• An open in the wire



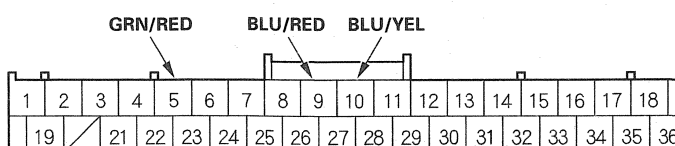


Gauge Control Module Input Test

NOTE: If there is malfunction of the parking brake reminder and speedometer function simultaneously, troubleshooting the vehicle speed signal circuit first.

1. Remove the gauge control module and disconnect 36P connector B from the gauge control module (see page 22-102).
2. Inspect the connector and socket terminals to be sure they are all making good contact.
 - If the terminals are bent, loose or corroded, repair them as necessary, and recheck the system.
 - If the terminals look OK, go to step 3.

GAUGE CONTROL MODULE CONNECTOR B (36P)



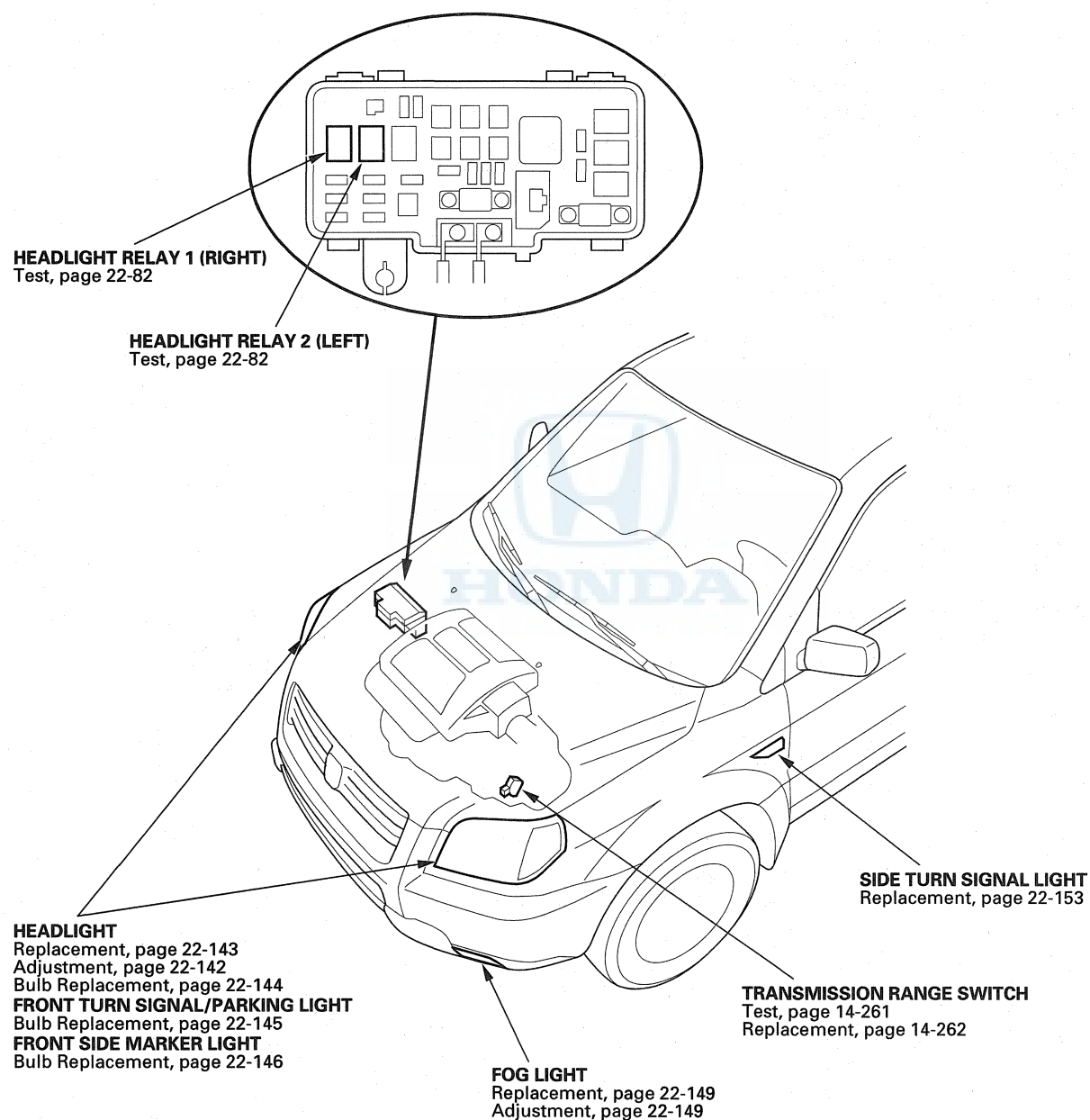
Wire side of female terminals

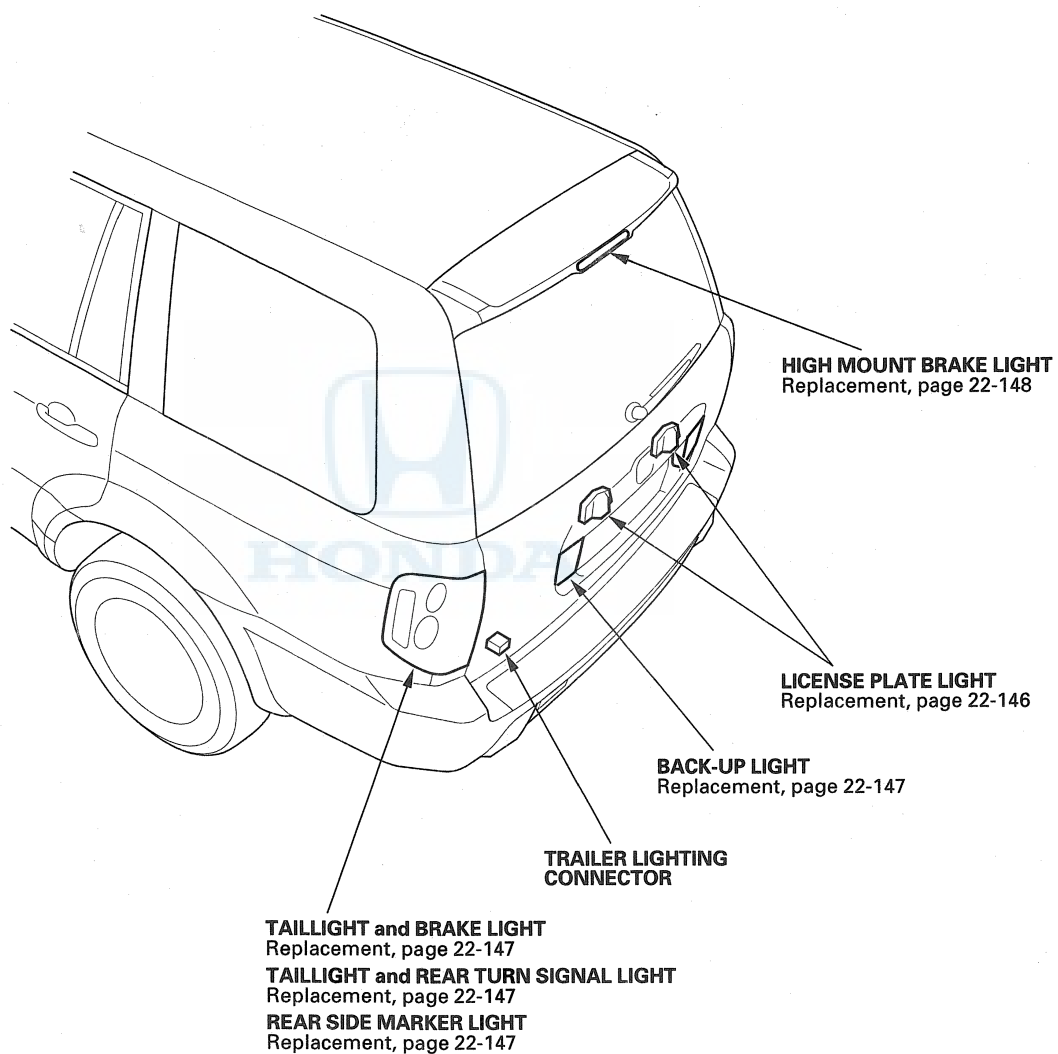
3. Reconnect the connectors to the gauge control module, and make these input tests at the connector.
 - If any test indicates a problem, find and correct the cause, then recheck the system.
 - If all the input tests prove OK, the gauge internal circuit must be faulty; replace the gauge control module.

Cavity	Wire	Test condition	Test: Desired result	Possible cause if result is not obtained
B9	BLU/RED	Ignition switch ON (II), driver's seat belt unbuckled	Measure the voltage to ground: There should be less than 1 V.	<ul style="list-style-type: none"> • Poor ground (G801) • Faulty driver's seat belt switch • An open in the wire
		Ignition switch ON (II), driver's seat belt buckled	Measure the voltage to ground: There should be 5 V or more.	<ul style="list-style-type: none"> • Faulty driver's seat belt switch • A short to ground in the wire
B10	BLU/YEL	Ignition switch ON (II), engine OFF	Measure the voltage to ground: There should be less than 1 V.	<ul style="list-style-type: none"> • Faulty oil pressure switch • An open in the wire
		Start the engine	Measure the voltage to ground: There should be battery voltage.	<ul style="list-style-type: none"> • Insufficient oil • Improper lubrication • Faulty engine oil pressure switch • An open in the wire • A short to ground in the wire
B5	GRN/RED	Ignition switch ON (II), parking brake set	Measure the voltage to ground: There should be less than 1 V.	<ul style="list-style-type: none"> • Poor ground • Faulty parking brake switch • An open in the wire
		Ignition switch ON (II), parking brake released	Measure the voltage to ground: There should be battery voltage.	<ul style="list-style-type: none"> • Faulty parking brake switch • A short to ground in the wire

Exterior Lights

Component Location Index

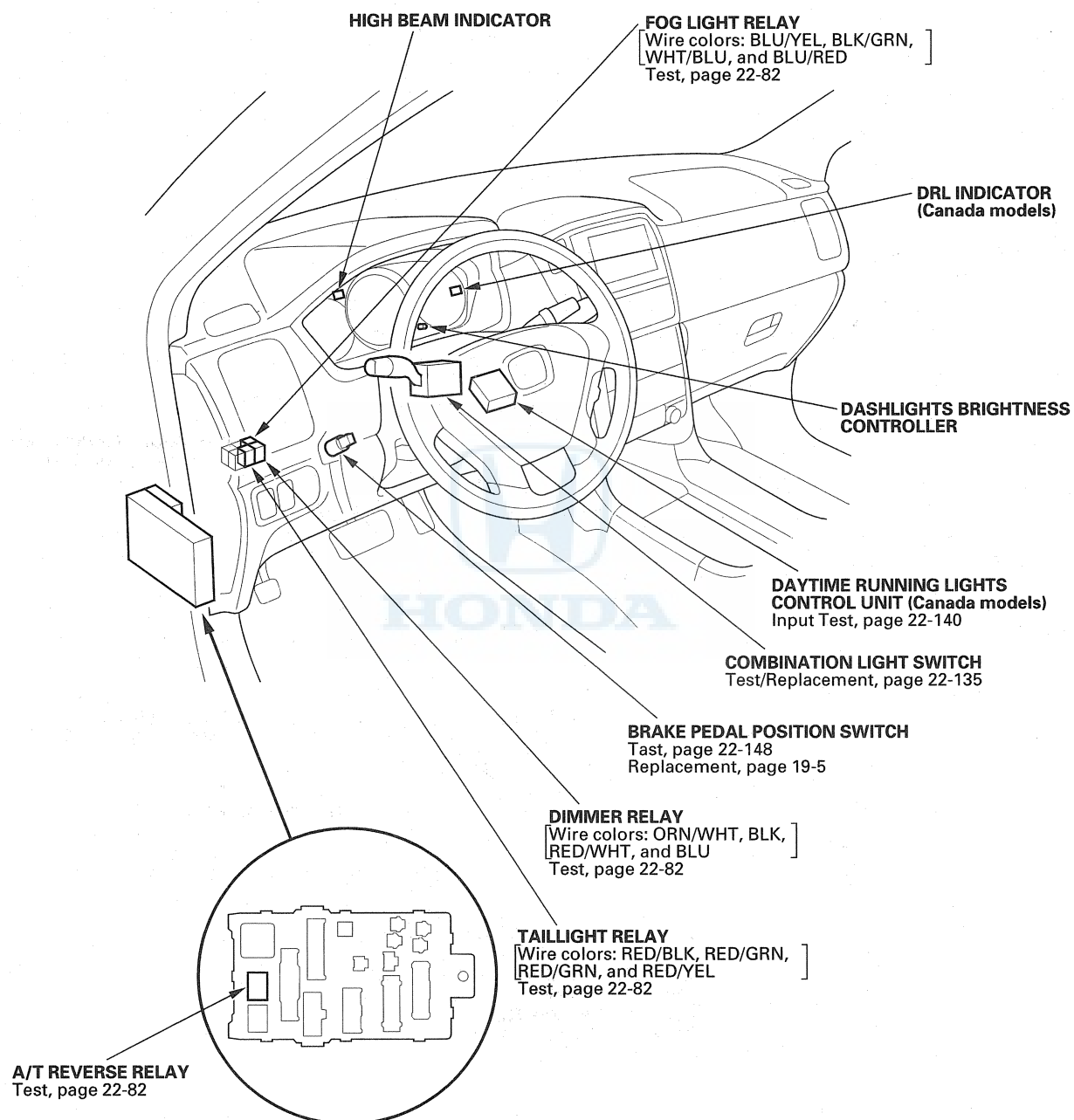




(cont'd)

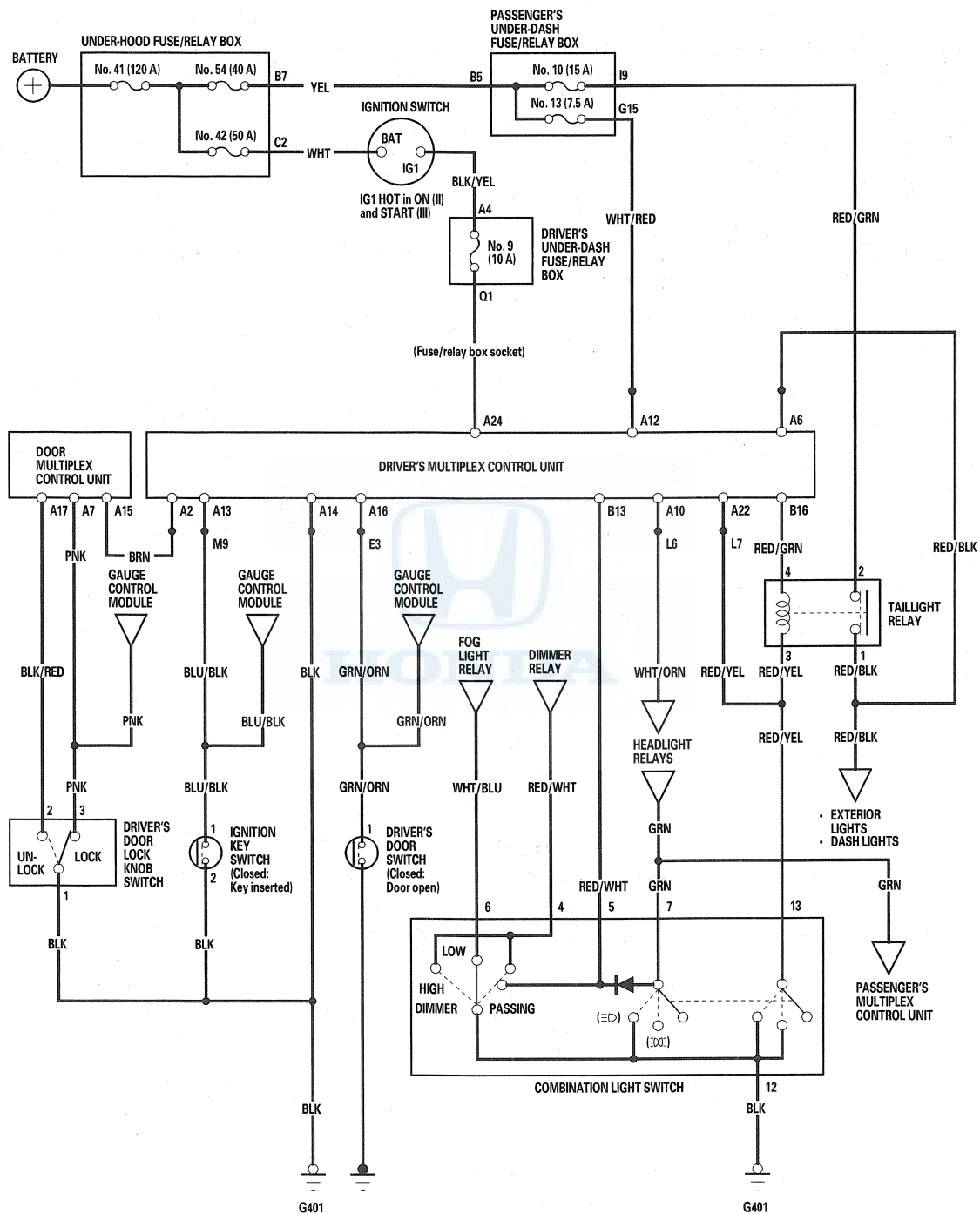
Exterior Lights

Component Location Index (cont'd)





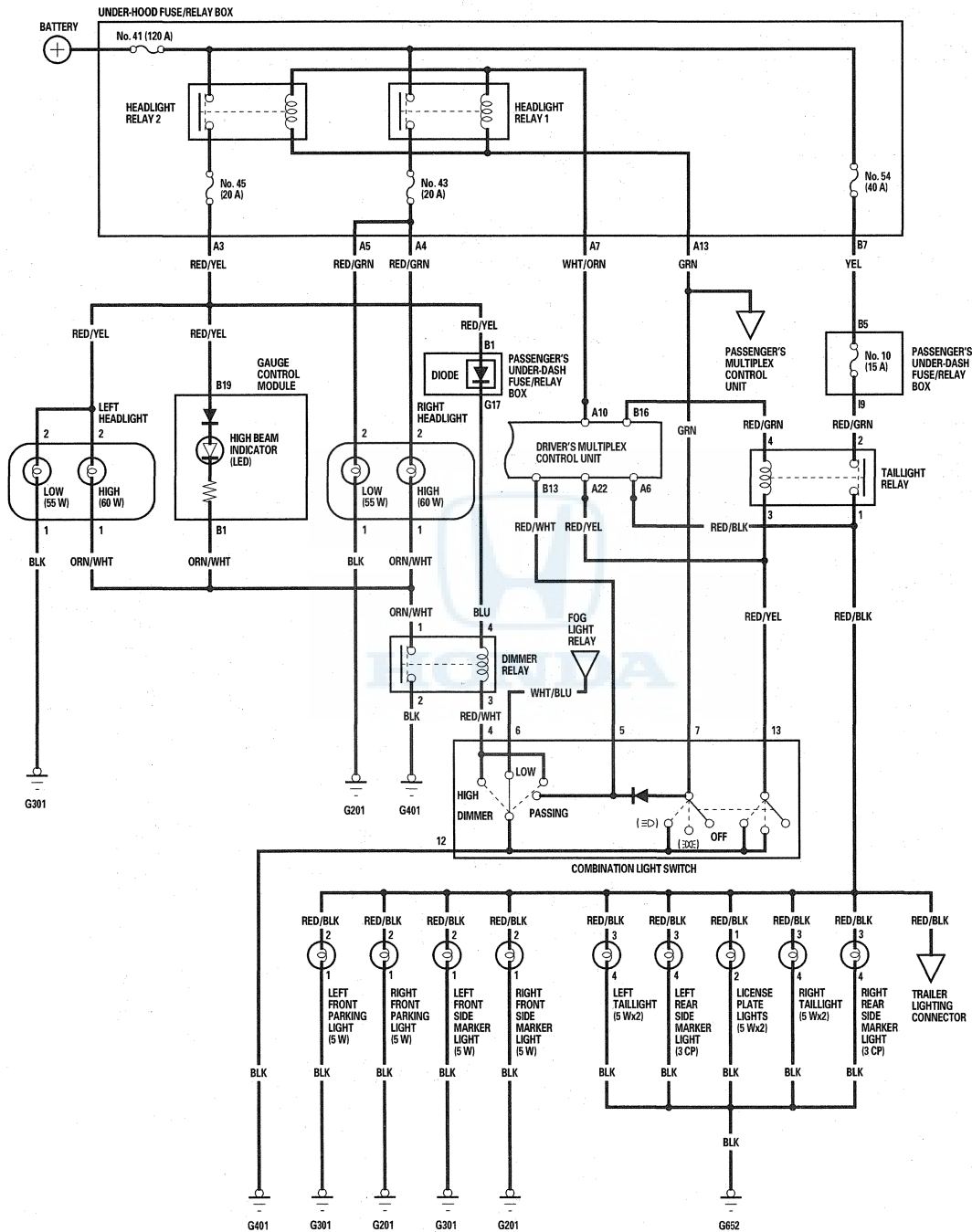
Circuit Diagram - Auto-off Headlights



Exterior Lights

Circuit Diagram - With Automatic Lights-off Feature

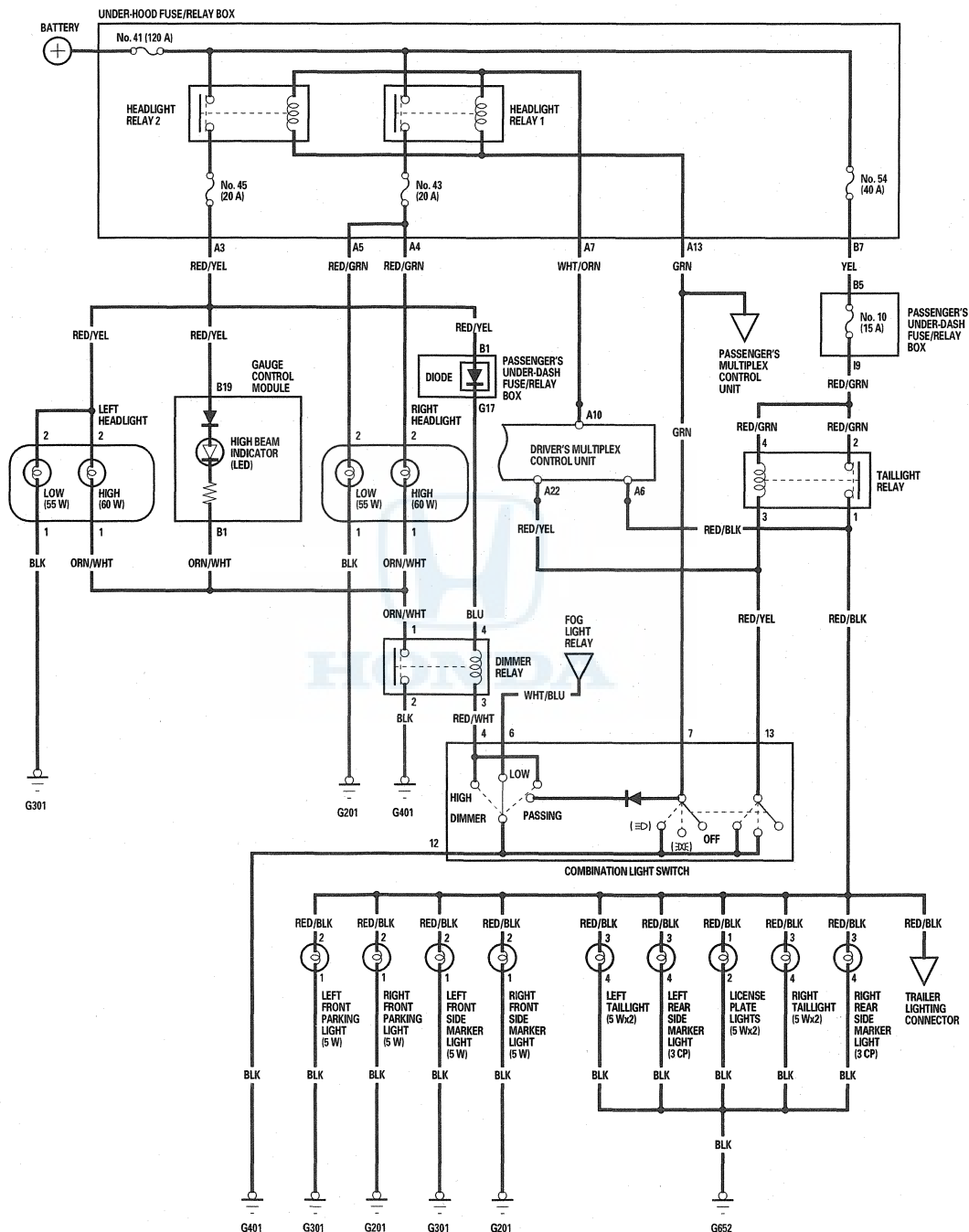
USA models





Circuit Diagram - Without Automatic Lights-off Feature

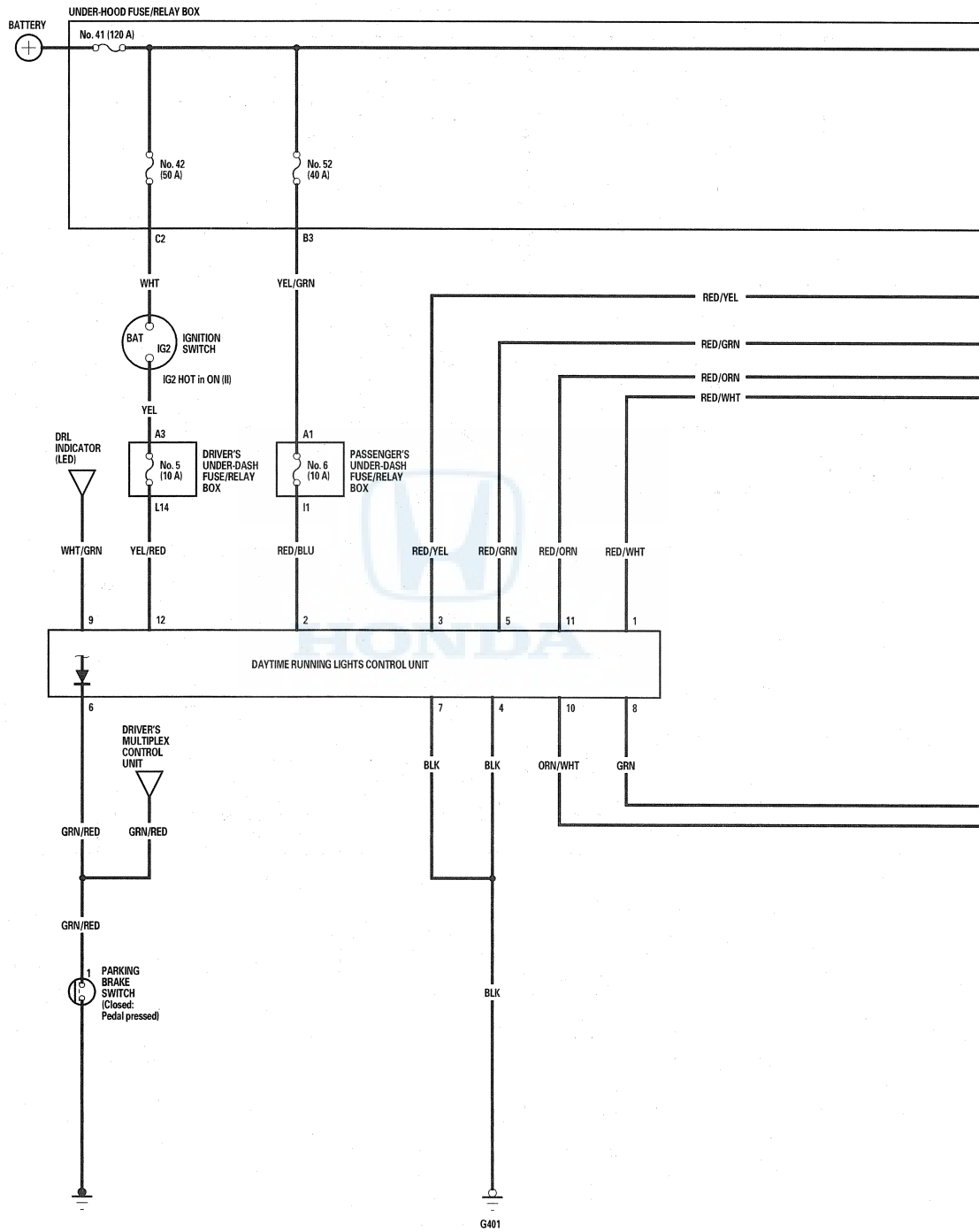
USA models



Exterior Lights

Circuit Diagram - With Automatic Lights-off Feature

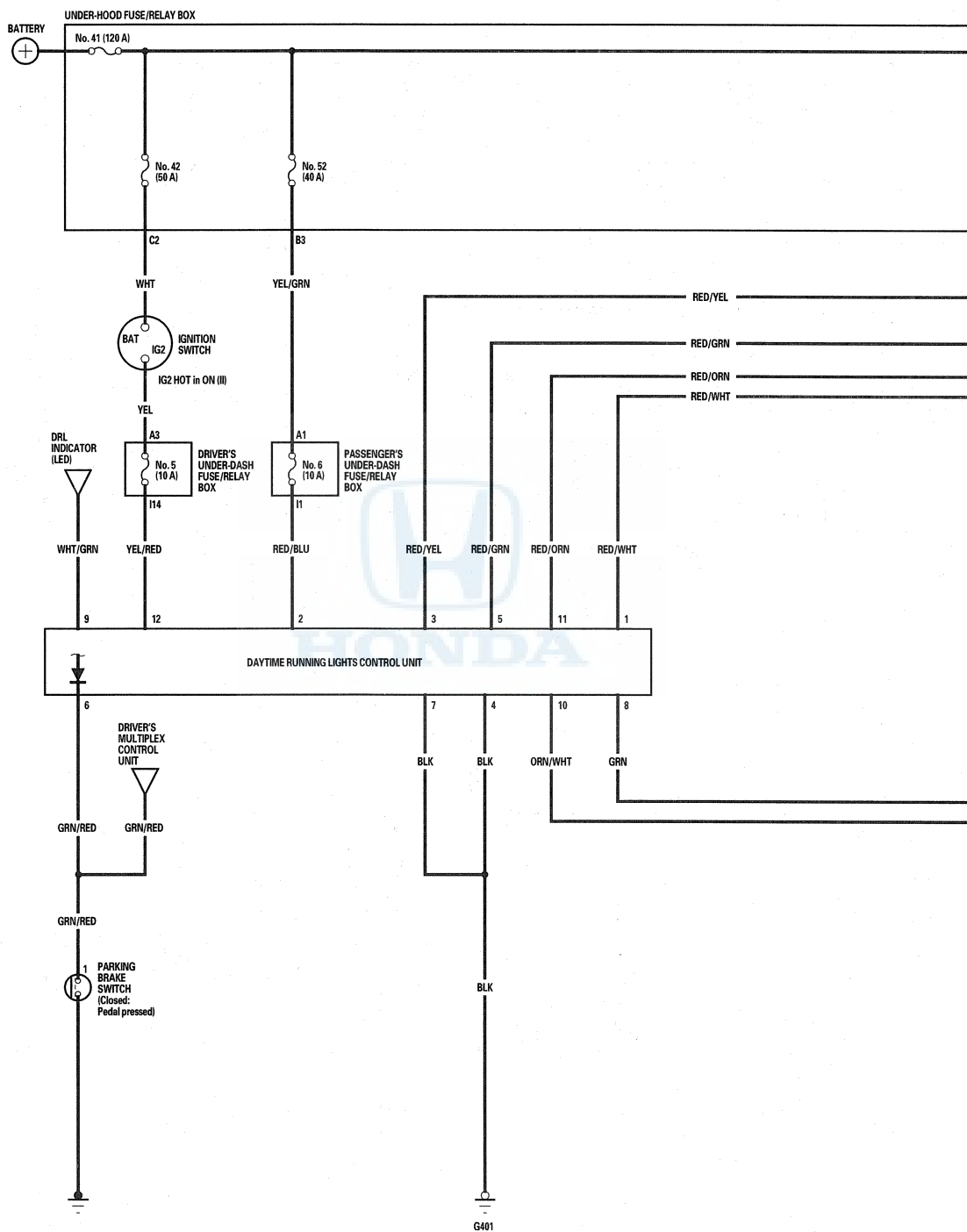
Canada models

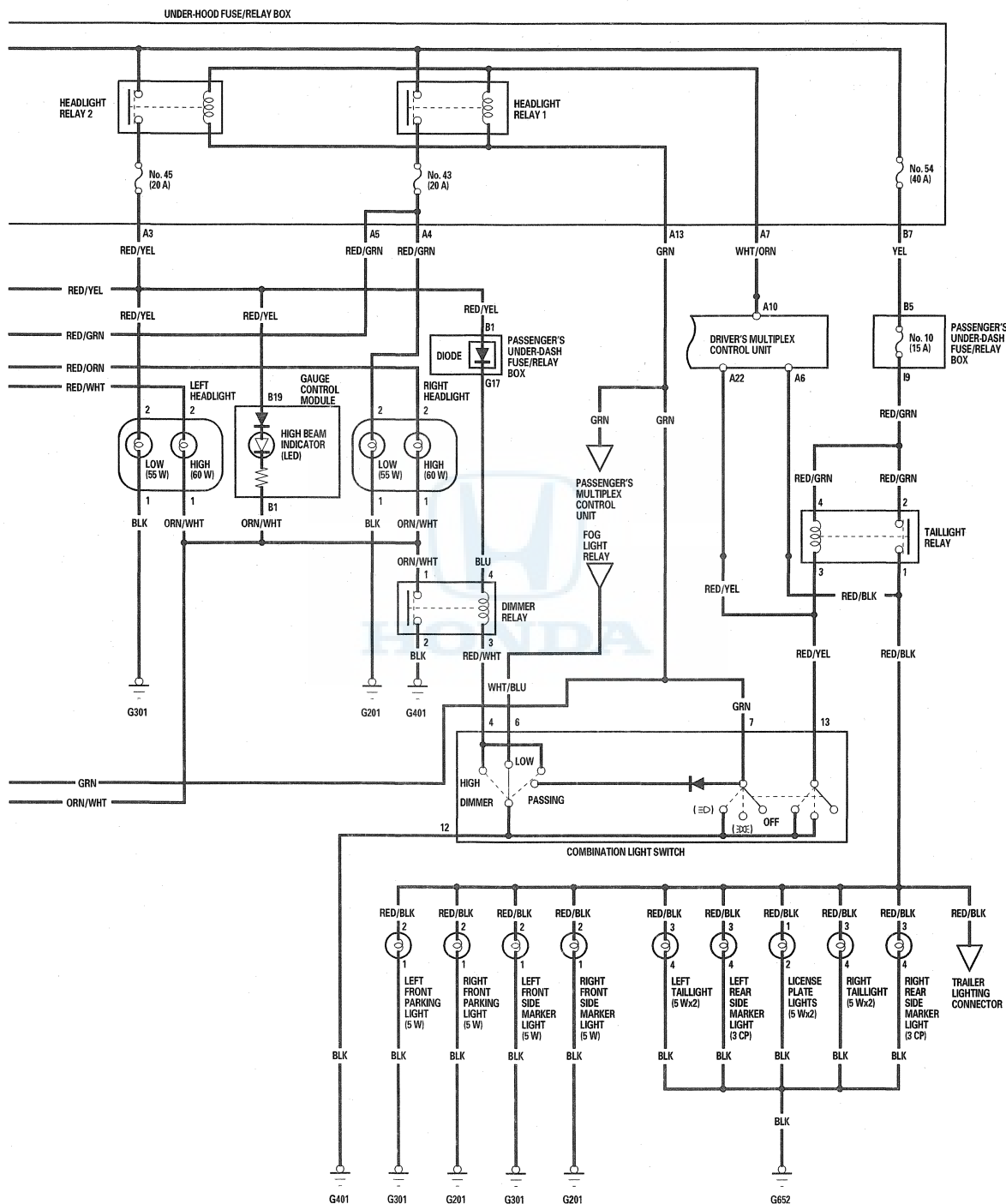


Exterior Lights

Circuit Diagram - Without Automatic Lights-off Feature

Canada models

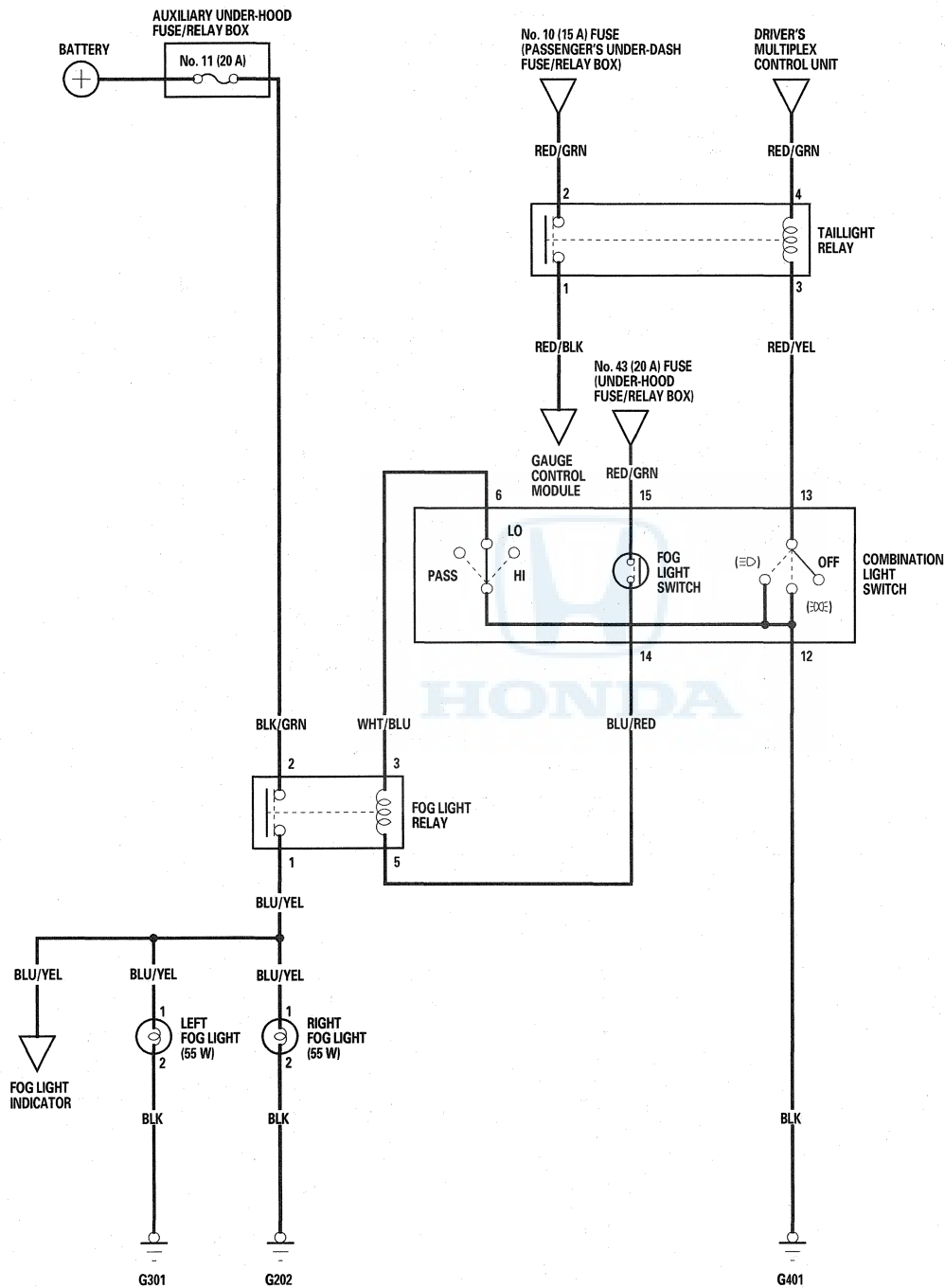


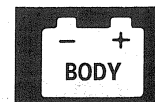


Exterior Lights

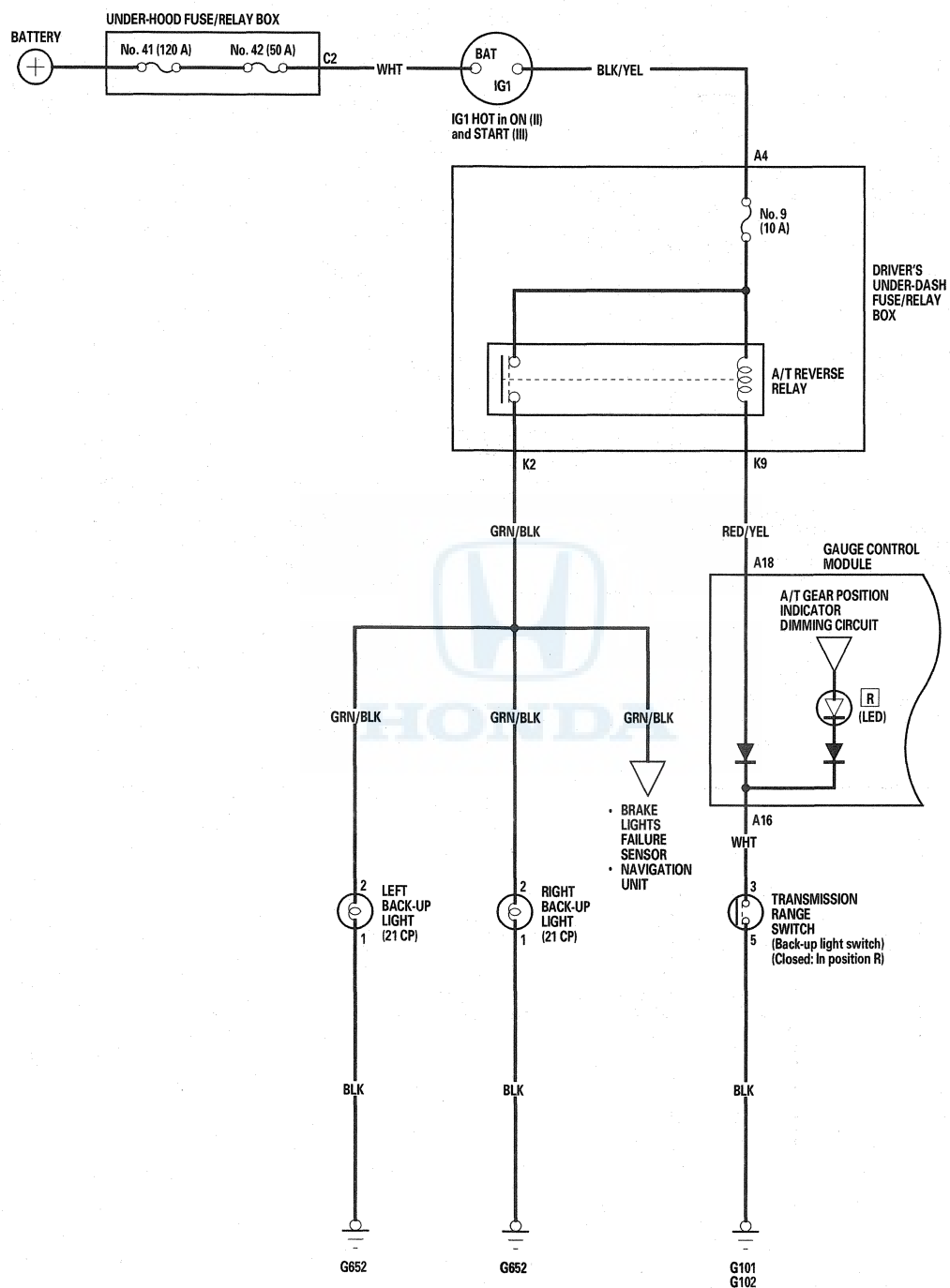
Circuit Diagram - Fog Lights

Expect LX and LX-VP models



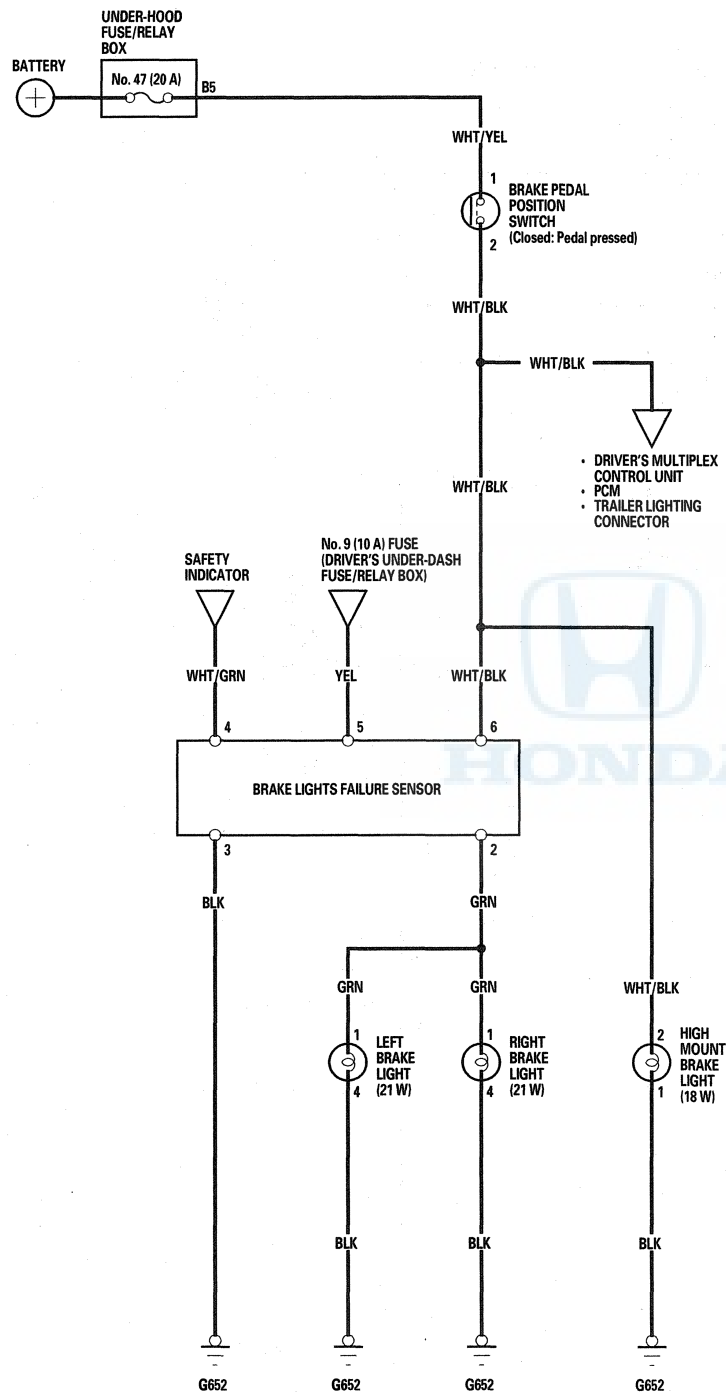


Circuit Diagram - Back-up Lights



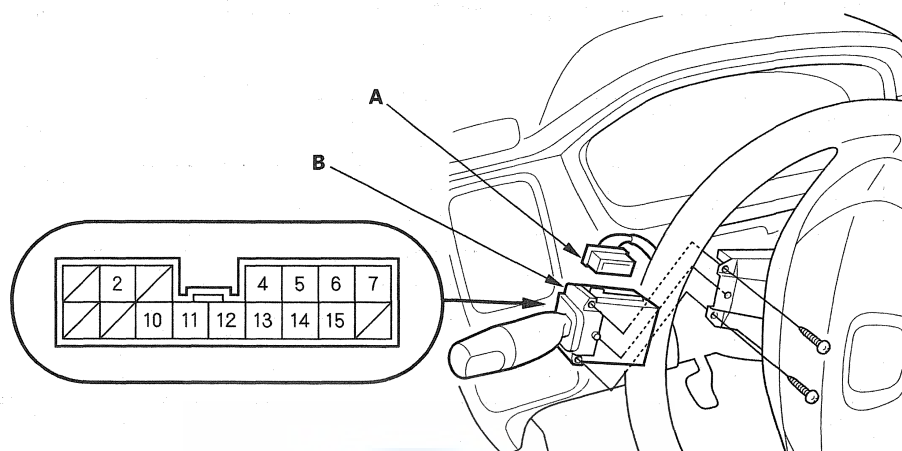
Exterior Lights

Circuit Diagram - Brake Lights



Combination Light Switch Test/Replacement

1. Remove the driver's dashboard lower cover (see page 20-90).
2. Remove the steering column covers (see page 17-25).
3. Disconnect the 16P connector (A) from the combination light switch (B).



(cont'd)

Exterior Lights

Combination Light Switch Test/Replacement (cont'd)

4. Remove the two screws, then slide out the combination light switch.
5. Inspect the connector terminals to be sure they are all making good contact.
 - If the terminals are bent, loose or corroded, repair them as necessary, and recheck the system.
 - If the terminals look OK, check for continuity between the terminals in each switch position according to the tables.

Light switch

Terminal		4	5*		6	7	12	13
Position								
Headlight switch	OFF				○		○	
	⏏				○		○	○
	LOW		○	←	○	○	○	○
	HIGH	○	○	←		○	○	○
Passing switch	OFF							
	ON	○	○			○	○	

*: With automatic light-off

Turn signal switch

Terminal	2	10	11
Position			
LEFT	○	○	
NEUTRAL			
RIGHT		○	○

Fog light switch

Terminal	14	15
Position		
OFF		
ON	○	○

6. If the continuity is not as specified in the table, replace the switch.



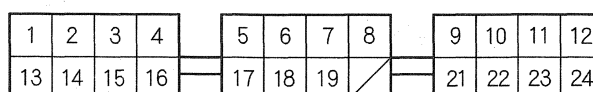
Auto-off Headlights Control Unit Input Test

1. Before testing the auto-off headlights functions, troubleshoot the multiplex control system (see page 22-244).

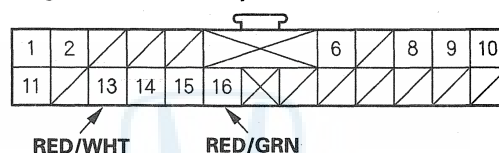
Driver's Multiplex Control Unit

2. Remove the driver's multiplex control unit from the driver's under-dash fuse/relay box.
3. Inspect the connector and socket terminals to be sure they are all making good contact.
 - If the terminals are bent, loose or corroded, repair them as necessary, and recheck the system.
 - If the terminals look OK, go to step 4.

DRIVER'S UNDER-DASH FUSE/RELAY BOX SOCKET
(Driver's multiplex control unit connector A)

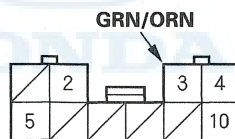


DRIVER'S MULTIPLEX CONTROL UNIT CONNECTOR B
(Plugs into driver's multiplex control unit)



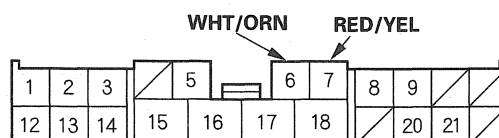
Wire side of female terminals

DRIVER'S UNDER-DASH FUSE/RELAY BOX CONNECTOR E



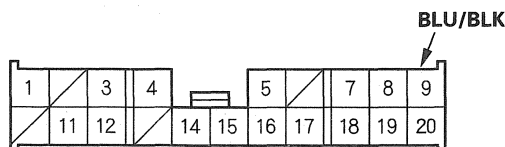
Wire side of female terminals

DRIVER'S UNDER-DASH FUSE/RELAY BOX CONNECTOR L



Wire side of female terminals

DRIVER'S UNDER-DASH FUSE/RELAY BOX CONNECTOR M



Wire side of female terminals

(cont'd)

Exterior Lights

Auto-off Headlights Control Unit Input Test (cont'd)

4. With the driver's multiplex control unit still disconnected, make these input tests at the connector or driver's under-dash fuse/relay box socket.

- If any test indicates a problem, find and correct the cause, then recheck the system.
- If all the input tests prove OK, go to step 5.

Cavity	Wire	Test condition	Test: Desired result	Possible cause if result is not obtained
A24	Fuse/relay box socket	Ignition switch ON (II)	Measure the voltage to ground: There should be battery voltage.	<ul style="list-style-type: none"> • Blown No. 9 (10 A) fuse in the driver's under-dash fuse/relay box • Faulty driver's under-dash fuse/relay box
A12	Fuse/relay box socket	Under all conditions	Measure the voltage to ground: There should be battery voltage.	<ul style="list-style-type: none"> • Blown No. 13 (7.5 A) fuse in the passenger's under-dash fuse/relay box • An open in the wire

5. Reconnect the driver's multiplex control unit to the driver's under-dash fuse/relay box, and perform the following input tests at the appropriate connectors on the driver's under-dash fuse/relay box. For driver's under-dash fuse/relay box connector socket location (see page 22-68).

- If any test indicates a problem, find and correct the cause, then recheck the system.
- If all the input tests prove OK, go to step 6.

Cavity	Wire	Test condition	Test: Desired result	Possible cause if result is not obtained
E3	GRN/ORN	Driver's door open	Measure the voltage to ground: There should be less than 1 V.	<ul style="list-style-type: none"> • Faulty driver's door switch. • An open in the wire
		Driver's door closed	Measure the voltage to ground: There should be 5 V or more.	<ul style="list-style-type: none"> • Faulty driver's door switch • A short to ground in the wire
B16*	RED/GRN	Combination light switch ON	Measure the voltage to ground: There should be about 12 V.	<ul style="list-style-type: none"> • Poor ground (G401) • Faulty combination light switch • An open in the wire
B13*	RED/WHT	Passing switch ON	Measure the voltage to ground: There should be less than 1 V.	<ul style="list-style-type: none"> • Poor ground (G401) • Faulty combination light switch • Faulty taillight relay • An open in the wire
		Passing switch OFF	Measure the voltage to ground: There should be 5 V or more.	<ul style="list-style-type: none"> • Faulty combination light switch • A short to ground in the wire
L6	WHT/ORN	Combination light switch ON	Measure the voltage to ground: There should be about 12 V.	<ul style="list-style-type: none"> • Poor ground (G401) • Faulty combination light switch • Faulty headlight relay • An open in the wire
L7	RED/YEL	Combination light switch ON	Measure the voltage to ground: There should be less than 1 V.	<ul style="list-style-type: none"> • Poor ground (G401) • Faulty combination light switch • An open in the wire
M9	BLU/BLK	Ignition key is in the ignition switch	Measure the voltage to ground: There should be less than 1 V.	<ul style="list-style-type: none"> • Poor ground (G401) • Faulty ignition switch • An open in the wire
		Ignition key is out of the ignition switch	Measure the voltage to ground: There should be 5 V or more.	<ul style="list-style-type: none"> • Faulty ignition switch • A short to ground in the wire

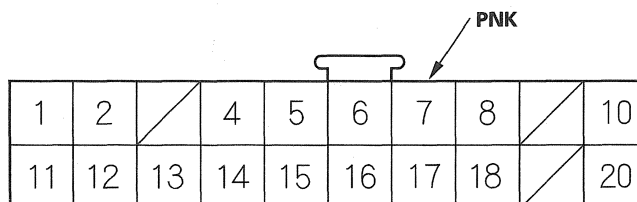
*: Multiplex control unit connector B



Door Multiplex Control Unit

6. Remove the driver's door panel, and disconnect connector A (20P) from the door multiplex control unit.
7. Inspect the connector and socket terminals to be sure they are all making good contact.
 - If the terminals are bent, loose or corroded, repair them as necessary, and recheck the system.
 - If the terminals look OK, go to step 8.

DOOR MULTIPLEX CONTROL UNIT CONNECTOR A



Wire side of female terminals

8. Reconnect the connector to the door multiplex control unit, and make this input test.
 - If the test indicates a problem, find and correct the cause, then recheck the system.
 - If the input test proves OK, the driver's or door multiplex control unit must be faulty; replace with a known-good unit and retest.

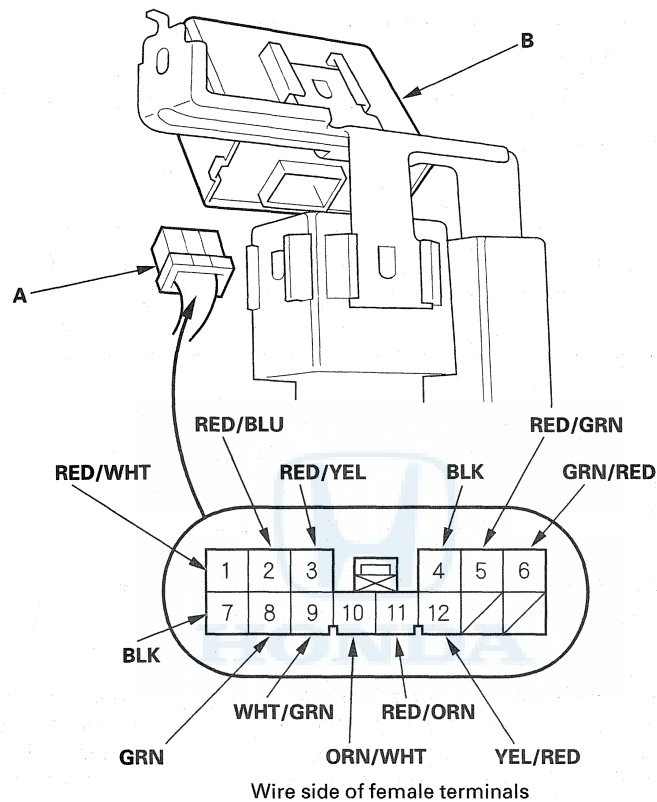
Cavity	Wire	Test condition	Test: Desired result	Possible cause if result is not obtained
A7	PNK	Driver's door lock knob locked	Measure the voltage to ground: There should be less than 1 V.	<ul style="list-style-type: none">• Poor ground (G401)• Faulty driver's door lock actuator• An open in the wire
		Driver's door lock knob unlocked	Measure the voltage to ground: There should be 5 V or more.	<ul style="list-style-type: none">• Faulty driver's door lock actuator• A short to ground in the wire

Exterior Lights

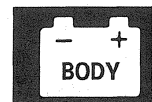
Daytime Running Lights Control Unit Input Test

Canada models

1. Remove the driver's dashboard lower cover (see page 20-90).
2. Disconnect the 14P connector (A) from the daytime running lights control unit (B).



3. Inspect the connector and socket terminals to be sure they are all making good contact.
 - If the terminals are bent, loose or corroded, repair them as necessary, and recheck the system.
 - If the terminals look OK, go to step 4.



4. Reconnect the 14P connector to the daytime running lights control unit and make these input tests at the connector.

- If any test indicates a problem, find and correct the cause, then recheck the system.
- If all the input tests prove OK, go to step 5.

Cavity	Wire	Test condition	Test: Desired result	Possible cause if result is not obtained
2	RED/BLU	Under all conditions	Measure the voltage to ground: There should be battery voltage.	<ul style="list-style-type: none"> • Blown No. 52 (40 A) fuse in the under-hood fuse/relay box • Blown No. 6 (10 A) fuse in the passenger's under-dash fuse/relay box • An open in the wire
12	YEL/RED	Ignition switch ON (II)	Measure the voltage to ground: There should be battery voltage.	<ul style="list-style-type: none"> • Blown No. 42 (50 A) fuse in the under-hood fuse/relay box • Blown No. 5 (7.5 A) fuse in the driver's under-dash fuse/relay box • Faulty Ignition switch • An open in the wire
1	RED/WHT	Ignition switch ON (II)	Measure the voltage to ground: There should be battery voltage.	<ul style="list-style-type: none"> • Blown No. 5 (10 A) fuse in the driver's under-dash fuse/relay box • Blown No. 6 (10 A) fuse in the passenger's under-dash fuse/relay box • Faulty daytime running lights control unit • Poor ground (G401) • An open in the wire
11	RED/ORN	Ignition switch ON (II)	Measure the voltage to ground: There should be battery voltage.	<ul style="list-style-type: none"> • Blown No. 5 (10 A) fuse in the driver's under-dash fuse/relay box • Blown No. 6 (10 A) fuse in the passenger's under-dash fuse/relay box • Faulty daytime running lights control unit • Poor ground (G401) • An open in the wire
10	ORN/WHT	Ignition switch ON (II)	Measure the voltage to ground: There should be less than 1 V.	<ul style="list-style-type: none"> • Blown No. 5 (10 A) fuse in the driver's under-dash fuse/relay box • Blown No. 6 (10 A) fuse in the passenger's under-dash fuse/relay box • Blown bulb • Faulty daytime running lights control unit • Poor ground (G401) • An open in the wire
4	BLK	Under all conditions	Measure the voltage to ground: There should be less than 1 V.	<ul style="list-style-type: none"> • Poor ground (G401) • An open in the wire
7				
3	RED/YEL	Combination light switch ON (I)	Measure the voltage to ground: There should be battery voltage.	<ul style="list-style-type: none"> • Blown No. 45 (20 A) fuse in the under-hood fuse/relay box • Faulty headlight relay 2 • Faulty combination light switch • An open in the wire • Faulty driver's multiplex control unit
5	RED/GRN	Combination light switch ON (I)	Measure the voltage to ground: There should be battery voltage.	<ul style="list-style-type: none"> • Blown No. 43 (20 A) fuse in the under-hood fuse/relay box • Faulty headlight relay 1 • Faulty combination light switch • An open in the wire • Faulty driver's multiplex control unit

5. Disconnect the 14P connector from the daytime running lights control unit, and make these tests at the connector.

- If any test indicates a problem, find and correct the cause, then recheck the system.
- If all the input tests prove OK, the control unit must be faulty; replace it.

Cavity	Wire	Test condition	Test: Desired result	Possible cause if result is not obtained
6	GRN/RED	Parking brake pedal pushed	Check for continuity to ground: There should be continuity.	<ul style="list-style-type: none"> • Faulty parking brake switch • An open in the wire
8	GRN	Under all conditions	Measure the voltage to ground: There should be battery voltage.	<ul style="list-style-type: none"> • Faulty headlight relays • An open in the wire • Faulty driver's multiplex control unit
9	WHT/GRN	Ignition switch ON (II)	Attach to ground: The DRL indicator should come on.	<ul style="list-style-type: none"> • Faulty LED • An open in the wire

Exterior Lights

Headlight Adjustment

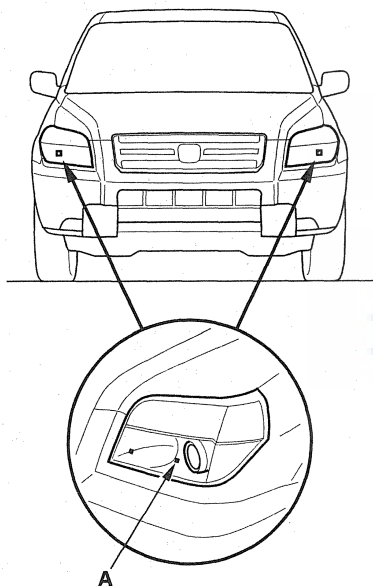
⚠ CAUTION

Headlights become very hot during use; do not touch them or any attaching hardware immediately after they have been turned off.

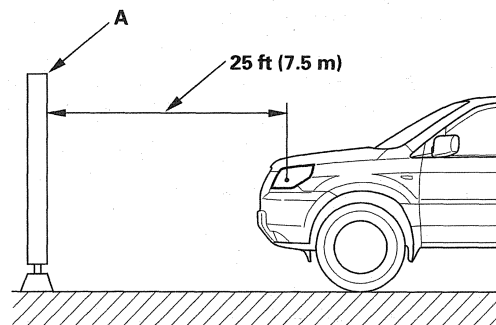
Before adjusting the headlights:

- Park the vehicle on a level surface.
- Make sure the tire pressures are correct.
- The driver or someone who weighs the same should sit in the driver's seat.

1. Clean the outer lens so that you can see the center of the headlights (A).



2. Park the vehicle 25 ft (7.5 m) away from a wall or a screen (A).

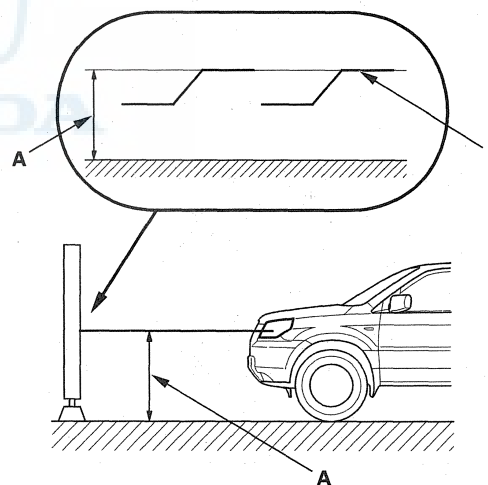


3. Turn the low beams on.

4. Determine if the headlights are aimed properly.

Vertical adjustment:

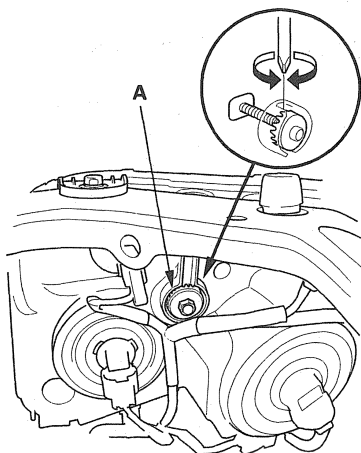
Measure the height of the headlights (A). Adjust the cut line (B) to the lights height.



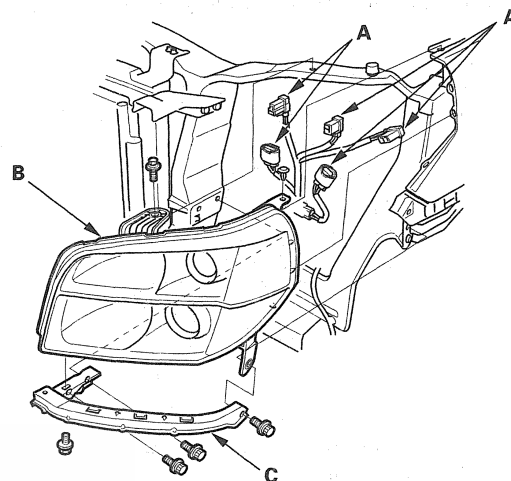


Headlight Replacement

5. If necessary, adjust the headlights to local requirements by turning the vertical adjuster (A).



1. Remove the front bumper (see page 20-138).
2. Disconnect the connectors (A) from the headlight (B).



3. Remove the clips and mounting bolts, then remove the corner upper beam (C) and headlight assembly.
4. Install in the reverse order of removal.
5. After replacement, adjust the headlights to local requirements.

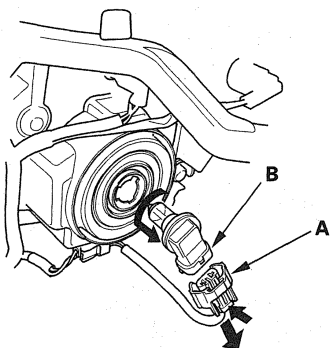
Exterior Lights

Bulb Replacement

Headlight (Low Beam)

1. Disconnect the 2P connector (A) from the headlight.

Headlight (low beam): 55 W (H11)

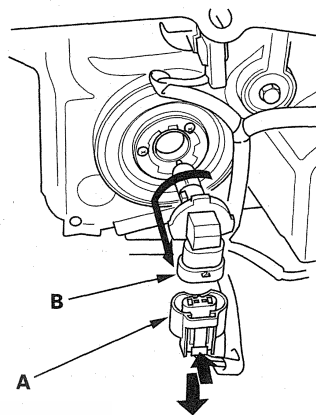


2. Turn the bulb socket (B) 45 °counterclockwise to remove it from the headlight housing.
3. Install a new bulb in the reverse order of removal.

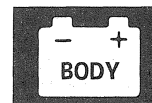
Headlight (High Beam)

1. Disconnect the 2P connector (A) from the headlight.

Headlight (high beam): 60 W (HB3)



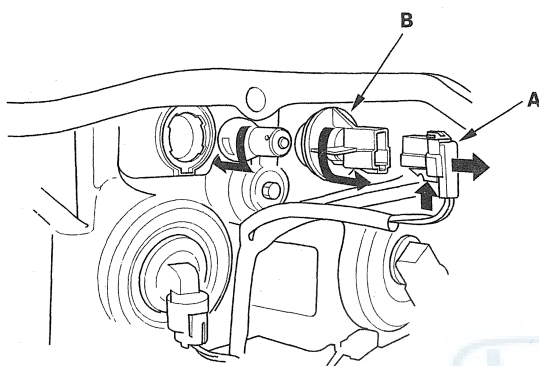
2. Turn the bulb socket (B) 45 °counterclockwise to remove it from the headlight housing.
3. Install a new bulb in the reverse order of removal.



Front Turn Signal Light

1. Disconnect the 2P connector (A) from the front turn signal light.
2. Turn the bulb socket (B) 45 °counterclockwise to remove it from the headlight housing.

Front Turn Signal Light: 21 W

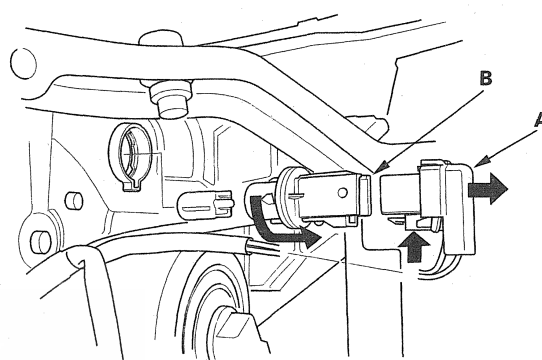


3. Install a new bulb in the reverse order of removal.

Front Parking Light

1. Disconnect the 2P connector (A) from the front parking light.
2. Turn the bulb socket (B) 45 °counterclockwise to remove it from the headlight housing.

Front Parking Light: 5 W



3. Install a new bulb in the reverse order of removal.

(cont'd)

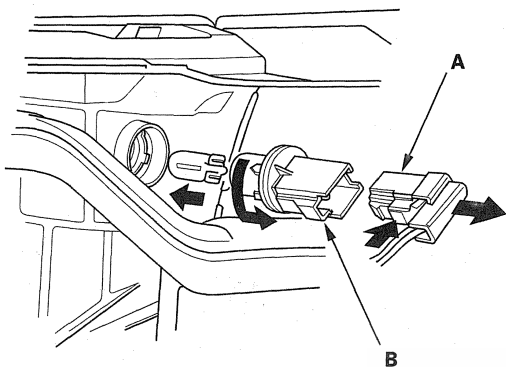
Exterior Lights

Bulb Replacement (cont'd)

Front Side Marker Light

1. Remove the front inner fender (see page 20-161).
2. Disconnect the connector (A) from the light.

FRONT SIDE MARKER LIGHT: 5 W

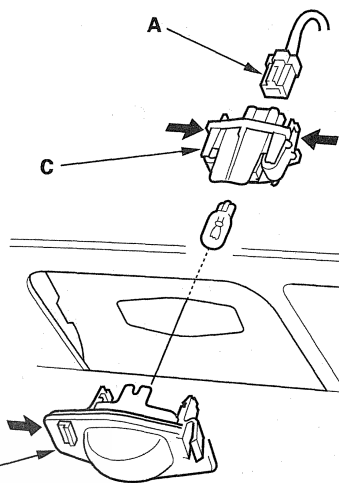


3. Turn the bulb socket (B) 45 ° counterclockwise to remove it from the headlight housing.
4. Install a new bulb in the reverse order of removal.

License Plate Light Replacement

1. Pull the license plate light assembly out, and disconnect the 2P connector (A) from the light.

LICENSE PLATE LIGHT: 5 W x 2



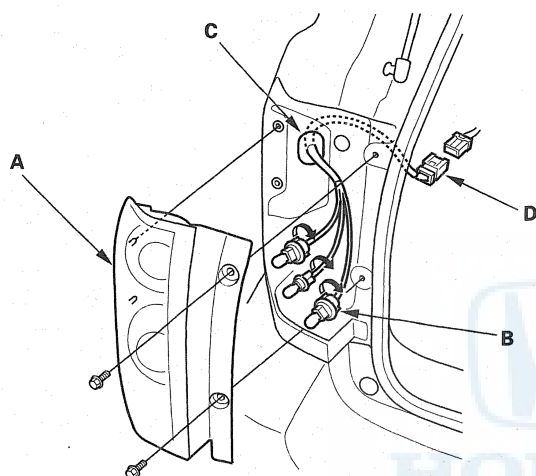
2. Separate the lens (B) and housing (C), then remove the bulb.
3. Install the light in the reverse order of removal.



Taillight Replacement

1. Open the tailgate.
2. Remove the two mounting bolts from the taillight (A) and carefully pull off the taillight.
3. Turn the bulb sockets (B) 45 °counterclockwise to remove them from the housing.

BRAKE/TAILLIGHT: 21/5 W
TURN SIGNAL LIGHT/TAILLIGHT: 21/5 W
REAR SIDE MARKER LIGHT: 3 CP

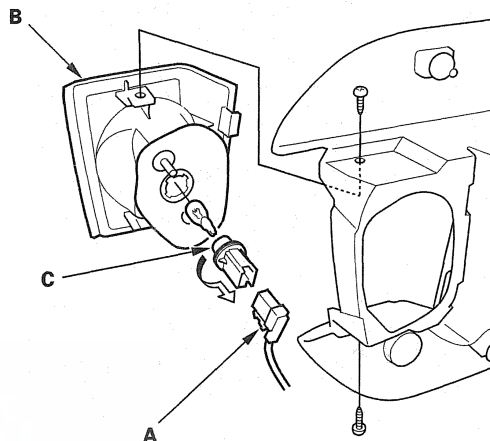


4. If replacement of the taillight harness is necessary, remove the grommet (C) and disconnect the 4P connector (D) from the right side wire harness.
5. Install the taillight in the reverse order of removal, and run water over it to make sure it does not leak.

Back-up Light Replacement

1. Open the tailgate and remove the maintenance lids from the tailgate.
2. Disconnect the 2P connector (A) from the back-up light (B).

BACK-UP LIGHT: 21 CP



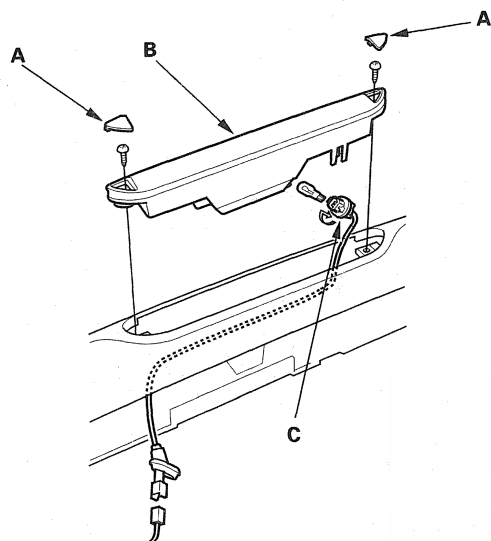
3. Turn the bulb socket (C) 45 °counterclockwise to remove it from the housing.
4. Remove the rear license plate trim (see page 20-158).
5. Remove the two screws and the back-up light.

Exterior Lights

High Mount Brake Light Replacement

1. Remove the caps (A) from the high mount brake light (B) with a small screwdriver.

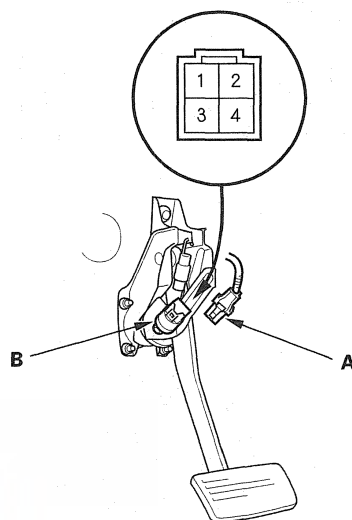
HIGH MOUNT BRAKE LIGHT: 18 W



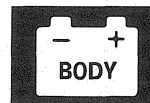
2. Remove the two screws and high mount brake light.
3. Turn the bulb socket (C) 45 °counterclockwise to remove it from the housing.
4. Install the light in the reverse order of removal.

Brake Pedal Position Switch Test

1. Remove the driver's dashboard lower cover (see page 20-90).
2. Disconnect the 4P connector (A) from the brake pedal position switch (B).



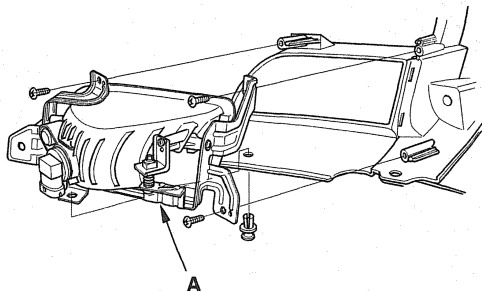
3. Check for continuity between the No. 1 and No. 2 terminals.
 - There should be continuity when the brake pedal is pressed.
 - There should be no continuity when the brake pedal is released.
4. Check for continuity between the No. 3 and No. 4 terminals.
 - There should be no continuity when the brake pedal is pressed.
 - There should be continuity when the brake pedal is released.
5. If necessary, replace the switch or adjust the pedal height (see page 19-5).



Fog Light Replacement

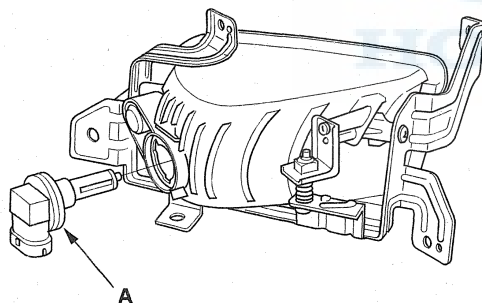
Expect LX and LX-VP models

1. Remove the front bumper (see page 20-138).
2. Remove the screw and mounting bolts from the fog light (A).



3. Turn the bulb socket (A) 45 ° counterclockwise to remove the bulb.

Fog Light: 55 W (H11)



4. Install the light in the reverse order of removal.

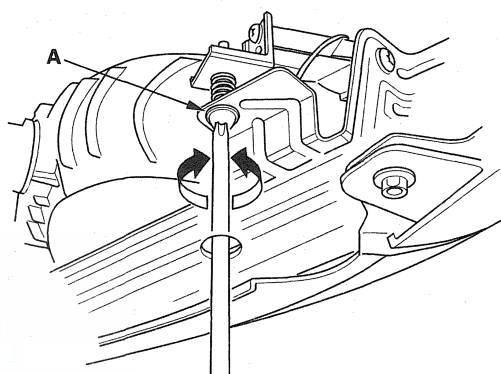
Fog Light Adjustment

Expect LX and LX-VP models

Before adjusting the fog lights:

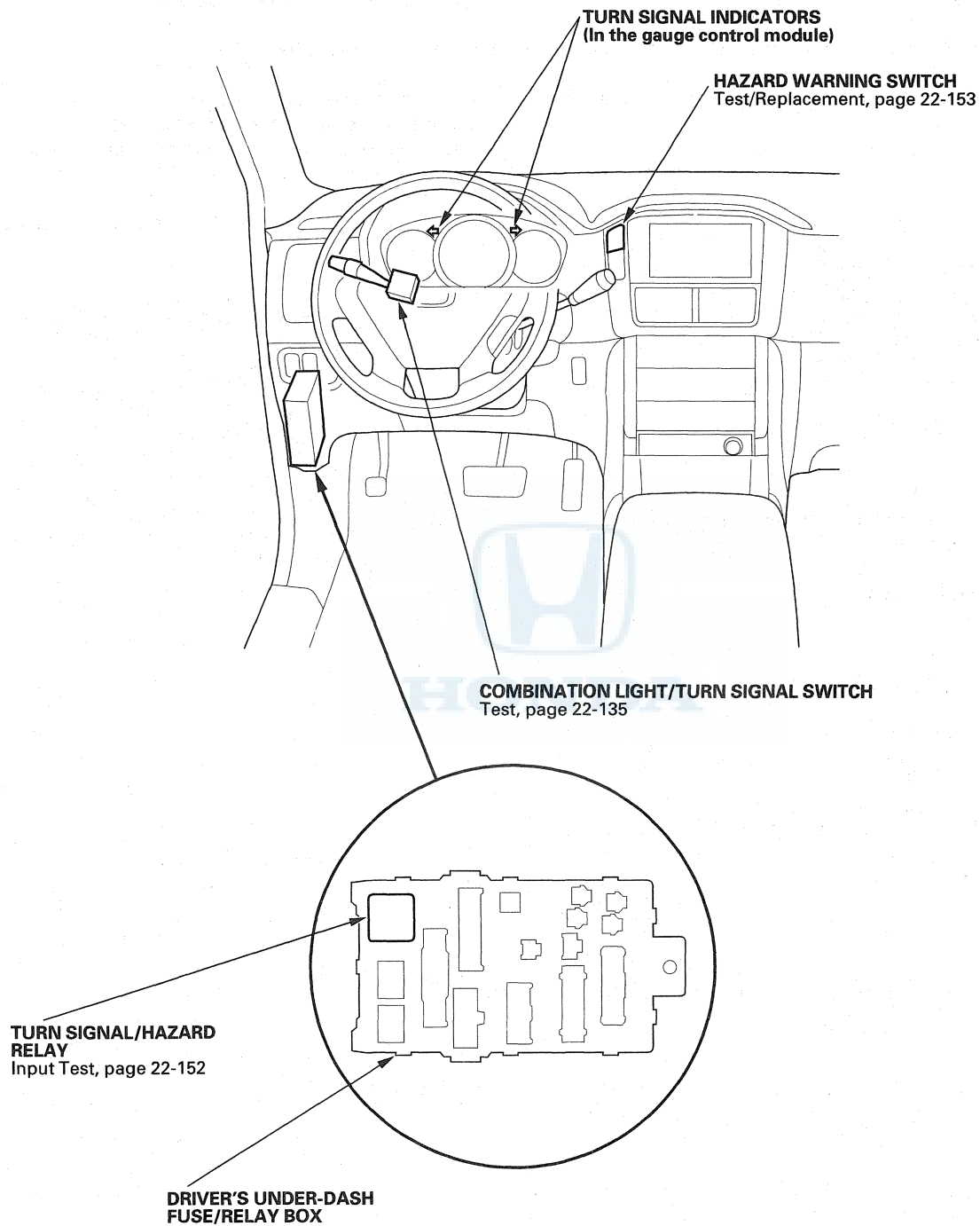
- Park the vehicle on a level surface.
- Make sure the tire pressures are correct.
- The driver or someone who weights the same should sit in the driver's seat.

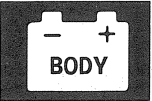
Adjust the fog lights to local requirements by turning the adjuster (A).



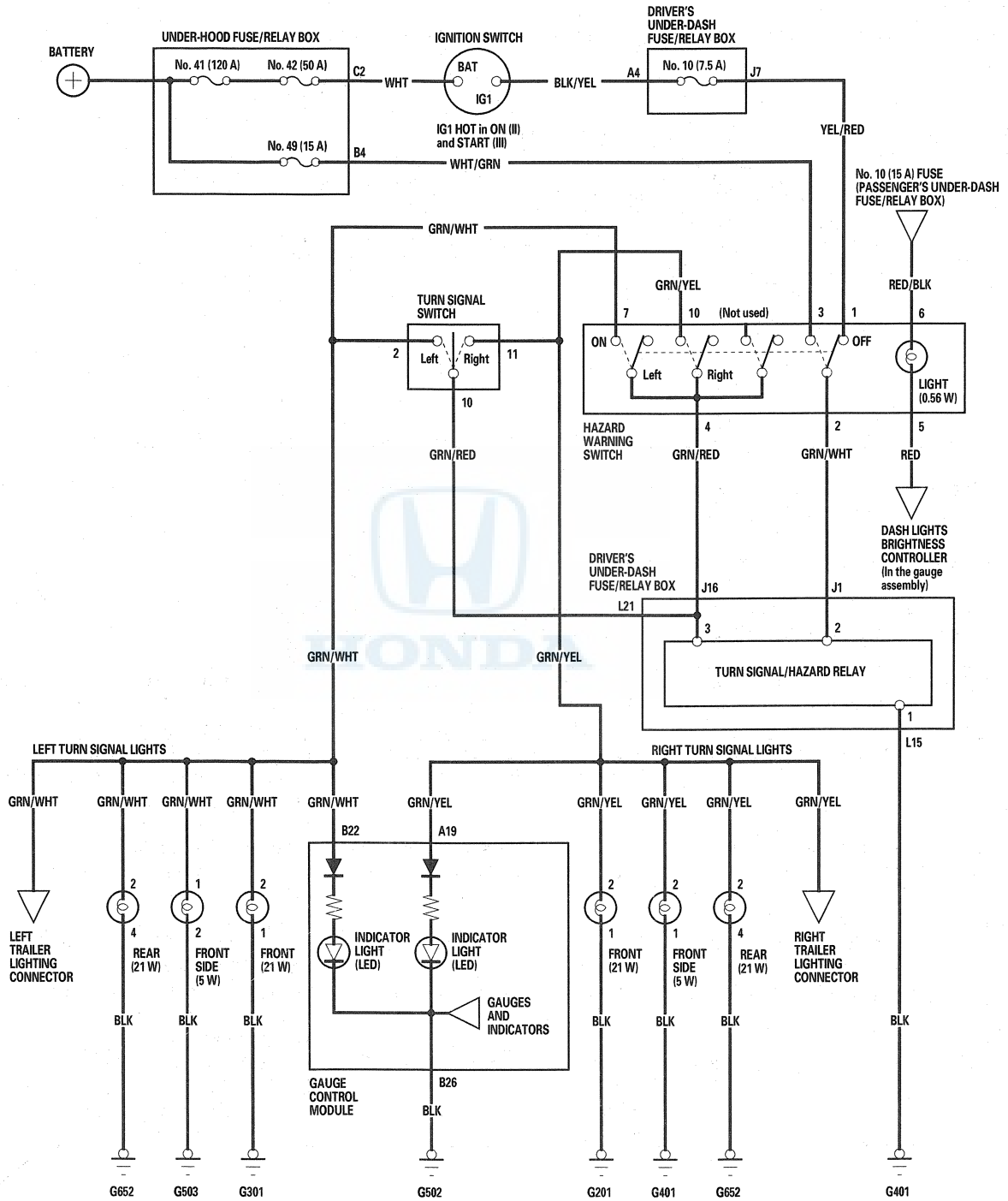
Turn Signal/Hazard Warning Lights

Component Location Index





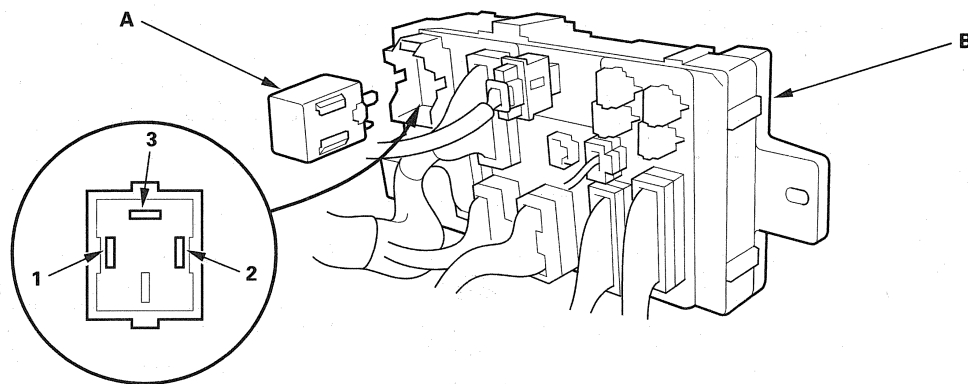
Circuit Diagram



Turn Signal/Hazard Warning Lights

Turn Signal/Hazard Relay Input Test

1. Remove the driver's under-dash fuse/relay box (see page 22-80).
2. Remove the turn signal/hazard relay (A) from the driver's under-dash fuse/relay box (B).



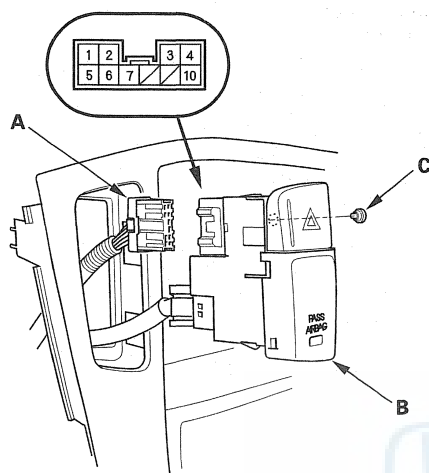
3. Inspect the relay and fuse/relay box socket terminals to be sure they are all making good contact.
 - If the terminals are bent, loose, or corroded, repair them as necessary, and recheck the system.
 - If the terminals look OK, go to step 4.
4. Make these input tests at the fuse/relay box.
 - If any test indicates a problem, find and correct the cause, then recheck the system.
 - If all the input tests prove OK, the turn signal/hazard relay must be faulty; replace it.

Cavity	Test condition	Test: Desired result	Possible cause if result is not obtained
1	Under all conditions	Check for continuity to ground: There should be continuity.	<ul style="list-style-type: none">• Poor ground (G401)• An open in the wire
2	Ignition switch ON (II)	Measure the voltage to ground: There should be battery voltage.	<ul style="list-style-type: none">• Blown No. 10 (7.5 A) fuse in the driver's under-dash fuse/relay box• Faulty turn signal switch• An open in the wire
	Hazard warning switch ON	Measure the voltage to ground: There should be battery voltage.	<ul style="list-style-type: none">• Blown No. 49 (15 A) fuse in the under-hood fuse/relay box• Faulty hazard warning switch• An open in the wire
3	Ignition switch ON (II) and turn signal switch in Right or Left position	Connect No. 2 terminal to No. 3 terminal: Right or left turn signal lights should come on.	<ul style="list-style-type: none">• Poor ground (G201, G301, G401, G502, G503, G652)• Faulty hazard warning switch• Faulty turn signal switch• An open in the wire
	Hazard warning switch ON	Connect No. 2 terminal to No. 3 terminal: Hazard warning lights should come on.	<ul style="list-style-type: none">• Poor ground (G201, G301, G401, G502, G503, G652)• Faulty hazard warning switch• An open in the wire



Hazard Warning Switch Test/Replacement

1. Remove the center panel (see page 20-93).
2. Disconnect the 10P connector (A) from the hazard warning switch (B).



3. Remove the hazard warning switch.
4. Check for continuity between the terminals in each switch position according to the table.

Terminal Position	5	6	1	2	3	4	7	10
OFF	○	○	○	○				
ON	○	○				○	○	○

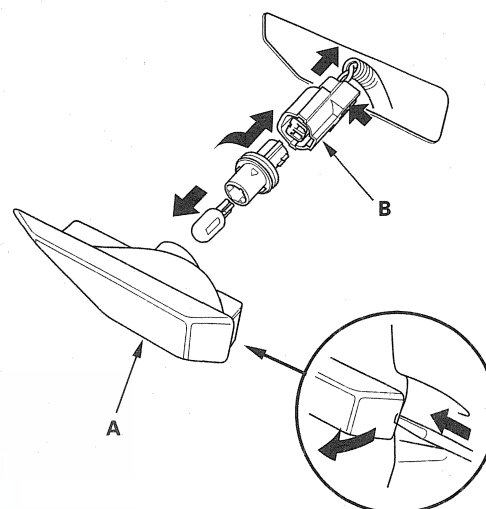
5. If the continuity is not as specified, replace the bulb (C) or the switch.

Side Turn Signal Light Replacement

NOTE: Be careful not to damage the fender.

1. Push the retaining spring, and remove the side turn signal light (A).

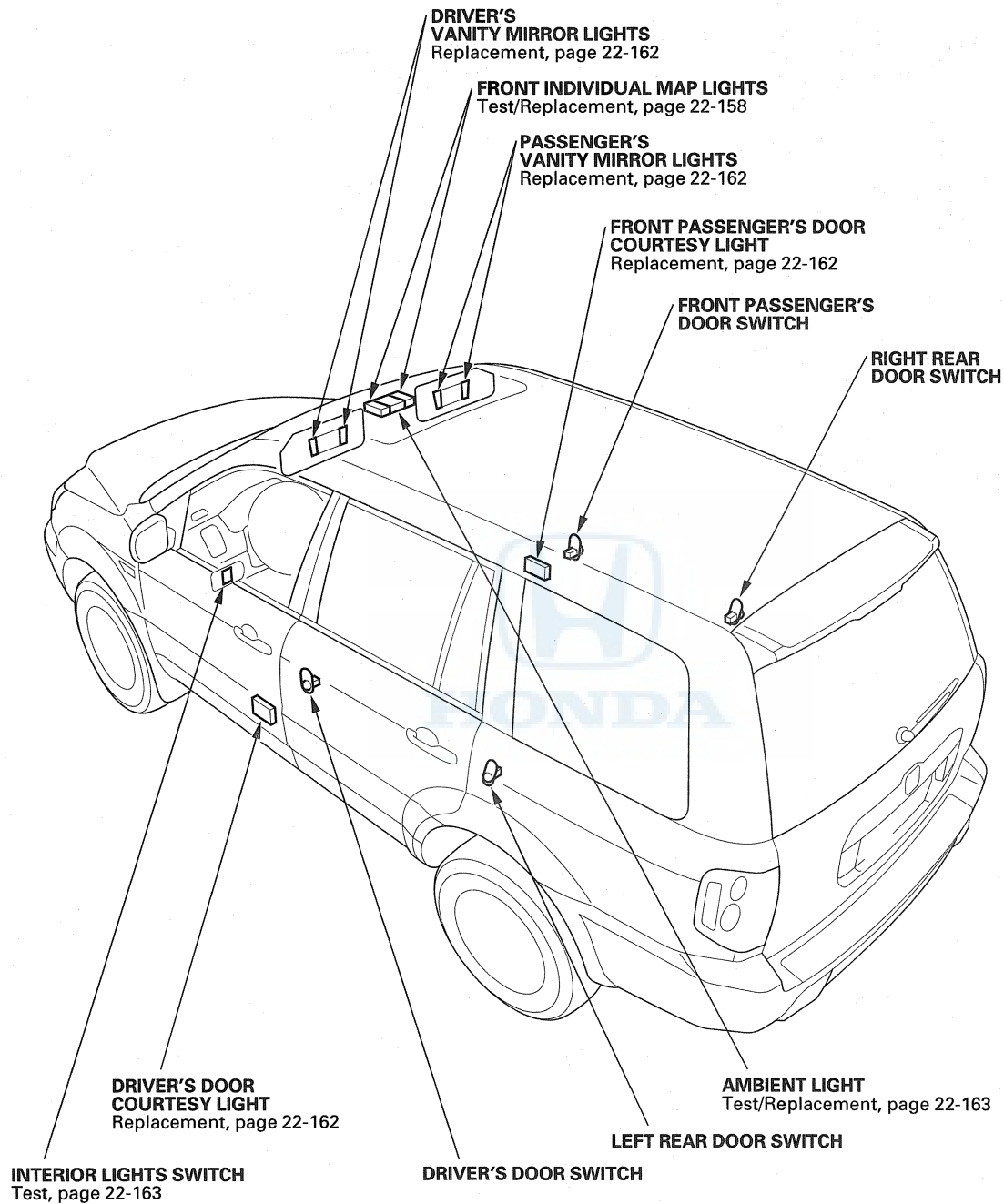
SIDE TURN SIGNAL LIGHT: 5 W

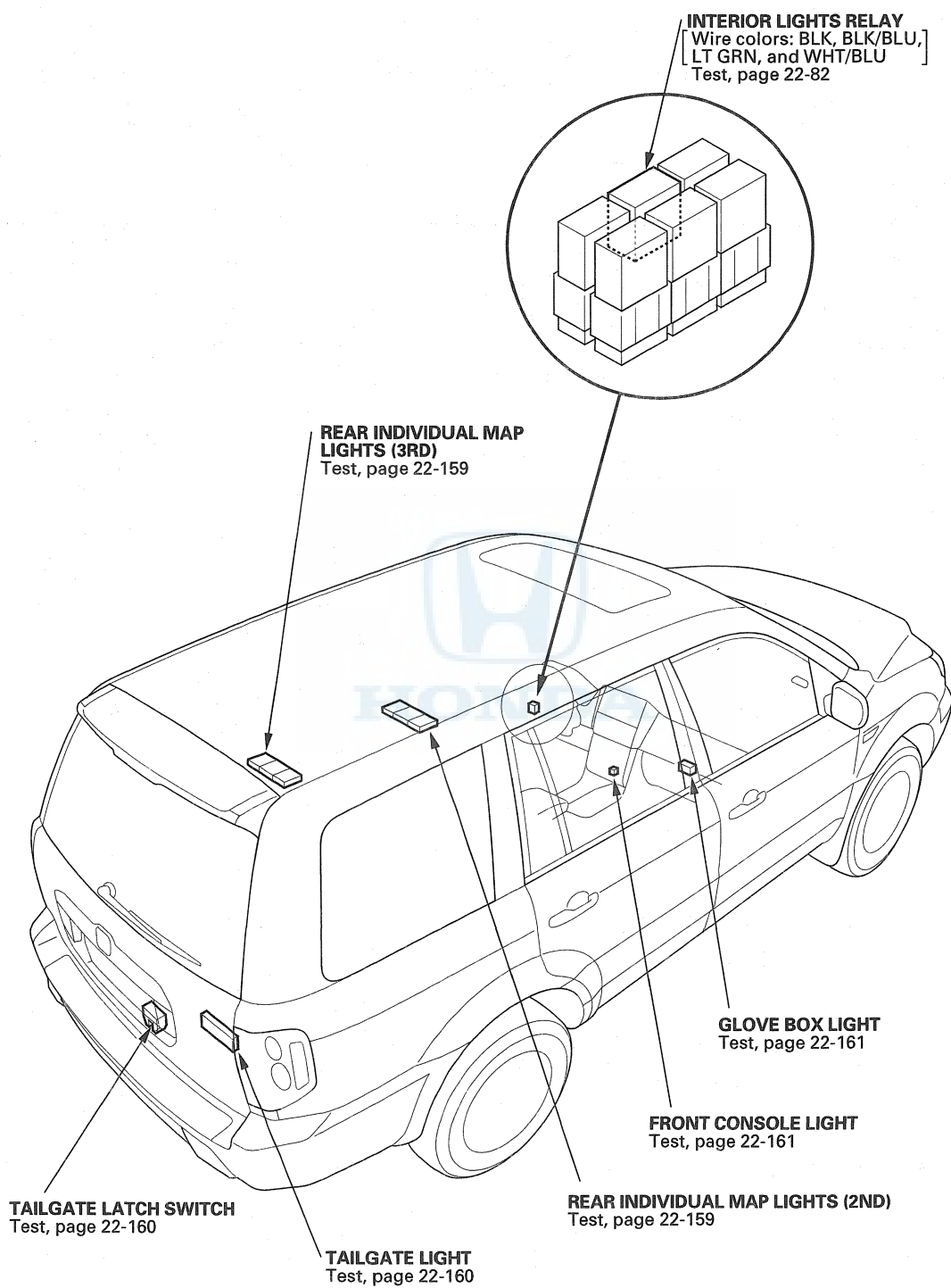


2. Disconnect the 2P connector (B) from the light.

Interior Lights

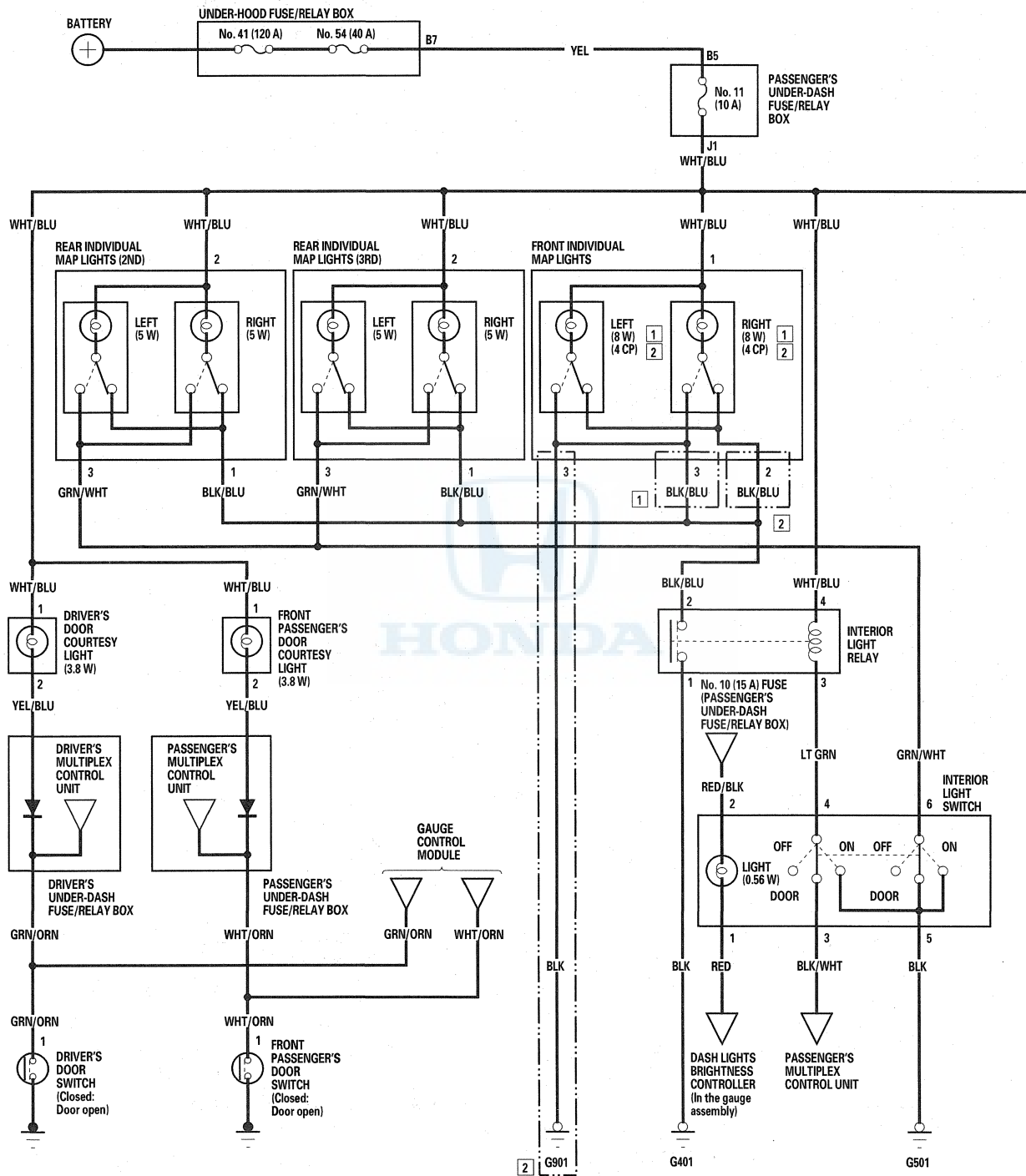
Component Location Index

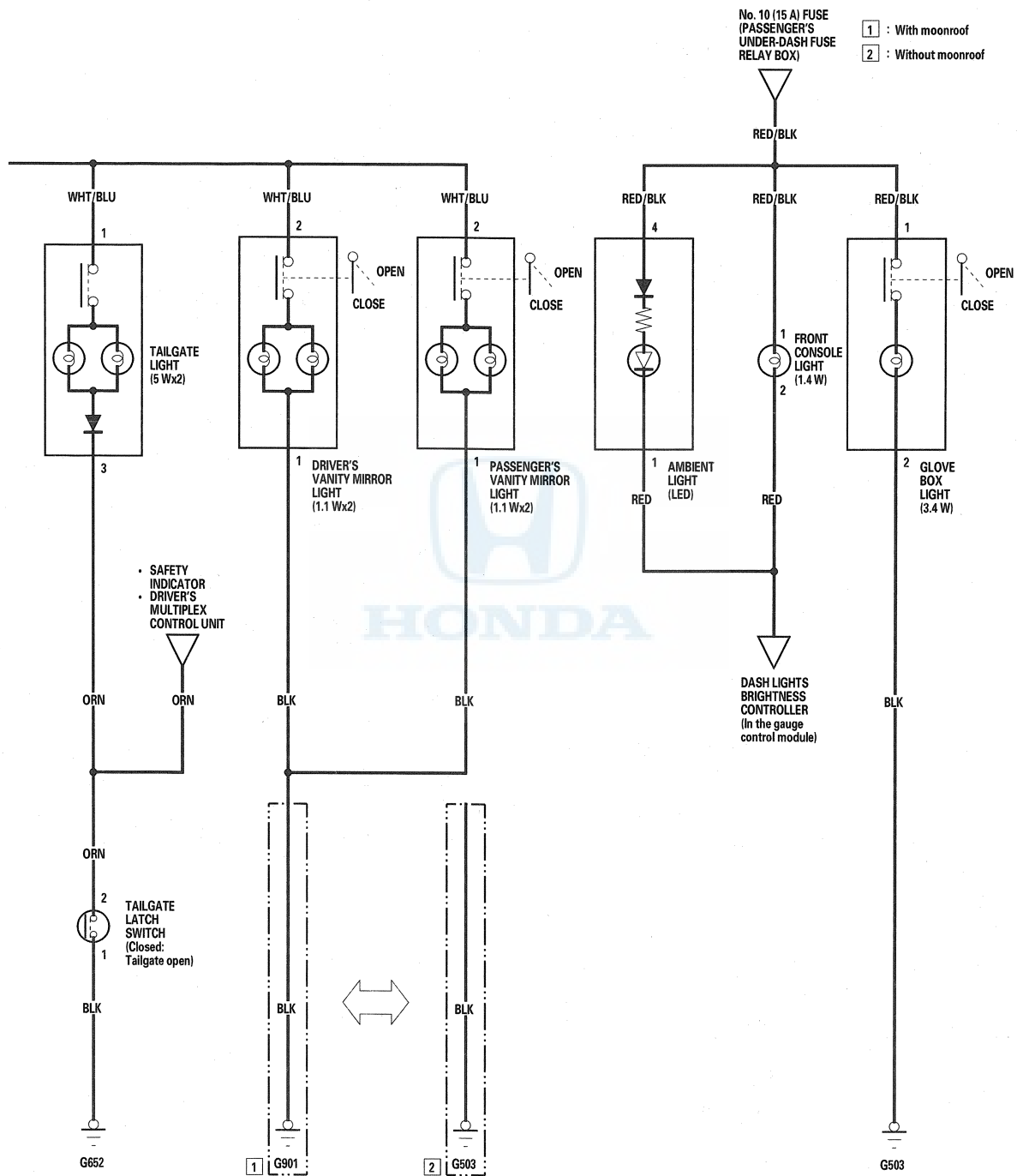




Interior Lights

Circuit Diagram





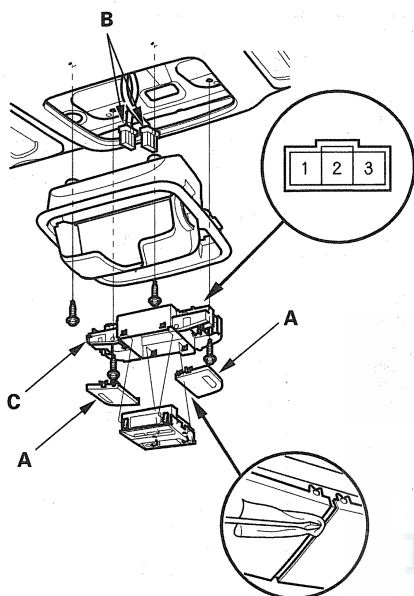
Interior Lights

Front Individual Map Light Test/Replacement

With moonroof

1. Turn the light switch OFF.
2. Carefully pry off the lens (A) with a small screwdriver.

MAP LIGHT: 8 W x 2



3. Remove the four mounting screws.
4. Disconnect the 3P and 10P connectors (B) from the housing (C).
5. Check for continuity between the terminals in each switch position according to the table.

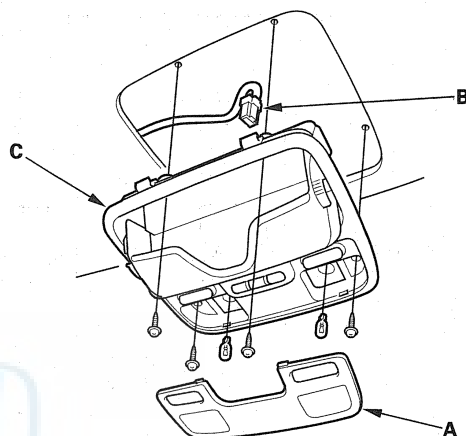
Terminal Position		1		2	3
R	ON	○	⊗	○	
	OFF	○	⊗		○
L	ON	○	⊗	○	
	OFF	○	⊗		○

6. If the continuity is not as specified, check the bulb(s). If the bulb(s) are OK, replace the light.

Without moonroof

1. Turn the light switch OFF.
2. Carefully pry off the lenses (A) with a small screwdriver.

MAP LIGHT: 4 CP x 2



3. Remove the four mounting screws.
4. Disconnect the 3P connector (B) from the roof console (C).
5. Check for continuity between the terminals in each switch position according to the table.

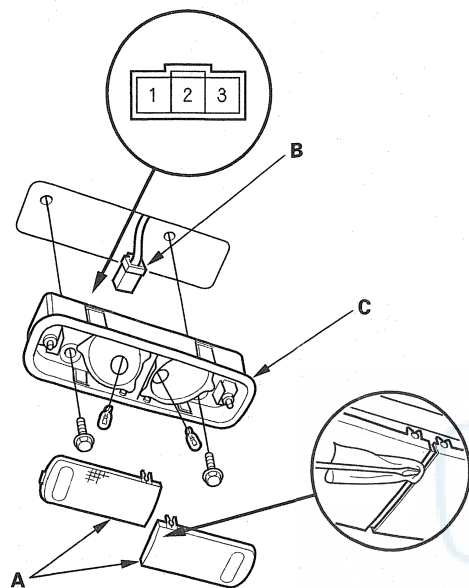
Terminal Position		1		2	3
R	ON	○	⊗	○	
	OFF	○	⊗		○
L	ON	○	⊗	○	
	OFF	○	⊗		○

6. If the continuity is not as specified, check the bulb(s). If the bulb(s) are OK, replace the light.

Rear Individual Map Light Test

1. Turn the light switch OFF.
2. Carefully pry off the lenses (A) with a small screwdriver.

MAP LIGHT: 5 W x 2



3. Remove the two mounting screws.
4. Disconnect the 3P connector (B) from the housing (C).
5. Check for continuity between the terminals in each switch position according to the table.

Terminal Position		1		2	3
R	ON				
	OFF				
L	ON				
	OFF				

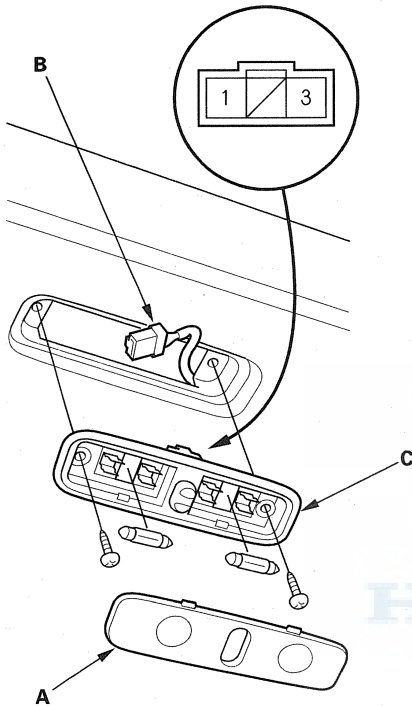
6. Install in the reverse order of removal.

Interior Lights

Tailgate Light Test

1. Open the tailgate.
2. Carefully pry off the lens (A) with a small screwdriver.

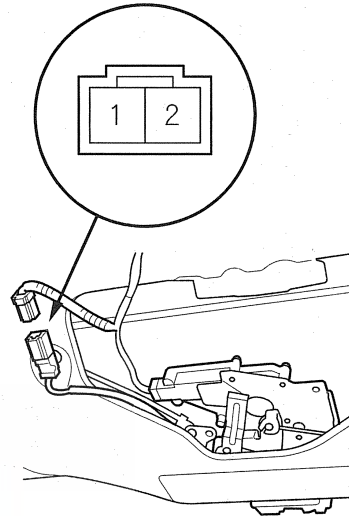
TAILGATE LIGHT: 5 W x 2



3. Remove the two mounting screws.
4. Disconnect the 3P connector (B) from the housing (C).
5. Check for continuity between the terminals. There should be continuity between the No. 1 and No. 3 terminals with the switch ON.
6. If the continuity is not as specified, check the bulb(s). If the bulb(s) are OK, replace the light.

Tailgate Latch Switch Test

1. Open the tailgate.
2. Remove the tailgate trim panel (see page 20-82).
3. Disconnect the 2P connector from the tailgate latch.



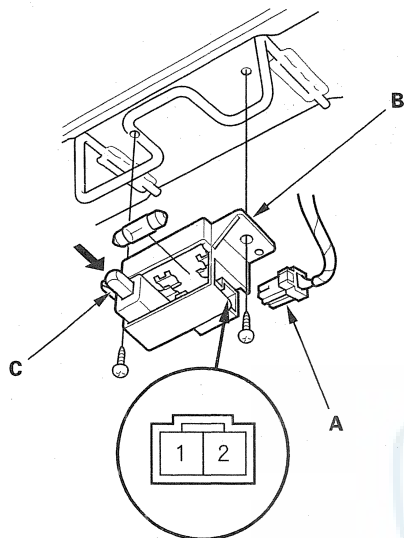
4. Check for continuity between the No. 1 and No. 2 terminals.
 - With the tailgate open, there should be continuity.
 - With the tailgate closed, there should be no continuity.
5. If the continuity is not as specified, replace the tailgate latch switch.



Glove Box Light Test

1. Remove the glove box (see page 20-95).
2. Disconnect the 2P connector (A) from the glove box light (B).

GLOVE BOX LIGHT: 3.4 W

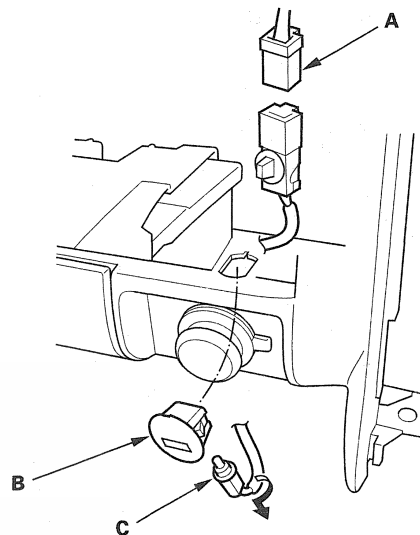


3. Check for continuity between the No. 1 and No. 2 terminals.
 - With the button (C) pressed, there should be no continuity.
 - With the button (C) released, there should be continuity.
4. If the continuity is not as specified, check the bulb. If the bulb is OK, replace the light.

Front Console Light Test

1. Remove the center lower cover (see page 20-88).
2. Disconnect the 2P connector (A) from the front console light (B).

FRONT CONSOLE LIGHT: 1.4 W



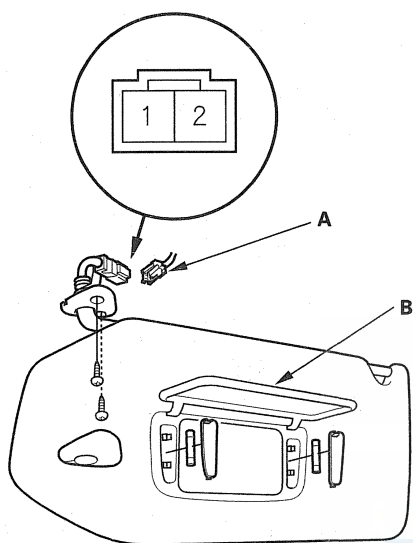
3. Turn the bulb socket (C) 45 ° counterclockwise to remove it from the light.

Interior Lights

Vanity Mirror Light Replacement

1. Open the sunvisor.
2. Remove the sunvisor (see step 3 on page 20-83).
3. Disconnect the 2P connector (A) from the vanity mirror light.

VANITY MIRROR LIGHT: 1.1 W

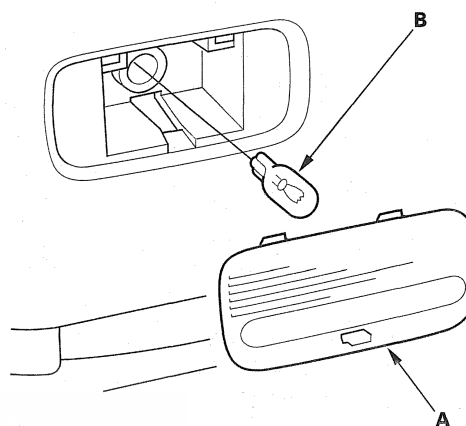


4. Check for continuity between the No. 1 and No. 2 terminals.
 - With the vanity mirror cover (B) opened, there should be continuity.
 - With the vanity mirror cover closed, there should be no continuity.
5. If the continuity is not as specified, check the bulbs. If the bulbs are OK, replace the sunvisor.

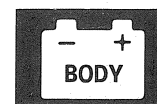
Courtesy Light Replacement

1. Carefully pry off the lens (A) with a small screwdriver.

COURTESY LIGHT: 3.8 W

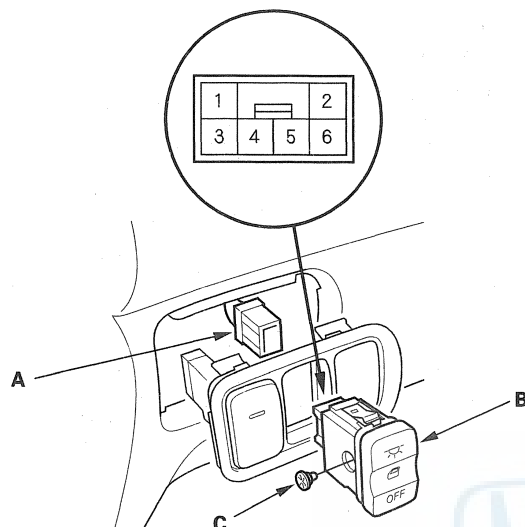


2. Remove the bulb (B) from the socket.



Interior Lights Switch Test

1. Remove the switch panel (see page 20-92).
2. Disconnect the 6P connector (A) from the interior lights switch (B).



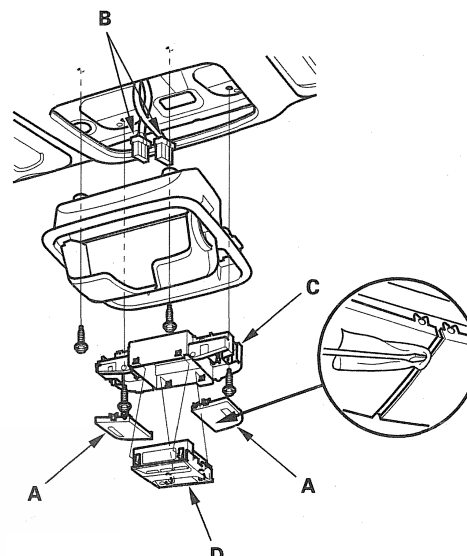
3. Pull the interior lights switch out of the switch panel.
4. Check for continuity between the terminals in each switch position according to the table.

Terminal Position	1	2	3	4	5	6
OFF	○	○				
MIDDLE (DOOR)	○	○	○	○	○	○
ON	○	○		○	○	○

5. If the continuity is not as specified, replace the bulb (C) or the switch.

Ambient Light Test/Replacement

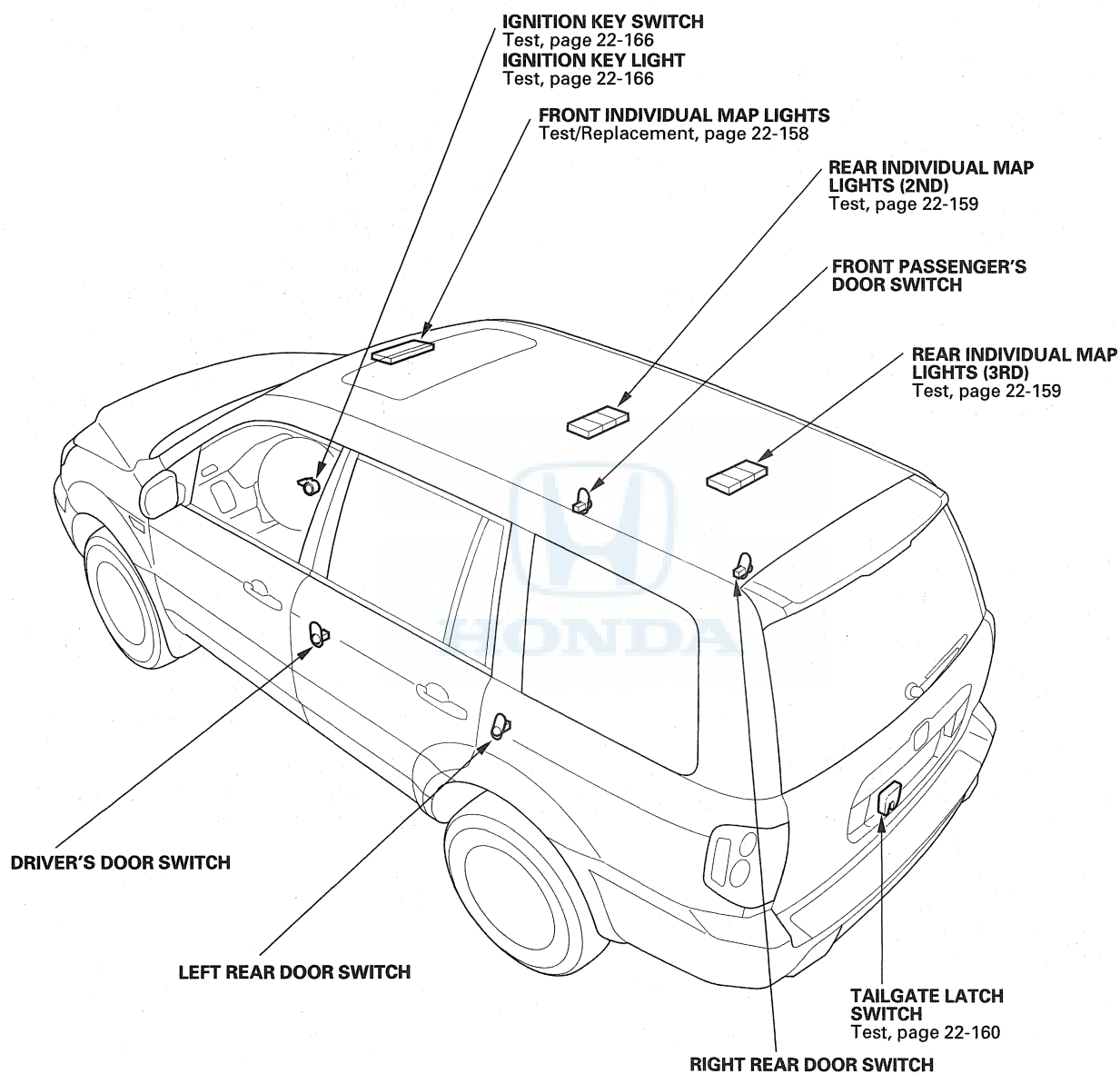
1. Turn the combination light switch OFF.
2. Carefully pry off the lens (A) with a small screwdriver.

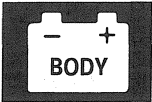


3. Remove the four mounting screws.
4. Disconnect the 3P and 10P connectors (B) from the housing (C).
5. Remove the ambient light module assembly (D).
6. The ambient light should come on when power is connected to the No. 4 terminal and ground is connected to the No. 1 terminal.
7. If the LED does not come on, replace the ambient light module assembly.

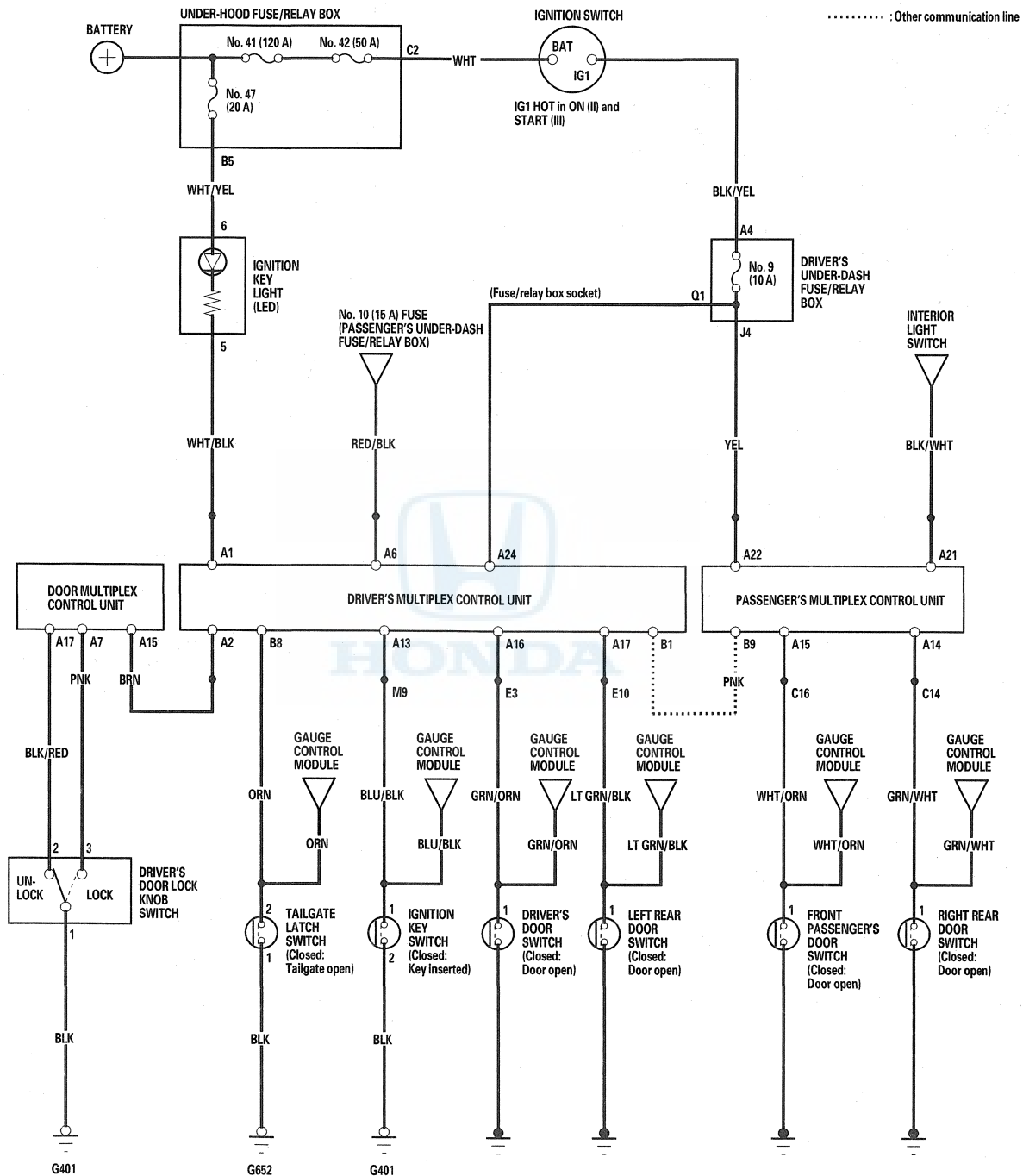
Entry Lights Control System

Component Location Index





Circuit Diagram



Entry Lights Control System

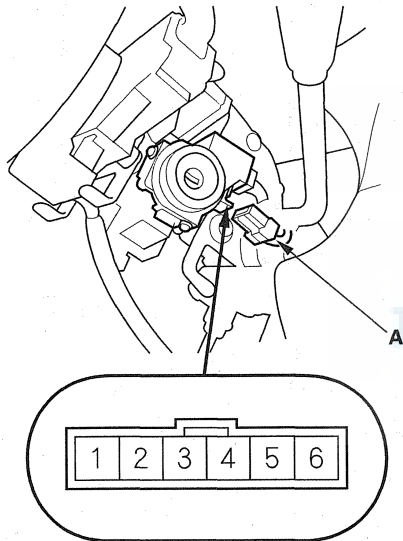
Ignition Key Switch Test

NOTE: For more key-in beeper information, refer to the circuit diagram (see page 22-116) and input test (see page 22-118).

When the ignition key is in the ignition switch, the key-in beeper in the driver's multiplex control unit senses ground through the closed ignition key switch. When you open the driver's door, the beeper circuit senses ground through the closed door switch.

1. Remove the steering column upper and lower covers (see page 17-25).
2. Disconnect the 6P connector.

NOTE: Lock tab (A) points down when installed.

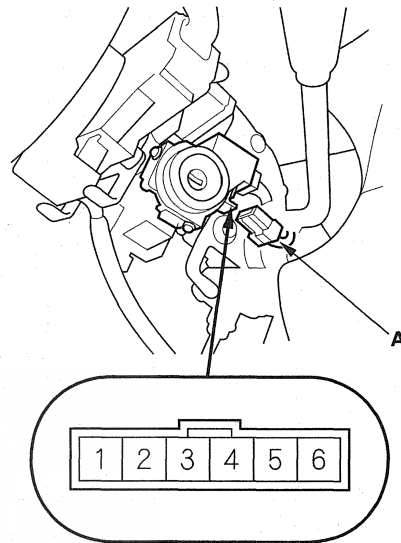


3. Check for continuity between the No. 1 and No. 2 terminals.
 - There should be continuity with the key in the ignition switch.
 - There should be no continuity with the key removed.
4. If the continuity is not as specified, replace the ignition key switch.

Ignition Key Light Test

1. Remove the steering column upper and lower covers (see page 17-25).
2. Disconnect the 6P connector.

NOTE: Lock tab (A) points down when installed.



3. The LED should come on when power is connected to the No. 6 terminal and ground is connected to No. 5 terminal.
4. If the LED does not come on, replace the ignition key switch.



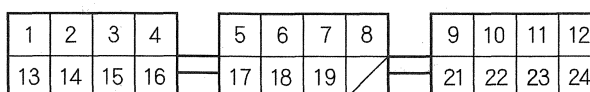
Control Circuit Input Test

1. Before testing the entry light control functions, troubleshoot the multiplex control system (see page 22-244).

Driver's Multiplex Control Unit

2. Remove the driver's multiplex control unit from the driver's under-dash fuse/relay box.
3. Inspect the connector and socket terminals to be sure they are all making good contact.
 - If the terminals are bent, loose or corroded, repair them as necessary, and recheck the system.
 - If the terminals look OK, go to step 4.

**DRIVER'S UNDER-DASH FUSE/RELAY BOX SOCKET
(Driver's multiplex control unit connector A)**

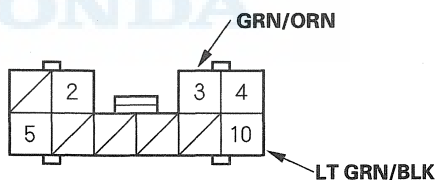


DRIVER'S MULTIPLEX UNIT CONNECTOR B



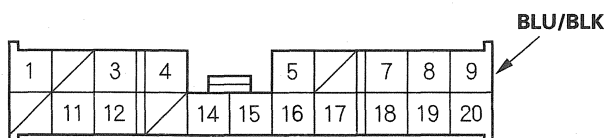
Wire side of female terminals

DRIVER'S UNDER-DASH FUSE/RELAY BOX CONNECTOR E



Wire side of female terminals

DRIVER'S UNDER-DASH FUSE/RELAY BOX CONNECTOR M



Wire side of female terminals

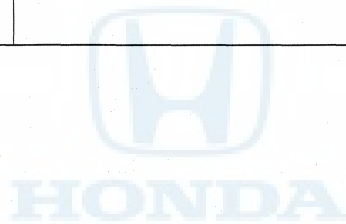
(cont'd)

Entry Lights Control System

Control Circuit Input Test (cont'd)

4. With the driver's multiplex control unit still disconnected, make these input tests at the connector or driver's under-dash fuse/relay box socket.
- If any test indicates a problem, find and correct the cause, then recheck the system.
 - If all the input tests prove OK, go to step 5.

Cavity	Wire	Test condition	Test: Desired result	Possible cause if result is not obtained
A1	Fuse/relay box socket	Under all conditions	Attach to ground: The ignition key light should come on.	<ul style="list-style-type: none">• Blown No. 47 (20 A) fuse in the under-hood fuse/relay box• Blown LED• An open in the wire
A24		Ignition switch ON (II)	Measure the voltage to ground: There should be battery voltage.	<ul style="list-style-type: none">• Blown No. 9 (10 A) fuse in the driver's under-dash fuse/relay box• Faulty driver's under-dash fuse/relay box
A6	Fuse/relay box socket	Combination light switch ON	Measure the voltage to ground: There should be battery voltage and jump 12 V to driver's multiplex connector B16 (EX).	<ul style="list-style-type: none">• Blown No. 54 (40 A) fuse in the under-hood fuse/relay box• Blown No. 10 (15 A) fuse in the passenger's under-dash fuse/relay box• Faulty taillight relay• Faulty combination light switch• An open in the wire





5. Reconnect the driver's multiplex control unit to the driver's under-dash fuse/relay box, and perform the following input tests at the appropriate connectors on the back of the driver's under-dash fuse/relay box.

For driver's under-dash fuse/relay box connector socket location (see page 22-68).

- If any test indicates a problem, find and correct the cause, then recheck the system.
- If all the input tests prove OK, go to step 6.

Cavity	Wire	Test condition	Test: Desired result	Possible cause if result is not obtained
E3	GRN/ORN	Driver's door open	Measure the voltage to ground: There should be less than 1 V.	<ul style="list-style-type: none"> • Faulty driver's door switch • An open in the wire
		Driver's door closed	Measure the voltage to ground: There should be 5 V or more.	<ul style="list-style-type: none"> • A short to ground in the wire • Faulty driver's door switch • An open in the wire
M9	BLU/BLK	Ignition key is in the ignition switch	Measure the voltage to ground: There should be less than 1 V.	<ul style="list-style-type: none"> • Poor ground (G401) • Faulty ignition switch • An open in the wire
		Ignition key is out of the ignition switch	Measure the voltage to ground: There should be 5 V or more.	<ul style="list-style-type: none"> • A short to ground in the wire • Poor ground (G401) • Faulty ignition switch • An open in the wire
E10	LT GRN/BLK	Left rear door open	Measure the voltage to ground: There should be less than 1 V.	<ul style="list-style-type: none"> • Faulty left rear door switch • An open in the wire
		Left rear door closed	Measure the voltage to ground: There should be 5 V or more.	<ul style="list-style-type: none"> • A short to ground in the wire • Faulty left rear door switch • An open in the wire
B8*	ORN	Tailgate open	Measure the voltage to ground: There should be less than 1 V.	<ul style="list-style-type: none"> • Poor ground (G652) • Faulty tailgate latch switch • An open in the wire
		Tailgate closed	Measure the voltage to ground: There should be 5 V or more.	<ul style="list-style-type: none"> • A short to ground in the wire • Poor ground (G652) • Faulty tailgate latch switch • An open in the wire

* : Driver's multiplex control unit connector B

(cont'd)

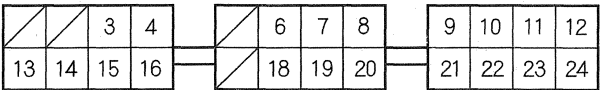
Entry Lights Control System

Control Circuit Input Test (cont'd)

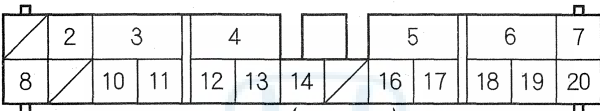
Passenger's Multiplex Control Unit

- 6. Remove the passenger's multiplex control unit from the passenger's under-dash fuse/relay box, and disconnect its connector.
- 7. Inspect the connector and socket terminals to be sure they are all making good contact.
 - If the terminals are bent, loose or corroded, repair them as necessary, and recheck the system.
 - If the terminals look OK, go to step 8.

**PASSENGER'S UNDER-DASH FUSE/RELAY BOX SOCKET
(Passenger's multiplex control unit connector A)**



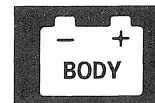
PASSENGER'S UNDER-DASH FUSE/RELAY BOX CONNECTOR C



GRN/WHT

WHT/ORN

Wire side of female terminals



8. With the passenger's multiplex control unit still disconnected, make these input tests at the connector and passenger's under-dash fuse/relay box socket.

- If any test indicates a problem, find and correct the cause, then recheck the system.
- If all the input tests prove OK, go to step 9.

Cavity	Wire	Test condition	Test: Desired result	Possible cause if result is not obtained
A22	Fuse/relay box socket	Ignition switch ON (II)	Measure the voltage to ground: There should be battery voltage.	<ul style="list-style-type: none"> • Blown No. 9 (10 A) fuse in the driver's under-dash fuse/relay box • Faulty driver's under-dash fuse/relay box • Faulty passenger's under-dash fuse/relay box • An open in the wire
A21		Interior light switches in the middle (Door) position	Attach to ground: Interior lights should come on.	<ul style="list-style-type: none"> • Blown No. 11 (10 A) fuse in the passenger's under-dash fuse/relay box • Blown No. 54 (40 A) fuse in the under-hood fuse/relay box • Faulty passenger's under-dash fuse/relay box • Faulty individual map light • Faulty interior lights switch • An open in the wire

9. Reconnect the passenger's multiplex control unit to the passenger's under-dash fuse/relay box, and perform the following input tests at the appropriate connector of the passenger's under-dash fuse/relay box.

- If any test indicates a problem, find and correct the cause, then recheck the system.
- If all the input tests prove OK, go to step 10.

Cavity	Wire	Test condition	Test: Desired result	Possible cause if result is not obtained
C16	WHT/ORN	Front passenger's door open	Measure the voltage to ground: There should be less than 1 V.	<ul style="list-style-type: none"> • Faulty front passenger's door switch • An open in the wire
		Front passenger's door closed	Measure the voltage to ground: There should be 5 V or more.	<ul style="list-style-type: none"> • Faulty front passenger's door switch • A short to ground in the wire
C14	GRN/WHT	Right rear door open	Measure the voltage to ground: There should be less than 1 V.	<ul style="list-style-type: none"> • Faulty right rear door switch • An open in the wire
		Right rear door closed	Measure the voltage to ground: There should be 5 V or more.	<ul style="list-style-type: none"> • Faulty right rear door switch • A short to ground in the wire

(cont'd)

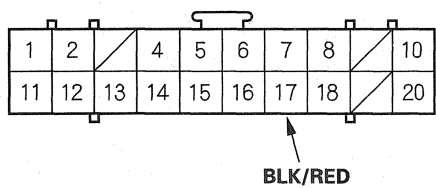
Entry Lights Control System

Control Circuit Input Test (cont'd)

Door Multiplex Control Unit

10. Remove the driver's door panel and disconnect the 20P connector from the door multiplex control unit.
11. Inspect the connector and socket terminals to be sure they are all making good contact.
- If the terminals are bent, loose or corroded, repair them as necessary, and recheck the system.
 - If the terminals look OK, go to step 12.

DOOR MULTIPLEX CONTROL UNIT CONNECTOR A



Wire side of female terminals

12. Reconnect the connector to the door multiplex control unit, and make the input test at the connector.
- If a test indicates a problem, find and correct the cause, then recheck the system.
 - If the input test proves OK, go to step 13.

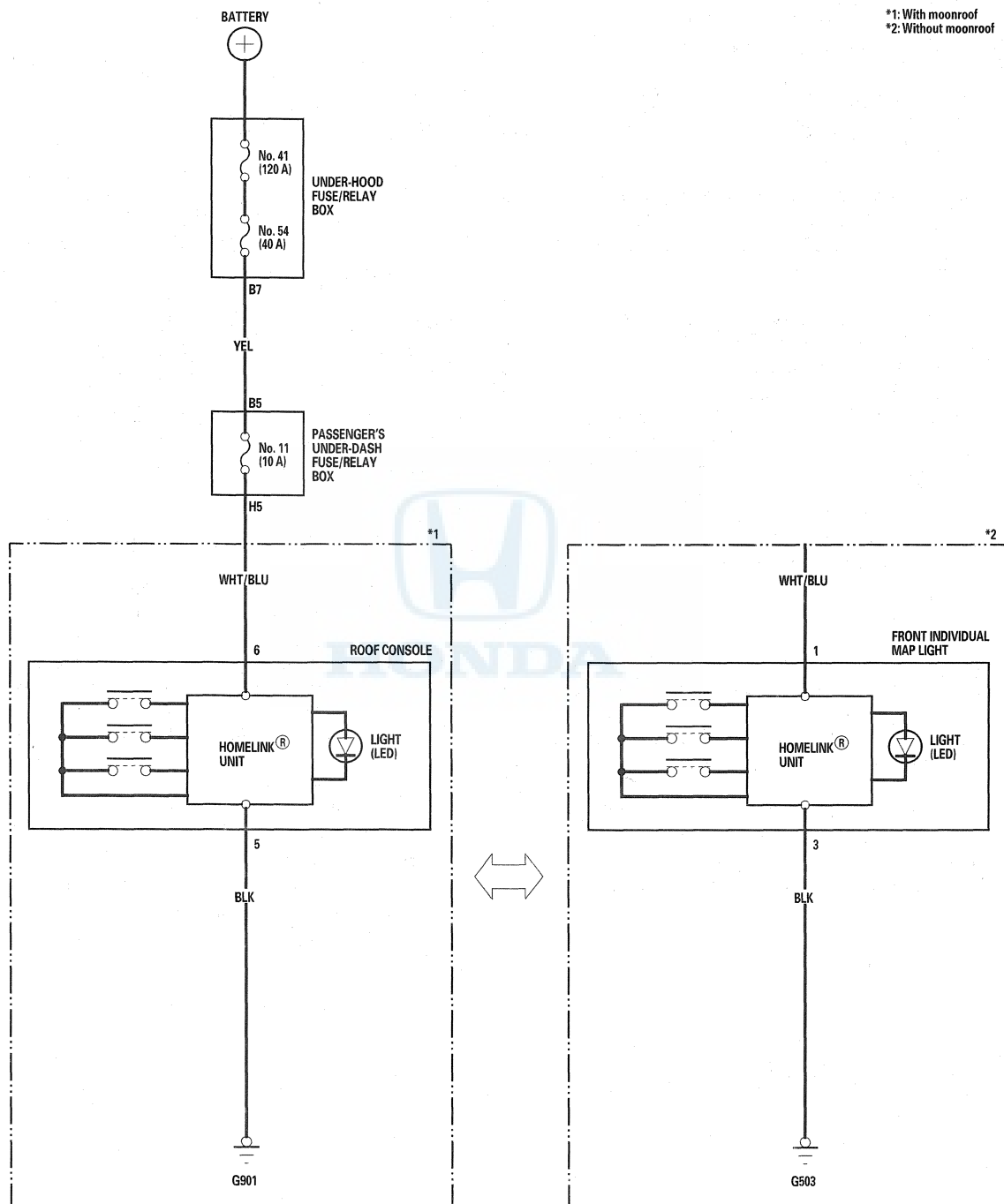
Cavity	Wire	Test condition	Test: Desired result	Possible cause if result is not obtained
A17	BLK/RED	Driver's door lock knob unlocked	Measure the voltage to ground: There should be less than 1 V.	<ul style="list-style-type: none">• Faulty driver's door lock actuator• Poor ground (G401)• An open in the wire
		Driver's door lock knob locked	Measure the voltage to ground: There should be 5 V or more.	<ul style="list-style-type: none">• Faulty driver's door lock actuator• Short to ground

13. If all the input tests prove OK, one of the control units must be faulty. Substitute a known-good control unit for the one that is most likely at fault, then recheck the system. If the system works properly, the original control unit is faulty; replace it. If there is still a malfunction, substitute a known-good control unit for the next most likely unit to be at fault, and recheck. If the system works properly, the original unit is faulty; replace it.

HomeLink Remote Control System



Circuit Diagram



HomeLink Remote Control System

Test

NOTE: If the HomeLink remote control system will not open the customer's garage, do this:

1. Press any of the buttons on the HomeLink unit.

- If the red indicator comes on, go to step 3.
- If the red indicator does not come on, go to step 2.

2. Measure the voltage between the No. 6(1)(+) and No. 5(3)(-) terminals of the roof console 10P (front individual map light 3P) connector. There should be battery voltage.

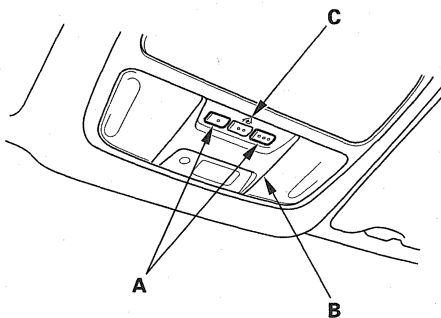
- If the voltage is not as specified, check for these problems:
 - A blown No. 11 (10 A) fuse in the passenger's under-dash fuse/relay box.
 - A faulty passenger's under-dash fuse/relay box.
 - An open in the WHT/BLU wire between the passenger's under-dash fuse/relay box and the roof console (map light).
 - An open in the BLK wire between the roof console (map light) and G901 (G501).
- If the voltage is as specified, go to step 3.

(): without moonroof

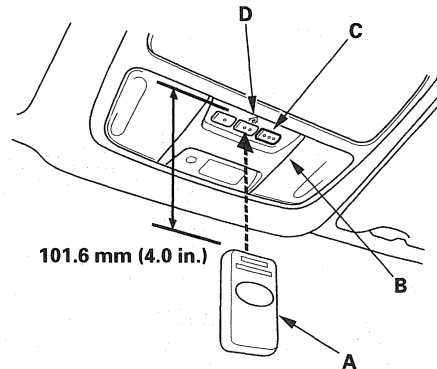
3. Make sure the commercially available Genie remote transmitter (test remote) has fresh batteries.

NOTE: The Genie remote transmitter can be either the fixed code type or rolling code type.

4. Clear any previously learned codes by pressing and holding the two outside buttons (A) on the HomeLink unit (B) for about 20 seconds. When the red indicator (C) on the unit starts blinking, release the buttons.



5. Point the test remote transmitter (A) straight up exactly 101.6 mm (4.0 in.) away from the HomeLink unit (B).



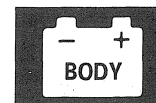
6. Press and hold the button on the test remote transmitter and one of the buttons (C) on the HomeLink unit at the same time.

7. Wait about 20 seconds while watching the red indicator (D) on the HomeLink unit.

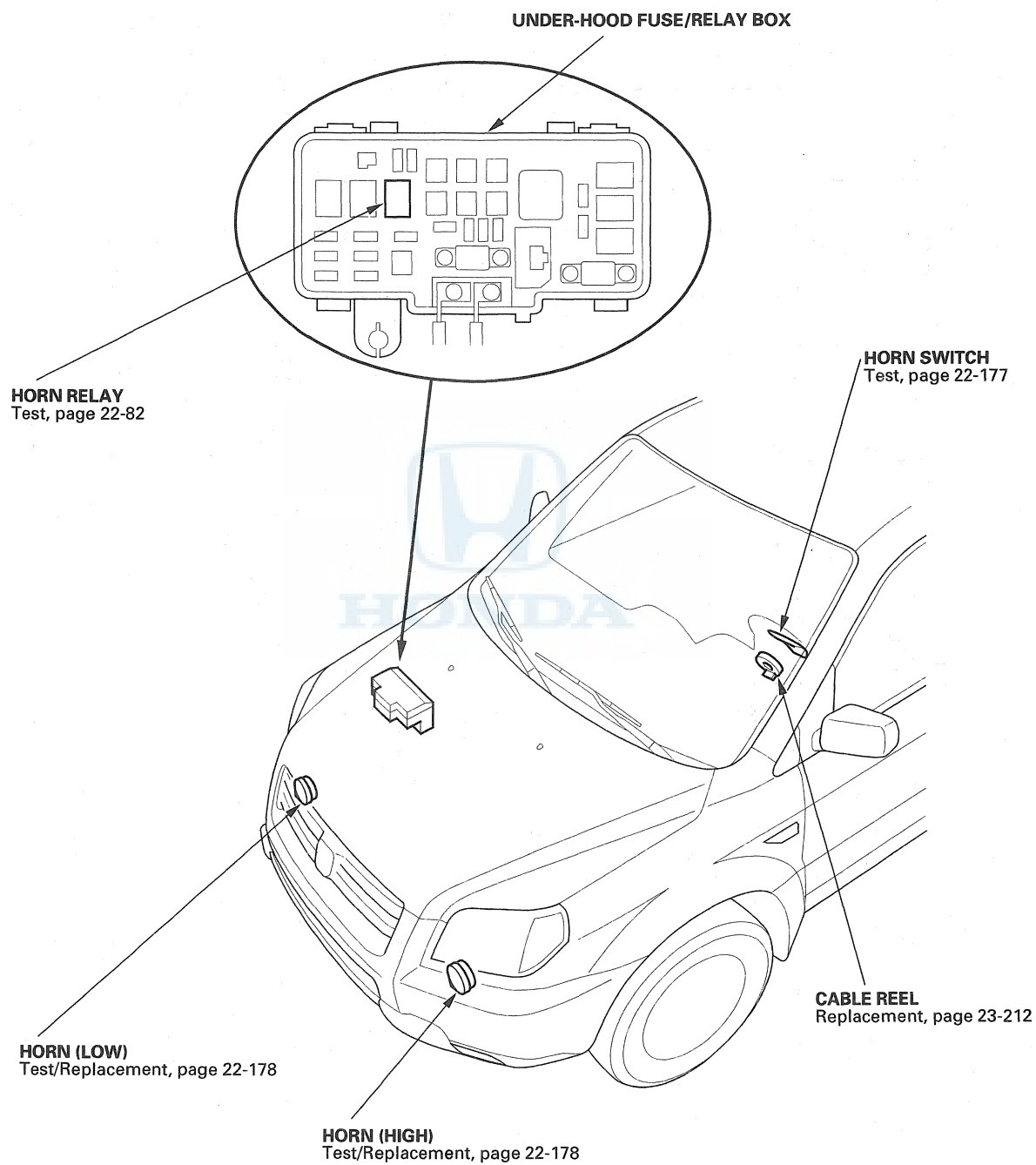
- If the red indicator starts blinking slowly and then blinks faster, the unit is OK. Release the buttons, then clear the learned code (see step 4). Explain to the customer that garage door remote transmitters come in two types: fixed code and rolling code. Each type has its own programming method, and each method is covered in the owner's manual. If the customer has concerns about the HomeLink unit, have the customer contact the HomeLink assistance desk at 1-800-355-3515. On the internet, go to www.homelink.com.
- If the red indicator does not blink, replace the roof console (map light). With moonroof (see page 22-163). Without moonroof (see page 22-158).

(): without moonroof

Horns

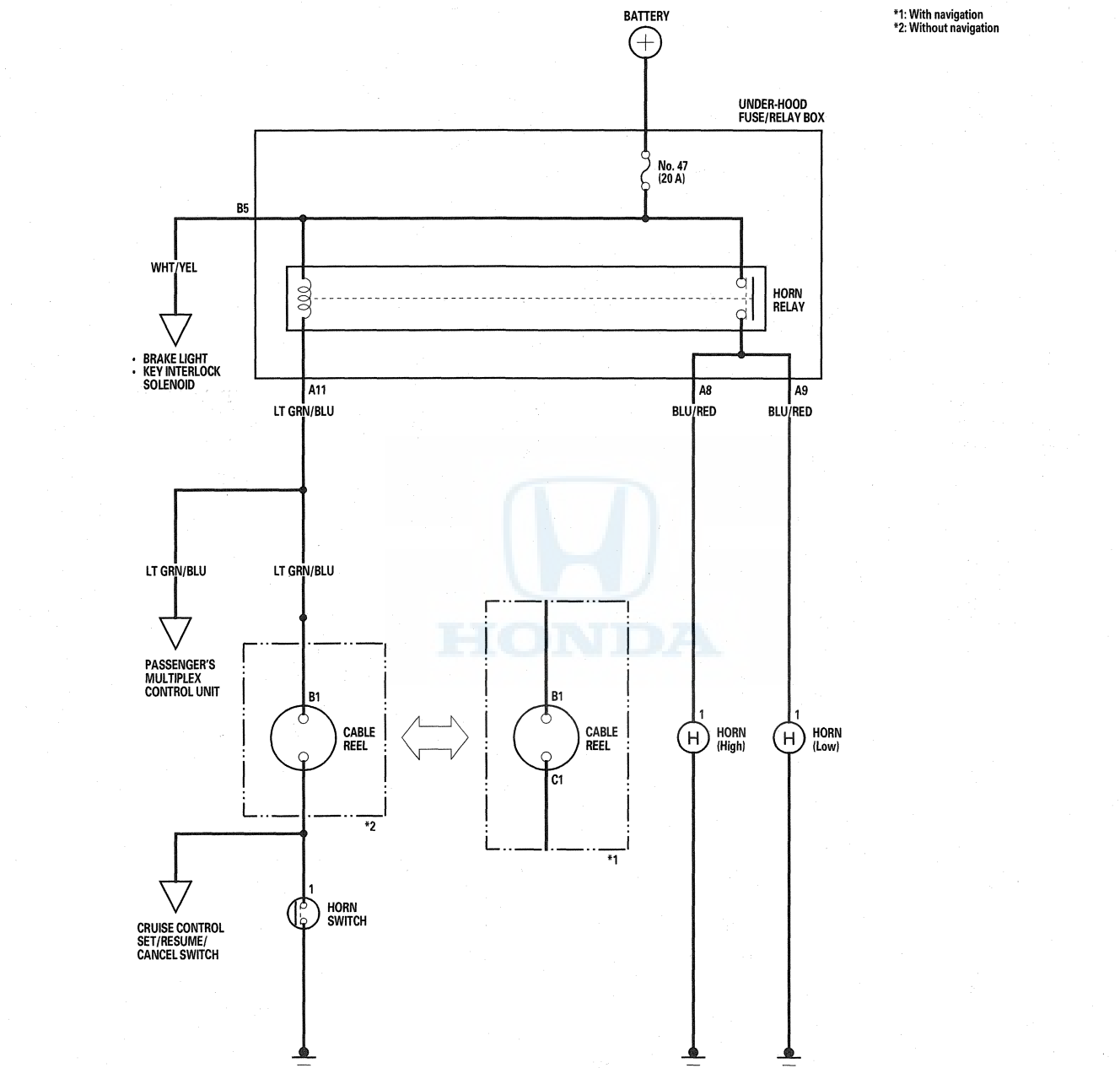


Component Location Index



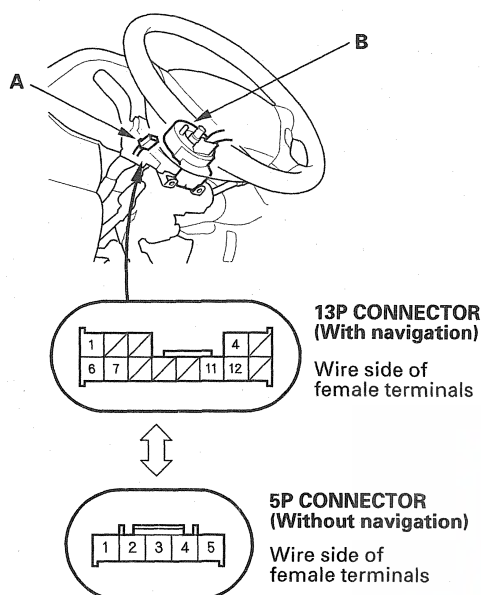
Horns

Circuit Diagram



Horn Switch Test

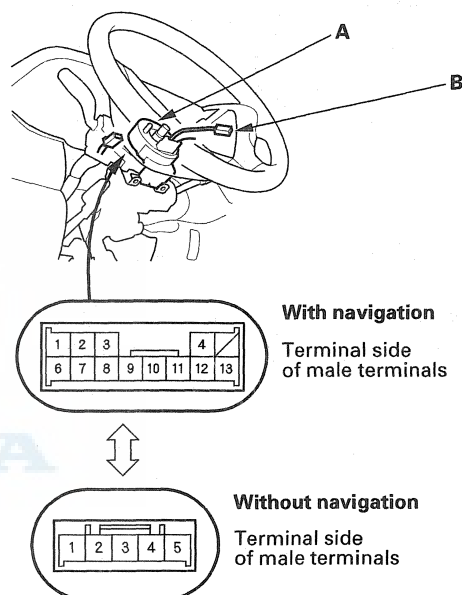
1. Remove the steering column covers (see page 17-25).
2. Disconnect dashboard wire harness B 13P (or 5P) connector (A) from the cable reel (B).



3. Using a jumper wire, connect dashboard wire harness B 13P (or 5P) connector (A) No. 1 terminal to body ground. The horns should sound.
 - If the horns sound, go to step 4.
 - If the horns don't sound, check the horn relay circuit.
4. Check for continuity between the No. 1 terminal of the cable reel side 13P (or 5P) connector and body ground with the horn switch pressed.
 - If there is continuity, the switch is OK.
 - If there is no continuity, go to step 6.

5. Remove the driver's airbag assembly (see page 23-201).
6. Check for continuity between the cable reel 13P (or 5P) connector (A) and the horn switch positive terminal (B).

- If there is no continuity, check for continuity of the radio remote switch harness. If the harness is OK, replace the cable reel (see page 23-212) and check for proper operation.
- If there is continuity, go to step 7.

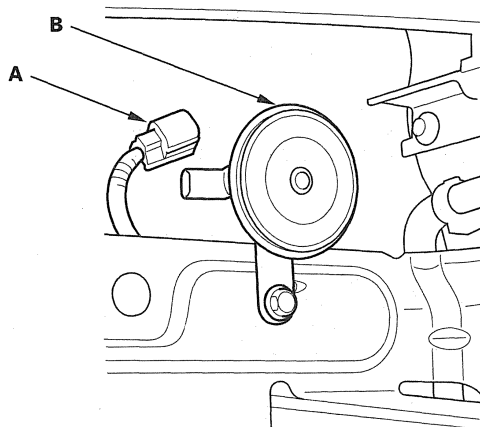


7. Check for continuity between the center of the steering column and ground.
 - If there is continuity, replace the horn plate.
 - If there is no continuity, replace the steering column.

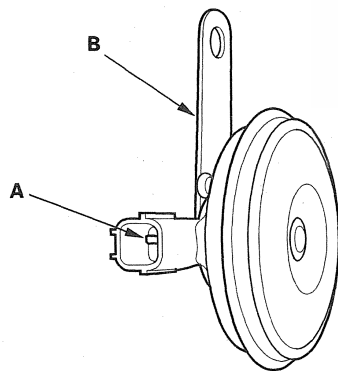
Horns

Horn Test/Replacement

1. Remove the front bumper (see page 20-138).
2. Disconnect the 1P connector (A) from each horn (B).

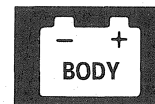


3. Remove the mounting bolt and horn.
4. Test each horn by connecting battery power to the terminal (A) and grounding the bracket (B). The horn should sound.

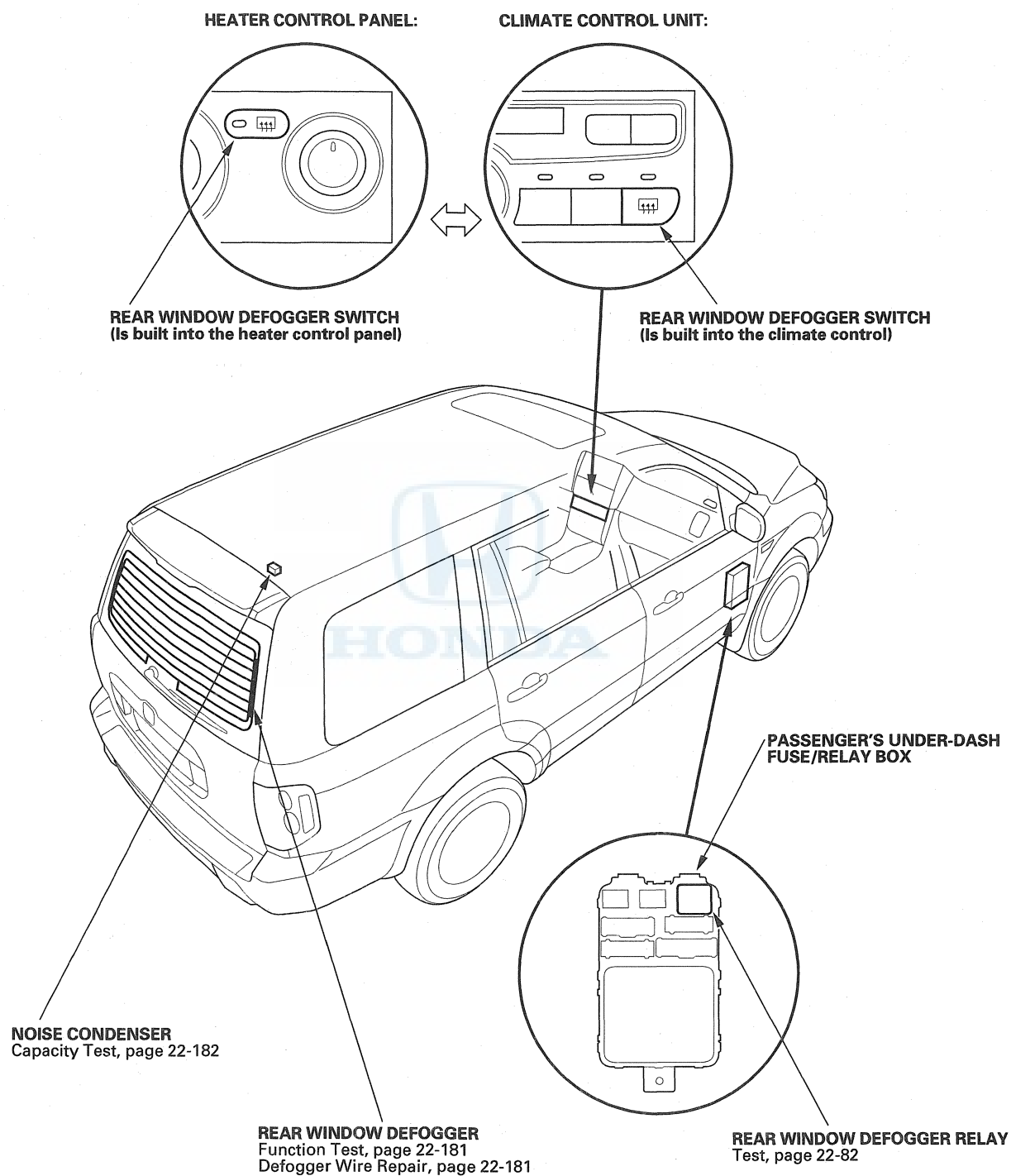


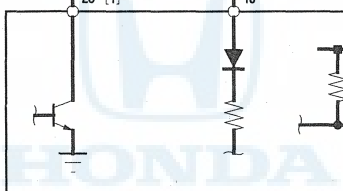
5. If it fails to sound, replace it.

Rear Window Defogger



Component Location Index







Function Test

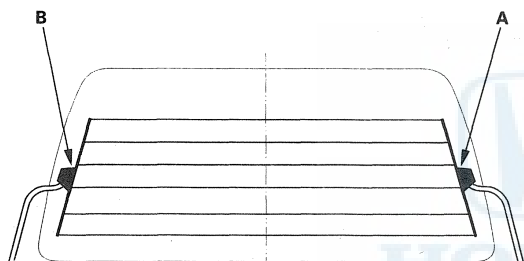
NOTE:

- Be careful not to scratch or damage the defogger wires with the tester probe.
- Before testing, check the No. 53 (30 A) fuse in the under-hood fuse/relay box and No. 3 (7.5 A) fuse in the driver's under-dash fuse/relay box.

1. Measure the voltage between the positive terminal (A) and body ground with the ignition switch and defogger switch ON.

There should be battery voltage.

- If there is no voltage, check for:
 - Faulty defogger relay.
 - An open in the BLK/GRN wire.
 - Faulty climate control panel unit or heater control panel.
- If there is battery voltage, go to step 2.



2. Measure the voltage between the positive terminal (A) and negative terminal (B).

There should be battery voltage.

- If there is no voltage, check for:
 - An open in the BLK wire.
 - Poor ground (G 652).
- If there is battery voltage, go to step 3.

3. Touch the voltmeter positive probe to the halfway point of each defogger wire, and the negative probe to the negative terminal.

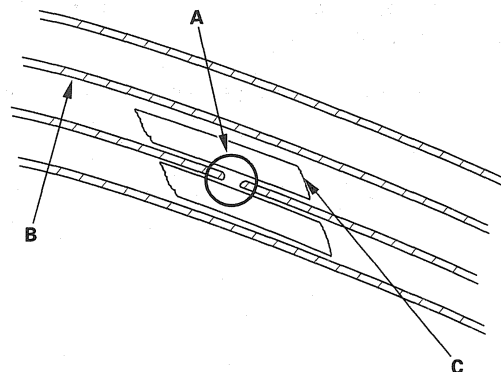
There should be about 6 V with the ignition switch and the defogger switch ON.

- If the voltage is as specified, the defogger wire is OK.
- If the voltage is not as specified, repair the defogger wire.
 - If it is battery voltage, there is a break in the negative half of the wire.
 - If it is 0 V, there is a break in the positive half of the wire.

Defogger Wire Repair

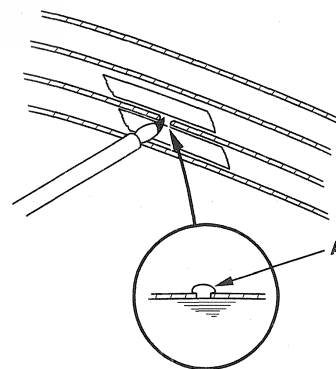
NOTE: To make an effective repair, the broken section must be no longer than 1 inch (25 mm).

1. Lightly rub the area around the broken section (A) with fine steel wool, then clean it with isopropyl alcohol.



2. Carefully mask above and below the broken portion of the defogger wire (B) with cellophane tape (C).

3. Mix the silver conductive paint thoroughly. Using a small brush, apply a heavy coat of paint (A) extending about 1/8" on both sides of the break. Allow 30 minutes to dry.



4. Check for continuity in the repaired wire.

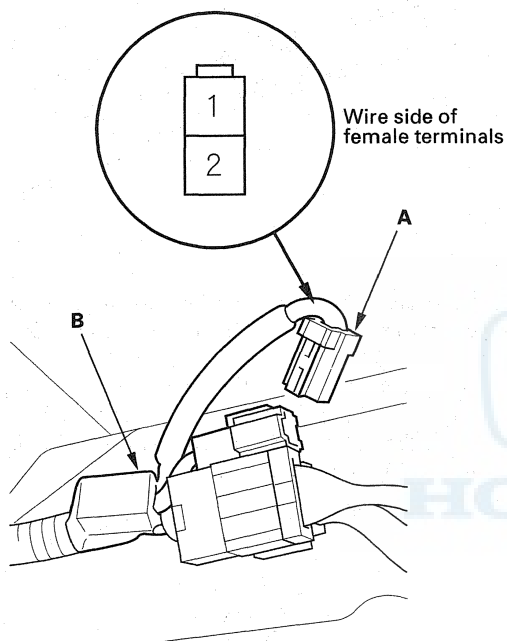
5. Apply a second coat of paint in the same way. Let it dry 3 hours before removing the tape.

Rear Window Defogger

Noise Condenser Capacity Test

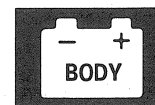
1. Remove the right side trim panel (see page 20-80).
2. Disconnect the 2P connector (A) from the noise condenser (B).
3. Use a commercially available condenser tester. Connect the condenser tester probes and measure the condenser capacity.

No. 1 and No. 2 terminal capacity: 0.47 microfarads

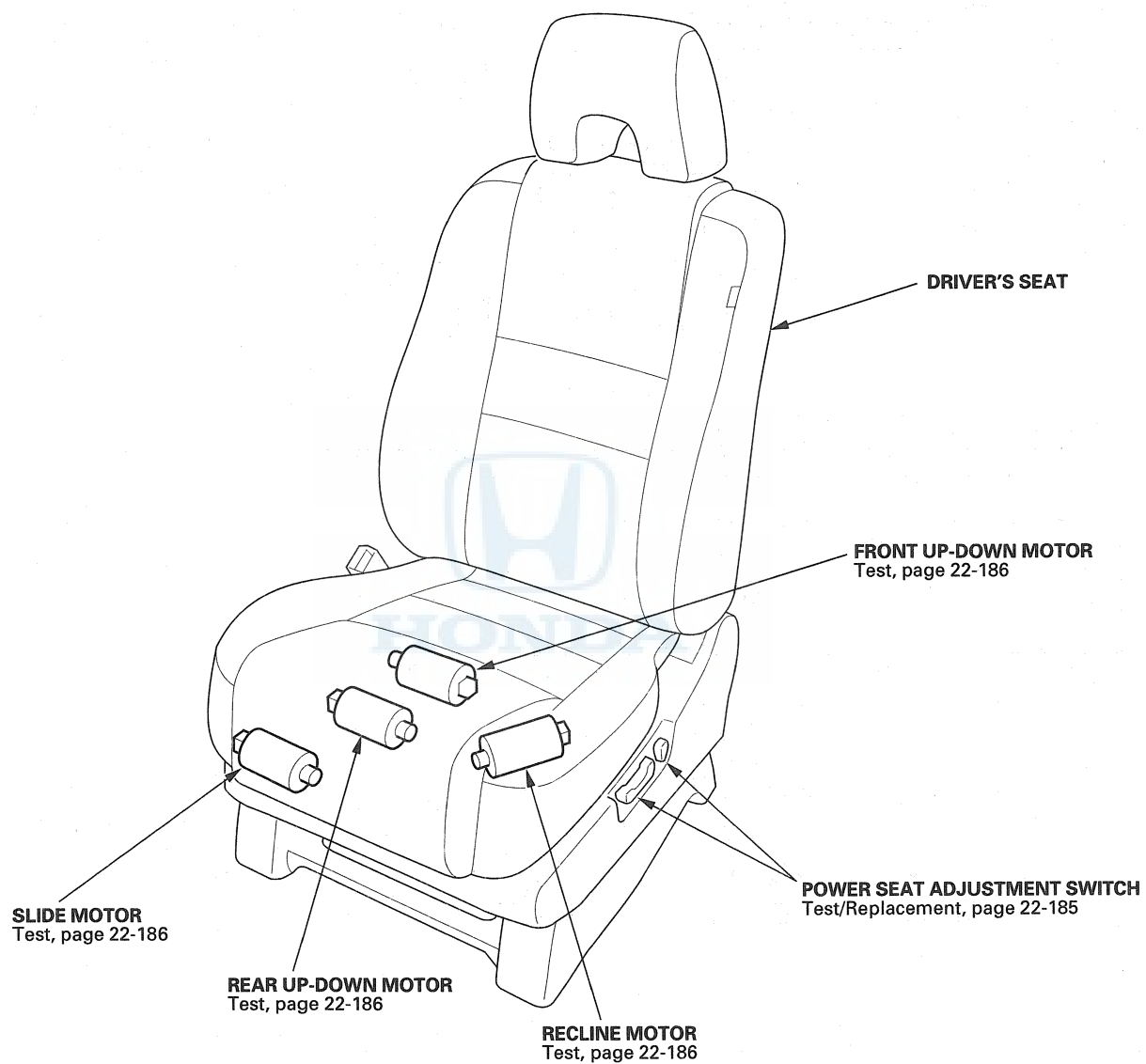


4. If not within the specifications, replace the noise condenser.

Power Seats

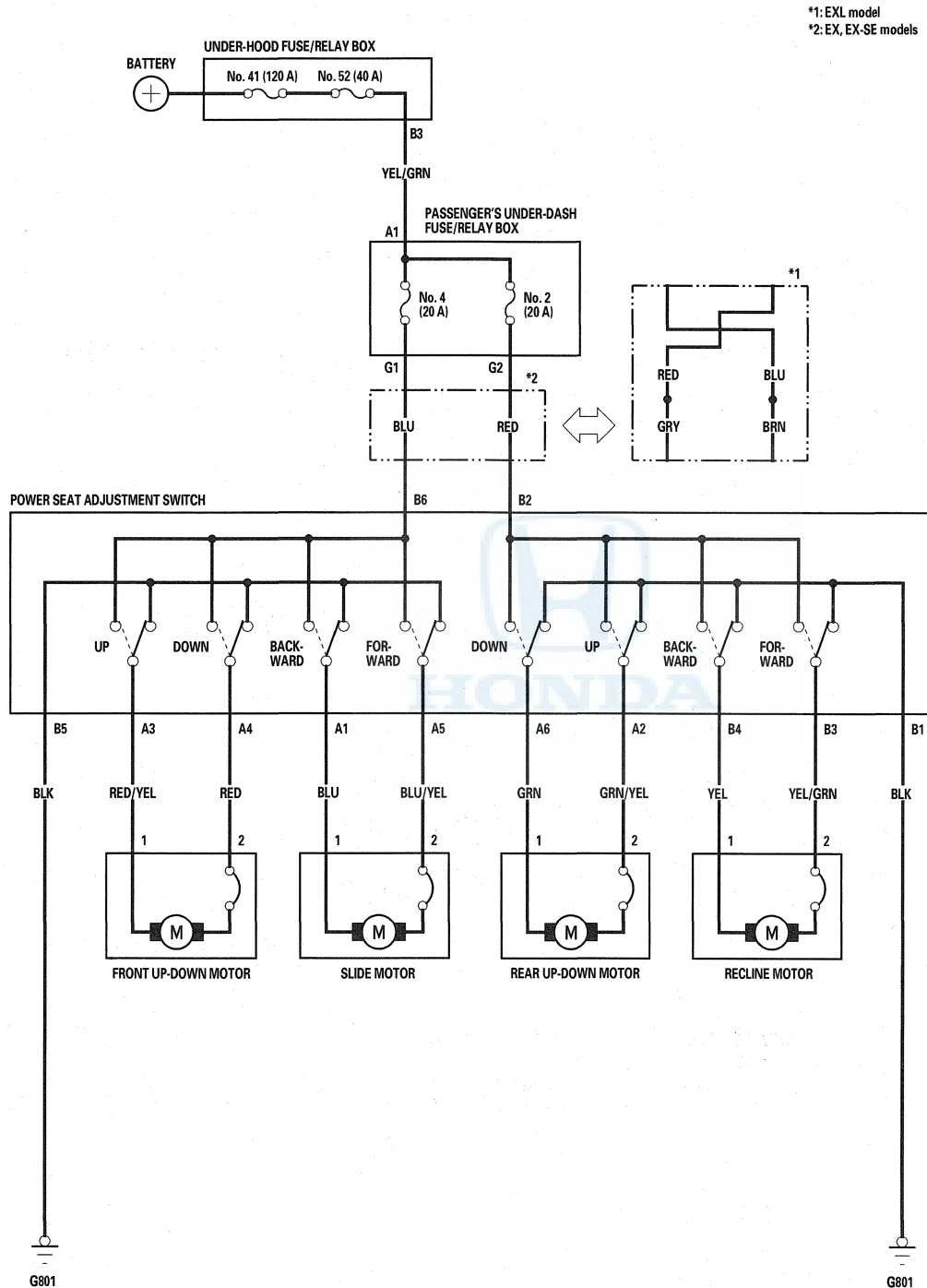


Component Location Index



Power Seats

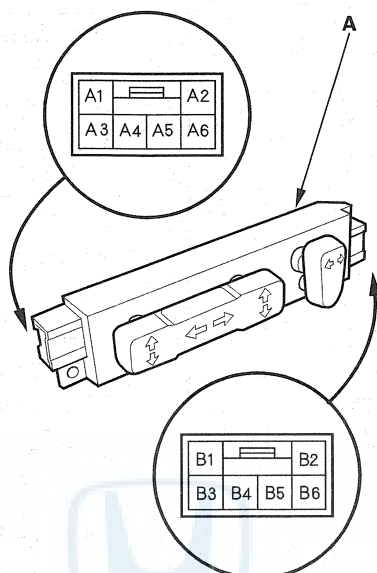
Circuit Diagram





Power Seat Adjustment Switch Test/Replacement

1. Remove the power seat adjustment switch knobs and recline cover from the driver's seat, then remove the two screws and the power seat switch (see page 20-107).
2. Disconnect the 6P connectors from the power seat adjustment switch (A).



3. Reinstall the adjustment switch knobs to the switch.
4. Check for continuity between the terminals in each switch position according to the table.

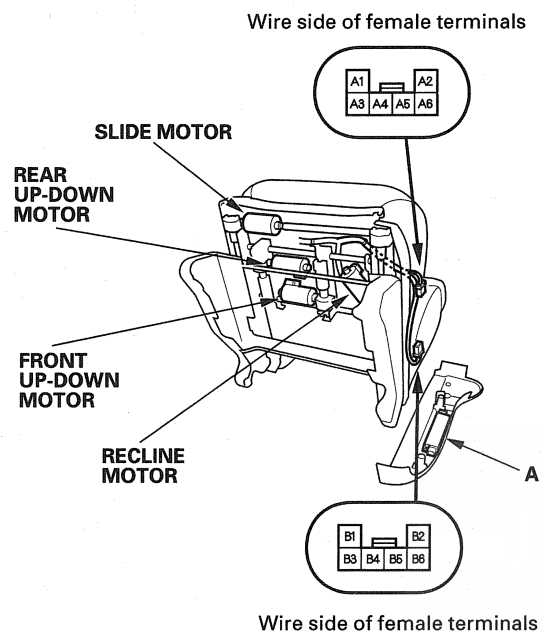
Terminal		A1	A2	A3	A4	A5	A6	B1	B2	B3	B4	B5	B6
Position													
SLIDE SWITCH	Forward	○				○						○	○
	Backward	○				○						○	○
RECLINE SWITCH	Forward							○	○	○	○		
	Backward							○	○	○	○		
FRONT UP-DOWN SWITCH	UP			○	○							○	○
	DOWN			○	○							○	○
REAR UP-DOWN SWITCH	UP		○					○	○	○			
	DOWN		○					○	○	○			

5. If the continuity is not as specified, replace the switch.

Power Seats

Motor Test

1. Remove the driver's seat (see page 20-104).
2. Disconnect the 6P connectors from the adjustment switch (A).



3. Test each motor by applying battery voltage and body ground to the terminals.

Slide motor:

Terminal	A1	A5
Position		
Forward	⊖	⊕
Backward	⊕	⊖

Recline motor:

Terminal	B3	B4
Position		
Forward	⊕	⊖
Backward	⊖	⊕

Front up-down motor:

Terminal	A3	A4
Position		
UP	⊕	⊖
DOWN	⊖	⊕

Rear up-down motor:

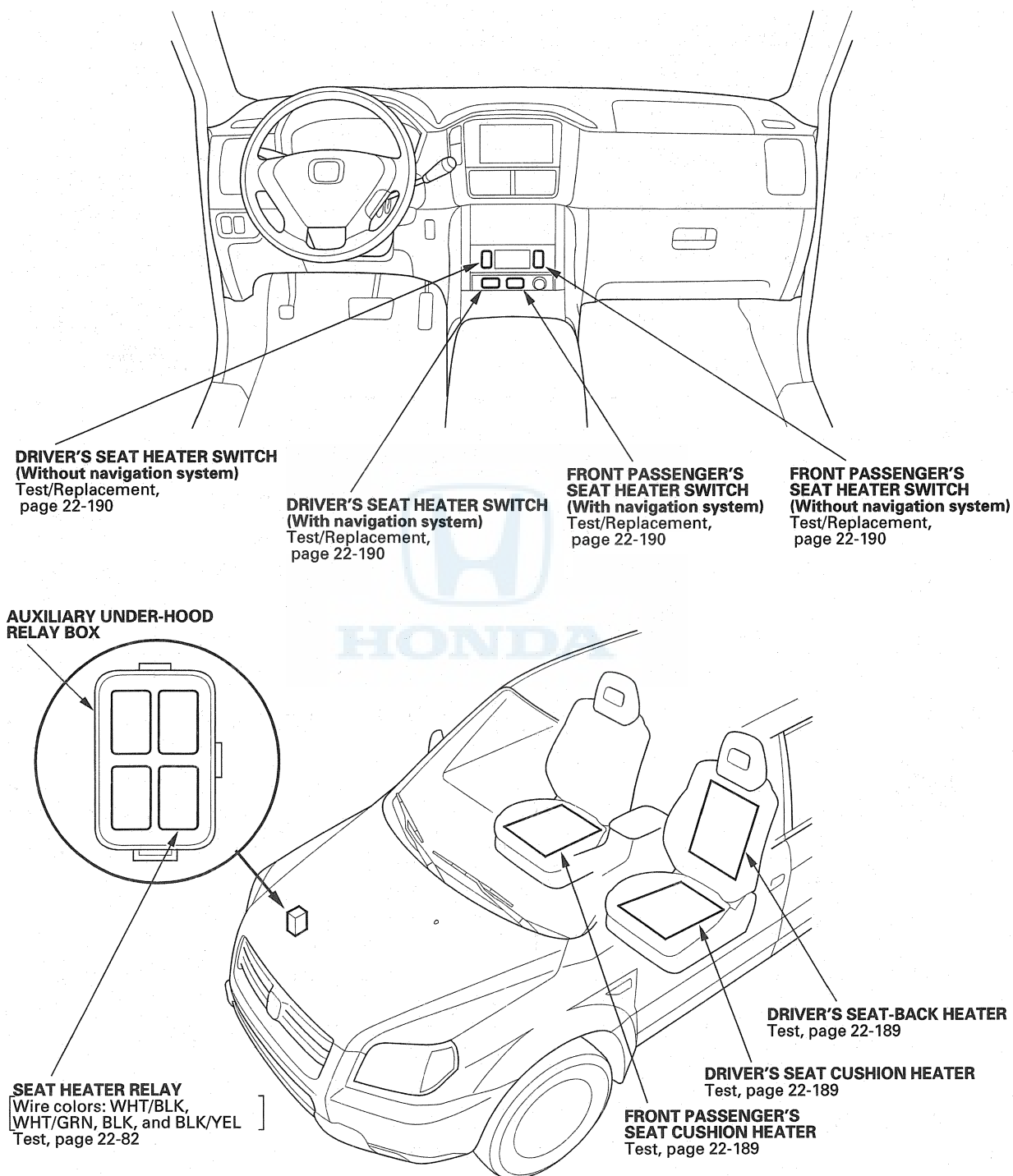
Terminal	A2	A6
Position		
UP	⊕	⊖
DOWN	⊖	⊕

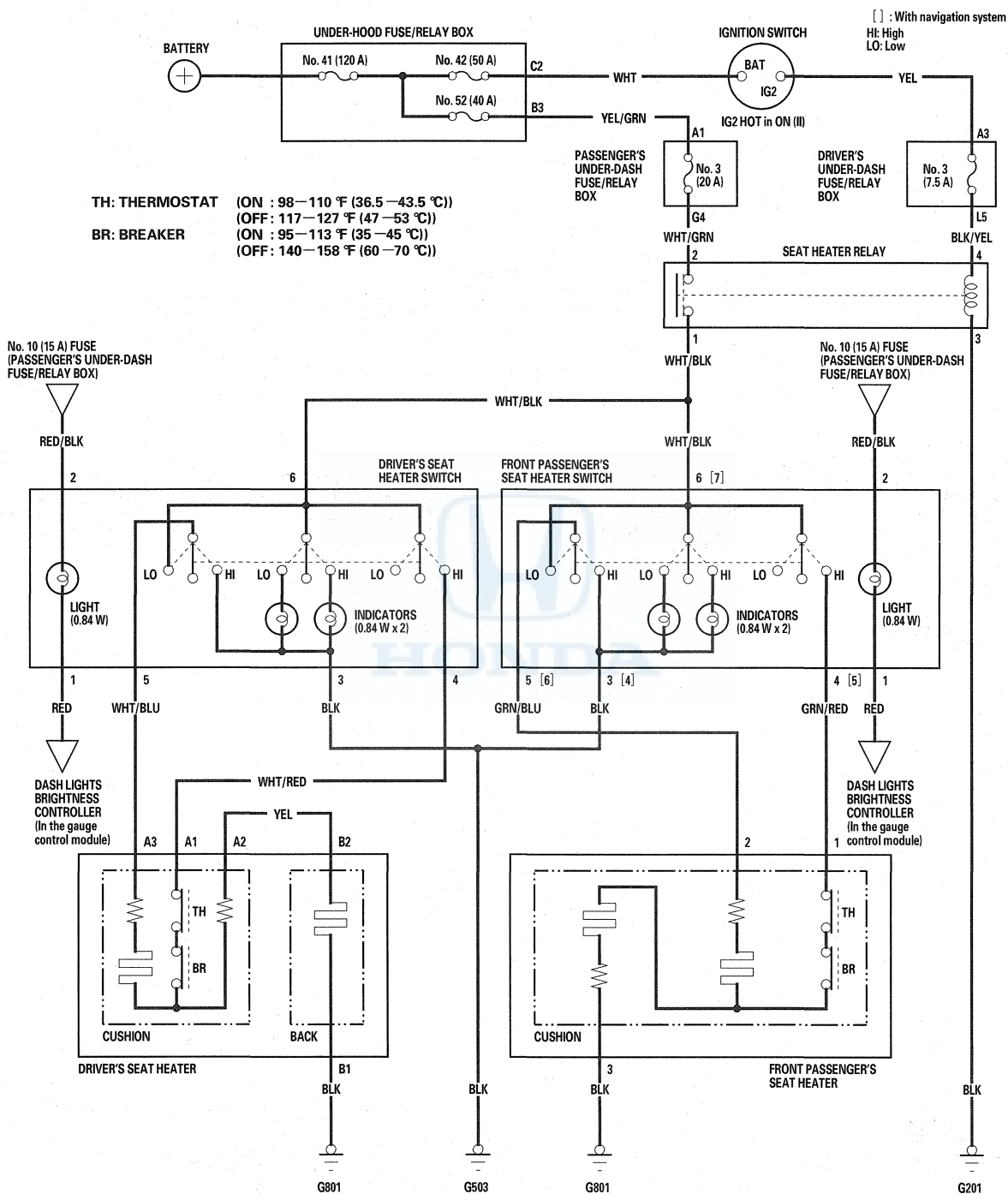
4. If the motor does not run or fails to run smoothly, check for an open in the driver's seat wire harness between the 6P connector and each 2P power seat motor connector. If the harness is OK, replace the motor (see page 20-107).

Seat Heaters



Component Location Index

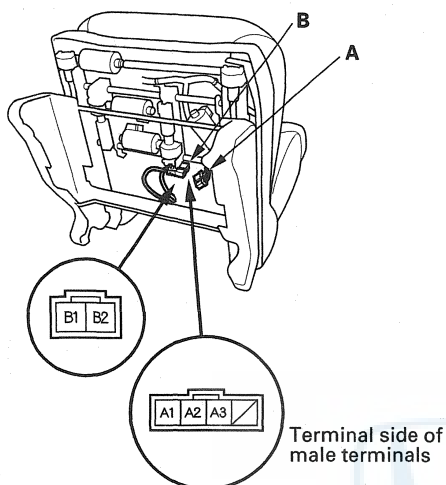




Seat Heater Test

Driver's Seat

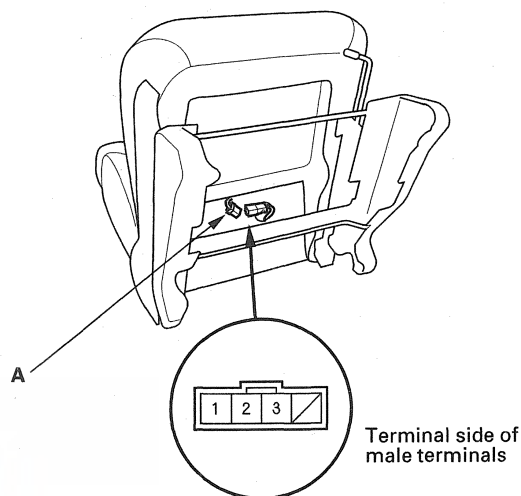
1. Remove the driver's seat (see page 20-104).
2. Disconnect the 4P connector (A) and 2P connector (B) from the seat heater.



3. **Seat Cushion Heater:**
Check for continuity between the A1 and A2 terminals, and A1 and A3 terminals of the 4P connector A. There should be continuity.
4. **Seat-back Heater:**
Check for continuity between the B1 and B2 terminals of the 2P connector B. There should be continuity.
5. If the continuity is not as specified, replace the seat heater.
6. If only the seat-back heater fails to warm-up, check for on open in the YEL wire of the driver's seat wire harness.

Front Passenger's Seat

1. Remove the passenger's seat (see page 20-104).
2. Disconnect the 4P connector (A) from the seat heater.



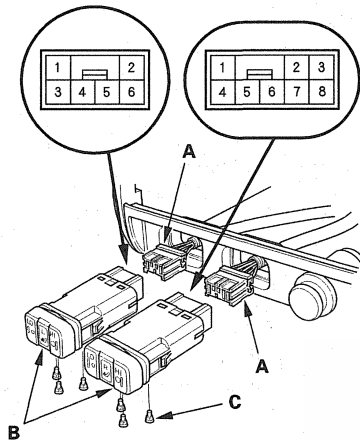
3. Check for continuity between the No. 1 and No. 3 terminals, and No. 1 and No. 2 terminals of the 4P connector. There should be continuity.
4. If the continuity is not as specified, replace the seat heater.

Seat Heaters

Switch Test/Replacement

Driver's and Passenger's Switch (With Navigation System)

1. Remove the center lower cover (see page 20-88).
2. Disconnect the 6P or 8P connector (A) from the seat heater switch (B), and remove the switch.



3. Check for continuity between the terminal in each switch position according the table.

Driver's seat

Terminal		1	2	3	6	4	5
Position							
ON	HIGH	○	⊖	○	○	⊖	○
	LOW	○	⊖	○	○	⊖	○
OFF		○	⊖	○			

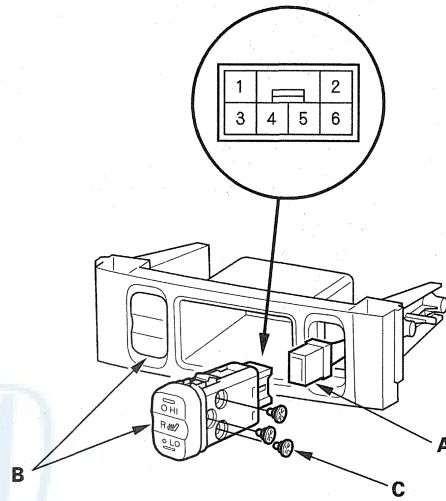
passenger's seat

Terminal		1	2	4	7	5	6
Position							
ON	HIGH	○	⊖	○	○	⊖	○
	LOW	○	⊖	○	○	⊖	○
OFF		○	⊖	○			

4. If the continuity is not as specified, replace the switch.
5. If any of the illumination bulbs (C) are blown, replace it.

Driver's and Passenger's Switch (Without Navigation System)

1. Remove the center lower cover (see page 20-88).
2. Disconnect the 6P connector (A) from each seat heater switch (B), and remove the switch.

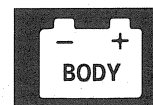


3. Check for continuity between the terminal in each switch position according the table.

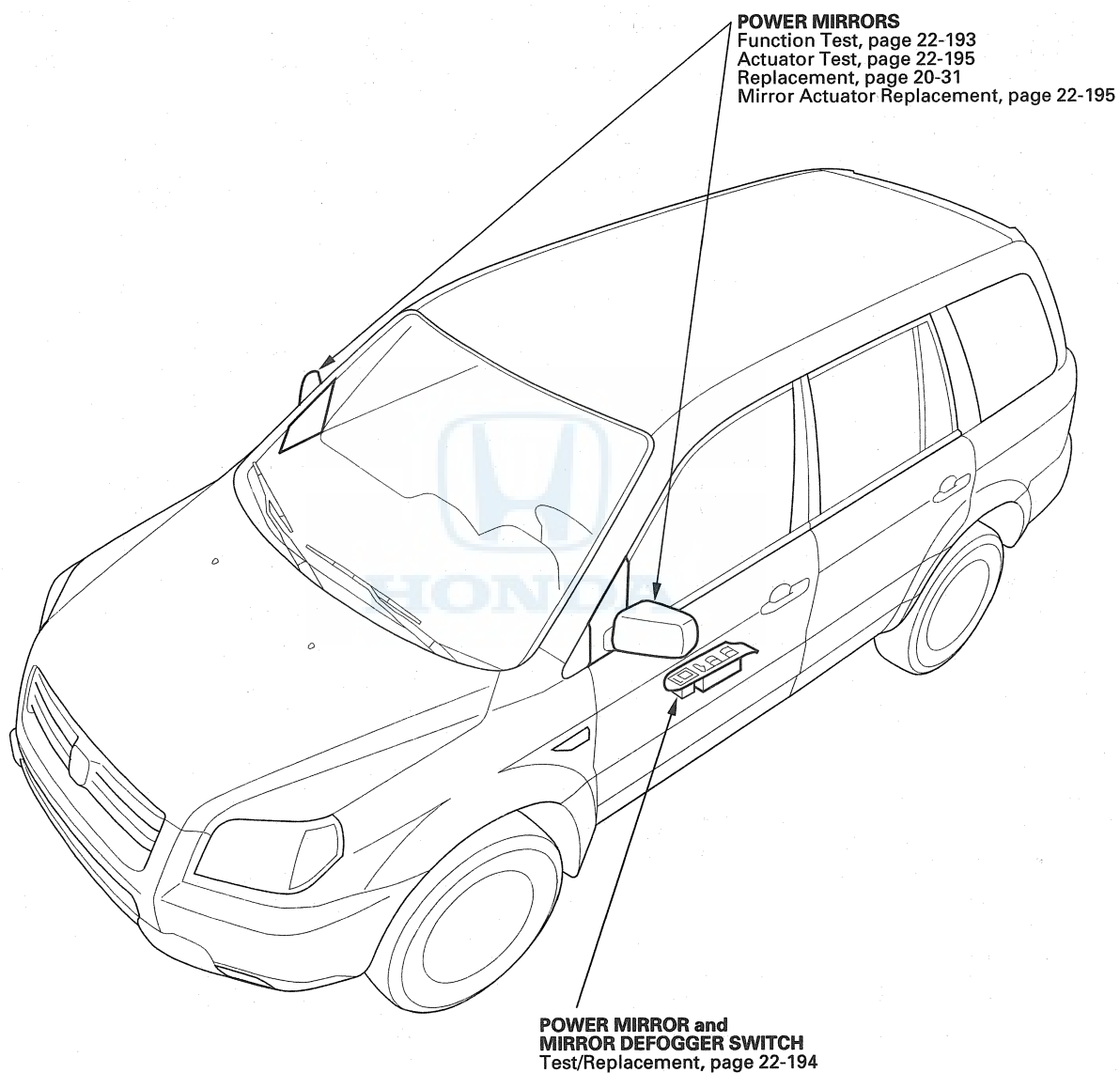
Terminal		1	2	3	6	4	5
Position							
ON	HIGH	○	⊖	○	○	⊖	○
	LOW	○	⊖	○	○	⊖	○
OFF		○	⊖	○			

4. If the continuity is not as specified, replace the switch.
5. If any of the illumination bulbs (C) are blown, replace it.

Power Mirrors

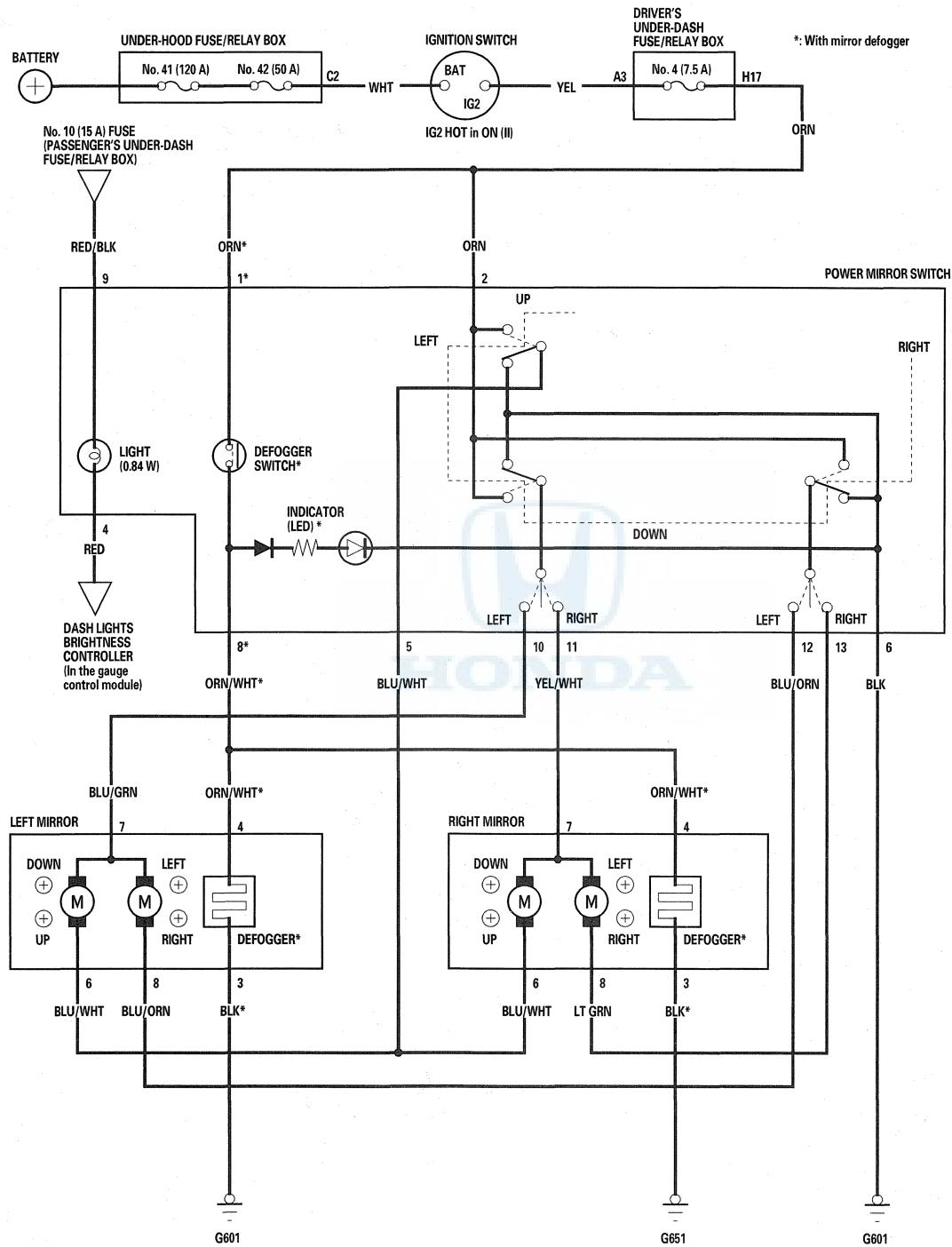


Component Location Index



Power Mirrors

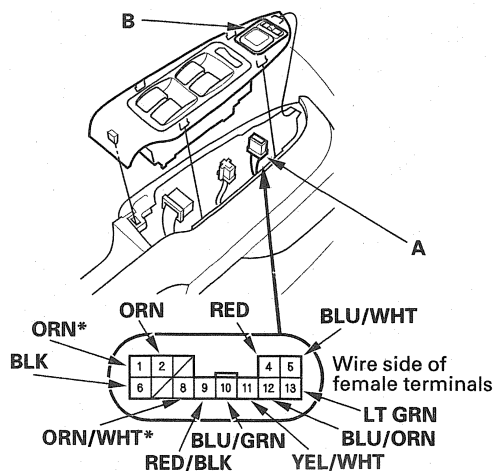
Circuit Diagram





Function Test

1. Remove the driver's door switch trim (see page 20-6).



*:With mirror defogger

2. Disconnect the 13P connector (A) from the power mirror switch (B), and inspect the terminals. If OK, go to step 3.
3. Choose the appropriate test based on the symptom:
 - Both mirrors don't work, go to step 4.
 - Left mirror doesn't work, go to step 6.
 - Right mirror doesn't work, go to step 7.
 - Defoggers don't work, go to step 8.

Both mirrors

4. Reconnect the power mirror switch connector, and measure the voltage between the No. 2 terminal and body ground with the ignition switch ON (II) while operating the power mirror switch. There should be battery voltage.
 - If there is no voltage, check for:
 - Blown No. 4 (7.5 A) fuse in the driver's under-dash fuse/relay box.
 - An open in the ORN wire.
 - If there is battery voltage, go to step 5.
5. Measure the voltage between the No. 6 terminal and body ground while operating the power mirror switch. There should be less than 1 V.
 - If there is more than 1 V, check for:
 - An open in the BLK wire.
 - Poor ground (G 601).
 - If there is less than 1 V, check both mirrors individually as described in the step 6 to 8.

Left mirror

6. Connect the No. 2 terminal to the No. 10 terminal, and the No. 5 (or No. 12) terminal to body ground with jumper wires. The left mirror should tilt down (or swing left) with the ignition switch ON (II).
 - If the mirror does not tilt down (or does not swing left), check for an open in the BLU/WHT (or BLU/ORN) wire between the left mirror and the 13P connector. If the wire is OK, check the left mirror actuator.
 - If the mirror neither tilts down (nor swings left) check for an open in the BLU/GRN wire.
 - If the mirror works properly, check the mirror switch.

Right mirror

7. Connect the No. 2 terminal to the No. 11 terminal, and the No. 5 (or No. 13) terminal to body ground with jumper wires. The right mirror should tilt down (or swing left) with the ignition switch ON (II).
 - If the mirror does not tilt down (or does not swing left), check for an open in the BLU/WHT (or LT GRN) wire between the right mirror and the 13P connector. If the wire is OK, check the right mirror actuator.
 - If the mirror neither tilts down (nor swings left) check for an open in the YEL/WHT wire.
 - If the mirror works properly, check the mirror switch.

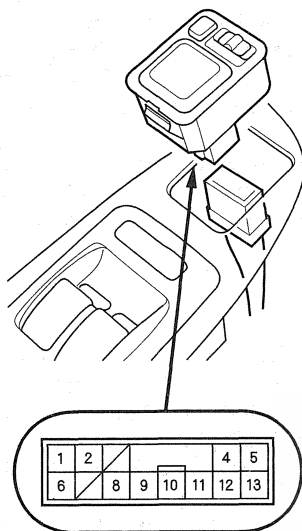
Defogger

8. Connect the No. 1 and No. 8 terminals with a jumper wire, and measure the voltage between the No. 8 terminal and body ground. There should be battery voltage and both mirrors should warm up with the ignition switch ON (II).
 - If there is no voltage or neither warms up, check for:
 - An open in the ORN and ORN/WHT wires.
 - Blown No. 4 (7.5 A) fuse in the driver's under-dash fuse/relay box.
 - Poor ground (G 601, G651).
 - If only one fails to warm up, check its defogger.
 - If both warm up, check the defogger switch.

Power Mirrors

Power Mirror and Mirror Defogger Switch Test/Replacement

- 1. Remove the driver's door switch trim (see page 20-6).
- 2. Disconnect the 13P connector from the power mirror switch.



- 3. Check for continuity between the terminals in each switch position according to the table.

Mirror Switch

Terminal Position	2	5	6	10	11	12	13
L	UP	○—○	○—○				
	DOWN	○—○	○—○	○—○			
	LEFT	○—○	○—○	○—○		○—○	
	RIGHT	○—○	○—○	○—○		○—○	
R	UP	○—○	○—○	○—○			
	DOWN	○—○	○—○	○—○			
	LEFT	○—○	○—○	○—○		○—○	○—○
	RIGHT	○—○	○—○	○—○		○—○	○—○

Defogger Switch

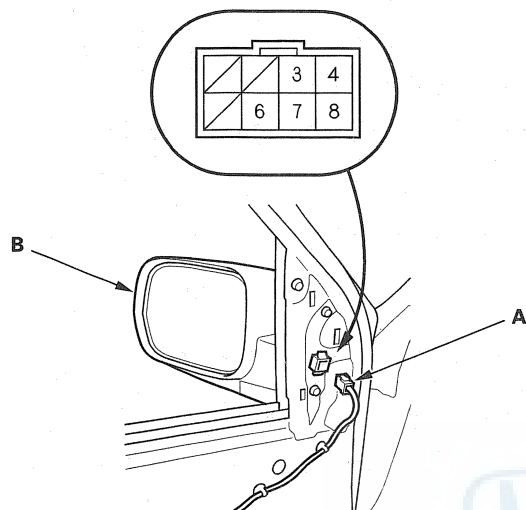
Terminal Position	1	8
ON	○—○	○—○
OFF		

- 4. If the continuity is not as specified, replace the switch.



Power Mirror Actuator Test

1. Remove the mirror mount cover (see page 20-31).
2. Disconnect the 8P connector (A) from the power mirror actuator (B).



3. Check actuator operation by connecting power and ground according to the table.

Terminal	6	7	8
Position			
TILT UP	+	-	
TILT DOWN	-	+	
SWING LEFT		+	-
SWING RIGHT		-	+

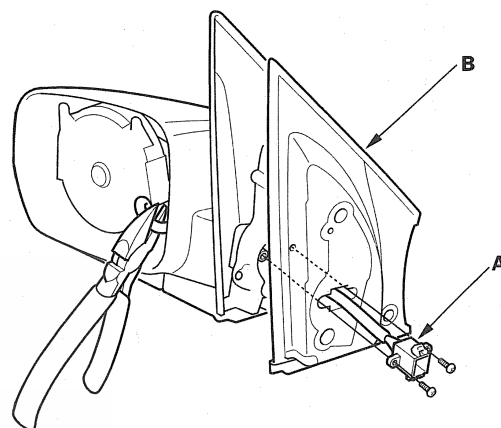
4. If the mirror fails to work properly, replace the mirror actuator.

Defogger Test

5. Check for continuity between the No. 3 and No. 4 terminals of the 8P connector. There should be continuity. If there is no continuity, check for an open circuit.

Power Mirror Actuator Replacement

1. Remove the power mirror (see page 20-31) and mirror holder (see page 20-32).
2. Disconnect the 8P connector from the mirror actuator.
3. Record the terminal location and wire colors, then cut the mirror actuator wires with the wire cutter.



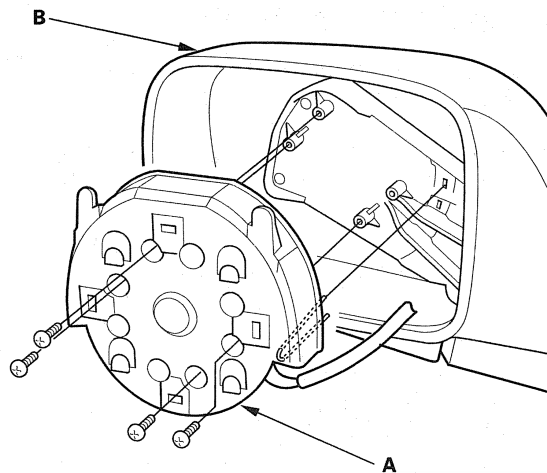
4. Remove the two TORX screws from the mirror connector (A), then remove the connector and cover (B).

(cont'd)

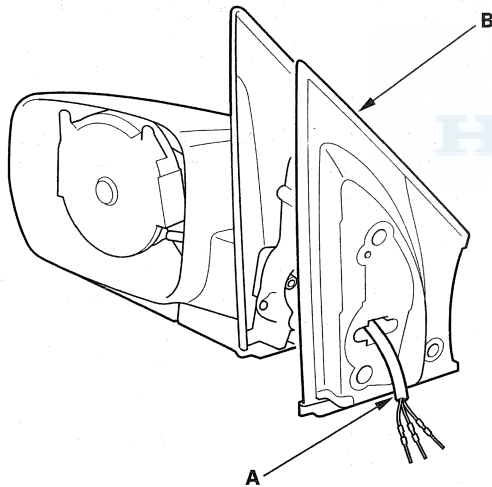
Power Mirrors

Power Mirror Actuator Replacement (cont'd)

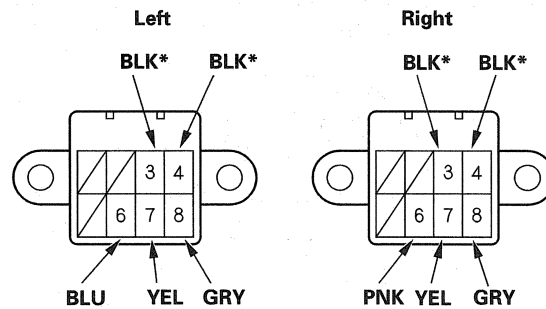
5. Remove the four TORX screws and separate the actuator (A) from the mirror housing (B).



6. Route the wire harness (A) of the new actuator through the hole in the bracket (B).



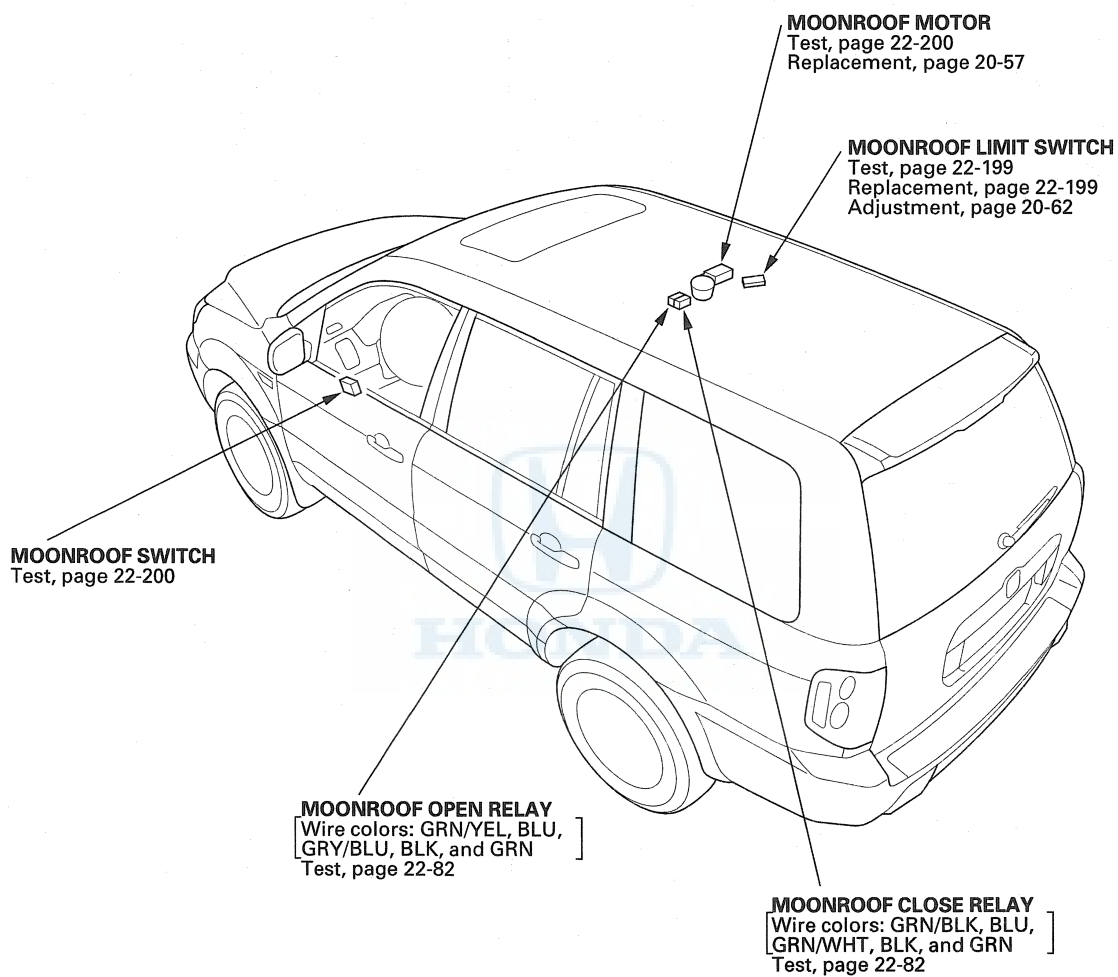
7. Insert the terminals into the connector in the original arrangement as shown.



*: With mirror defogger

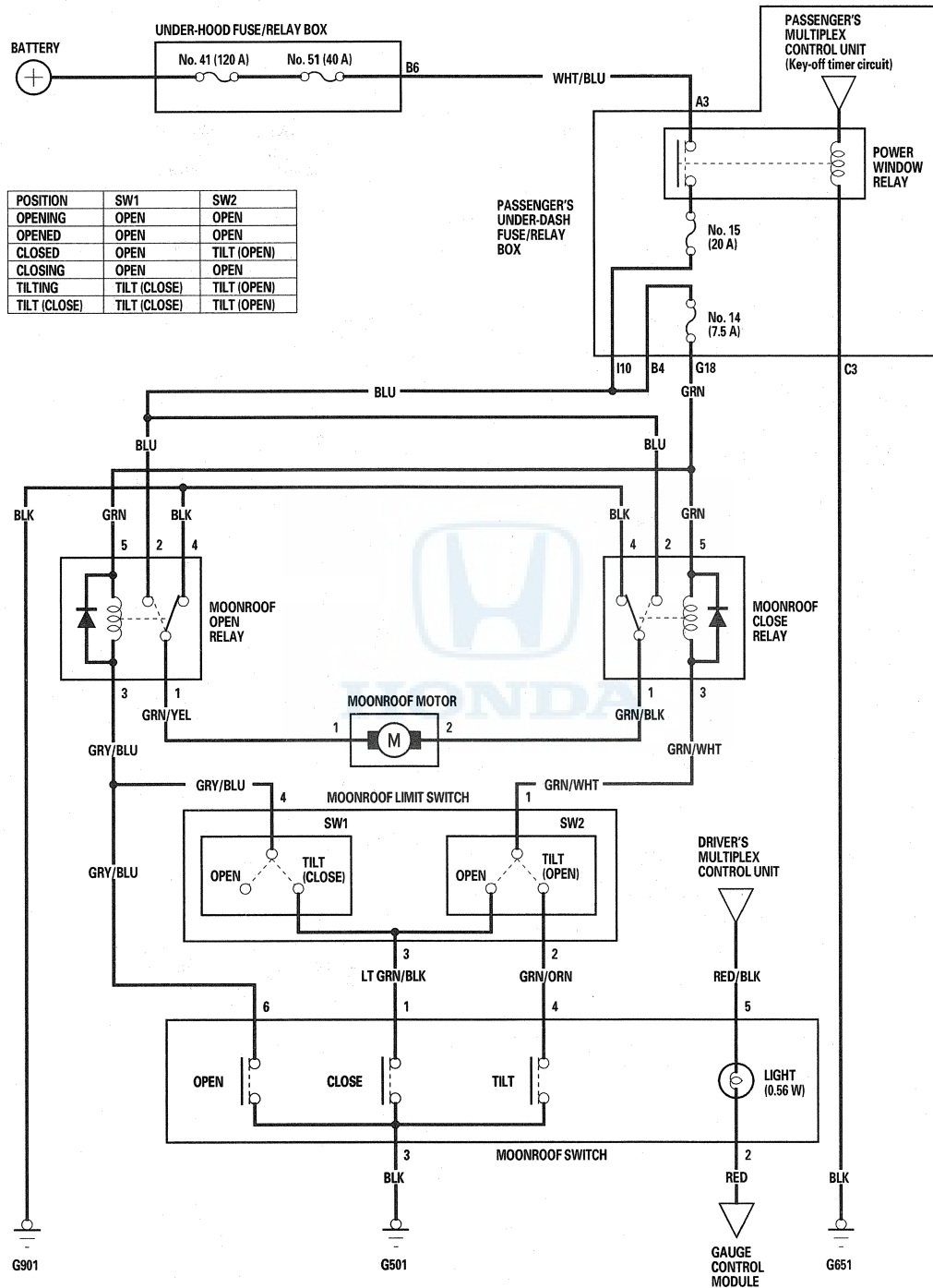
8. Reassemble in the reverse order of disassembly. Be careful not to break the mirror holder when reinstalling it to the actuator (see page 20-32).
9. Reinstall the mirror assembly to the door.
10. Operate the power mirror to ensure smooth operation.

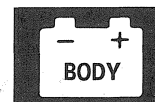
Component Location Index



Moonroof

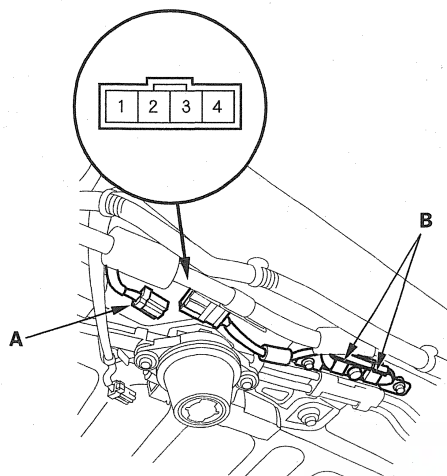
Circuit Diagram





Limit Switch Test

1. Remove the headliner (see page 20-83).
2. Disconnect the 4P connector (A) from the moonroof limit switch (B).



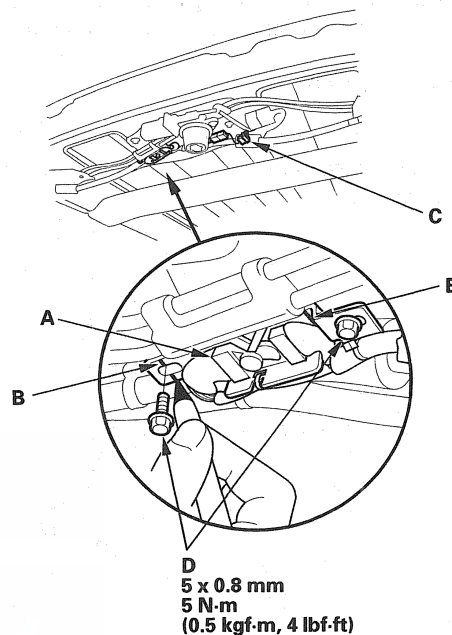
3. Check for continuity between the terminals in each switch position according to the table.

Terminal	1	2	3	4
Position				
TILT	○—○		○—○	
OPEN	○		○	
CLOSE	○—○			

4. If the continuity is not as specified, adjust the moonroof limit switch (see page 20-62).
If the continuity is still not as specified, replace the moonroof limit switch.

Limit Switch Replacement

1. Remove the headliner (see page 20-83).
2. Mark the position of the moonroof limit switch (A) on the moonroof frame (B).



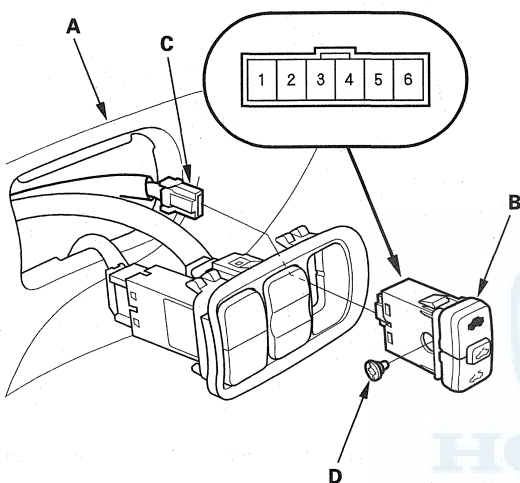
3. Disconnect the 4P connector (C) from the moonroof limit switch.
4. Remove the two mounting bolts (D).
5. Install the switch in the reverse order of removal.
6. Adjust the moonroof limit switch as needed (see page 20-62).

Moonroof

Switch Test

NOTE: The moonroof can still be operated for about 10 minutes after the ignition switch is turned from the "II" to the "I" or "O" positions, as long as none of the doors are opened. This provides a convenience to parked occupants while offering a degree of security against unwanted or accidental moonroof operation.

1. Remove the switch panel (A).
2. Carefully push out the moonroof switch (B) from behind the dashboard lower cover, then disconnect the 6P connector (C) from the switch.



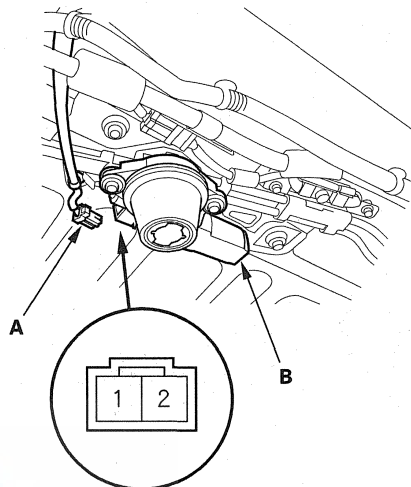
3. Check for continuity between the terminals in each switch position according to the table.

Terminal Position	2	5	1	3	4	6
CLOSE			○—○			
TILT	○—○	○		○—○		
OPEN				○—○	○—○	

4. If the continuity is not as specified, replace the bulb (D) or the switch.

Moonroof Motor Test

1. Remove the headliner (see page 20-83).
2. Disconnect the 2P connector (A) from the moonroof motor (B).



3. Check the motor by connecting power and ground according to the table.

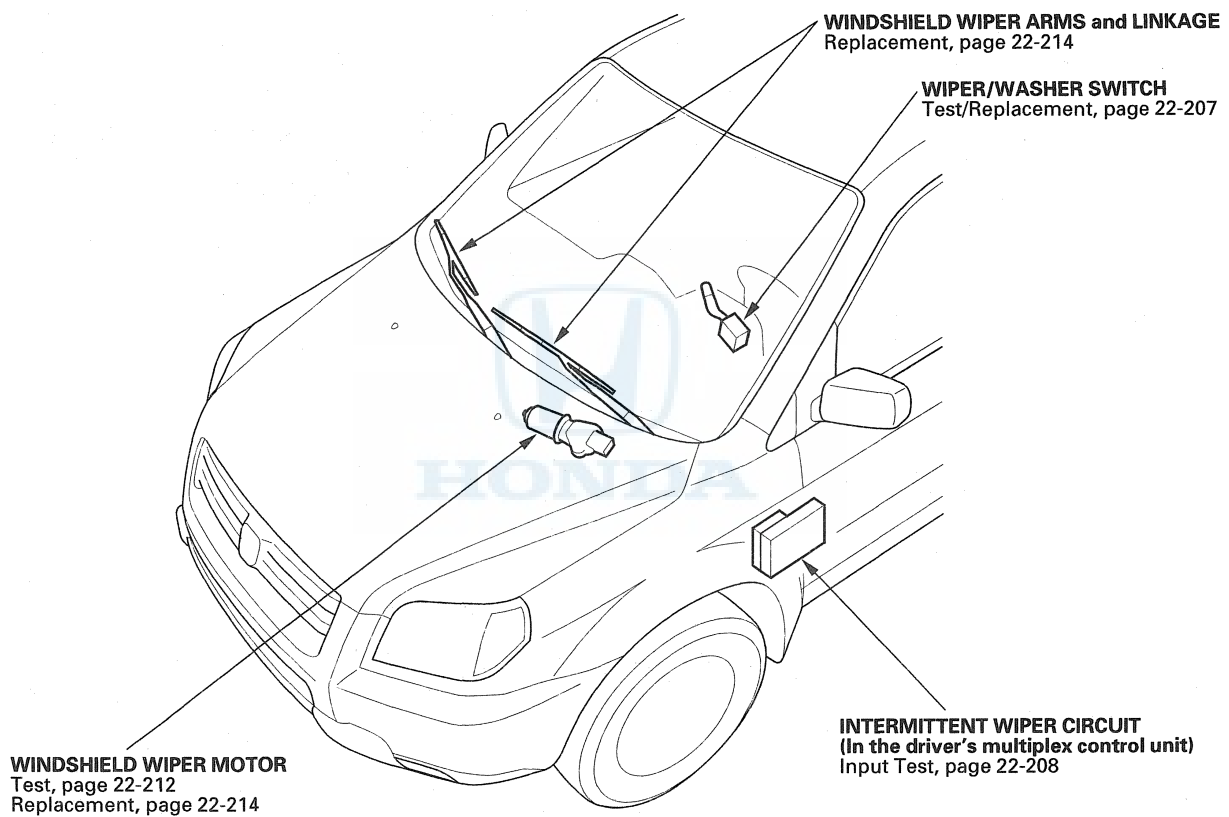
Terminal Position	1	2
OPEN	⊕	⊖
CLOSE	⊖	⊕

4. If the motor does not run, replace it.

NOTE: See closing force check (see page 20-63) for motor clutch test.



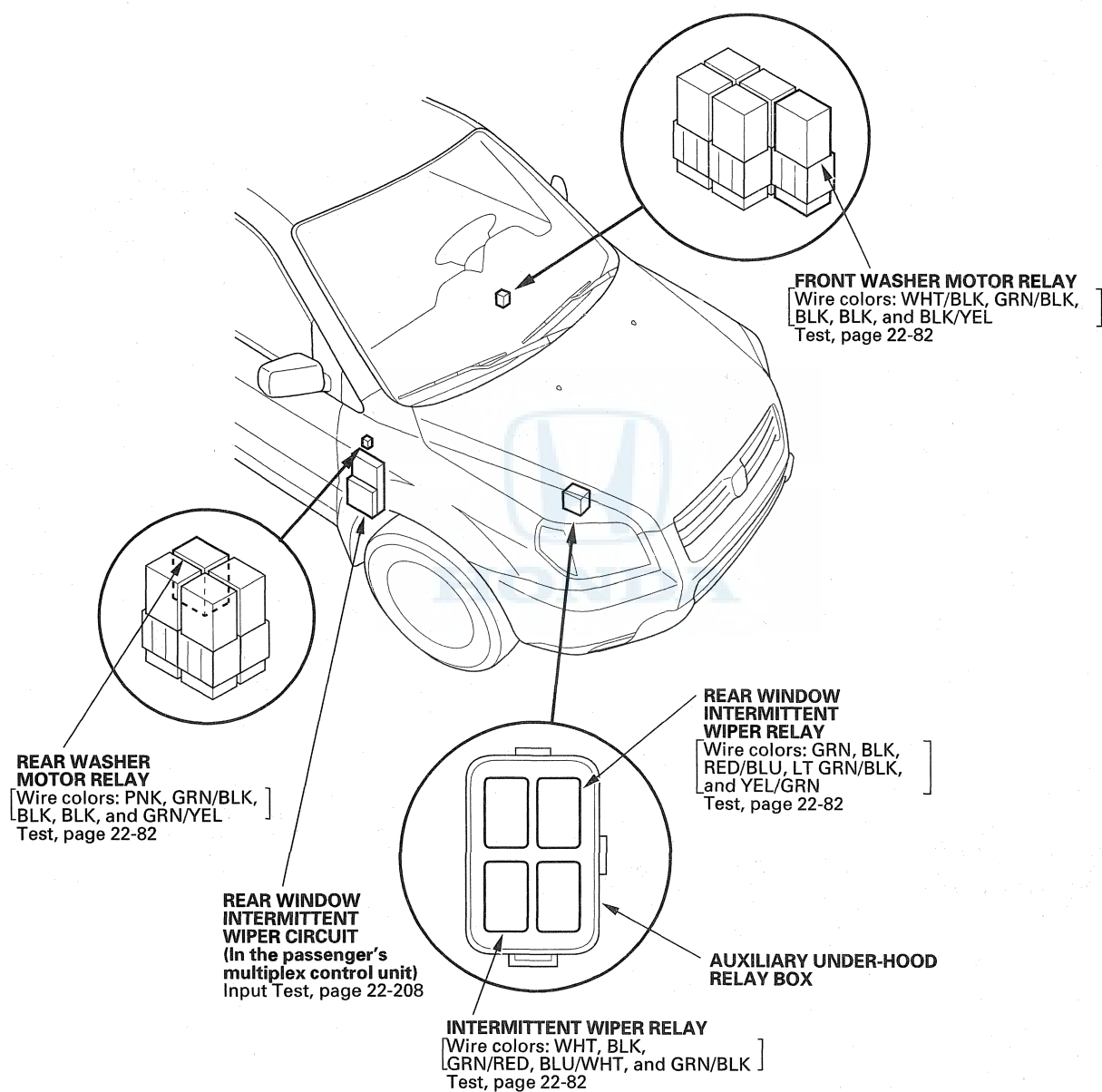
Component Location Index

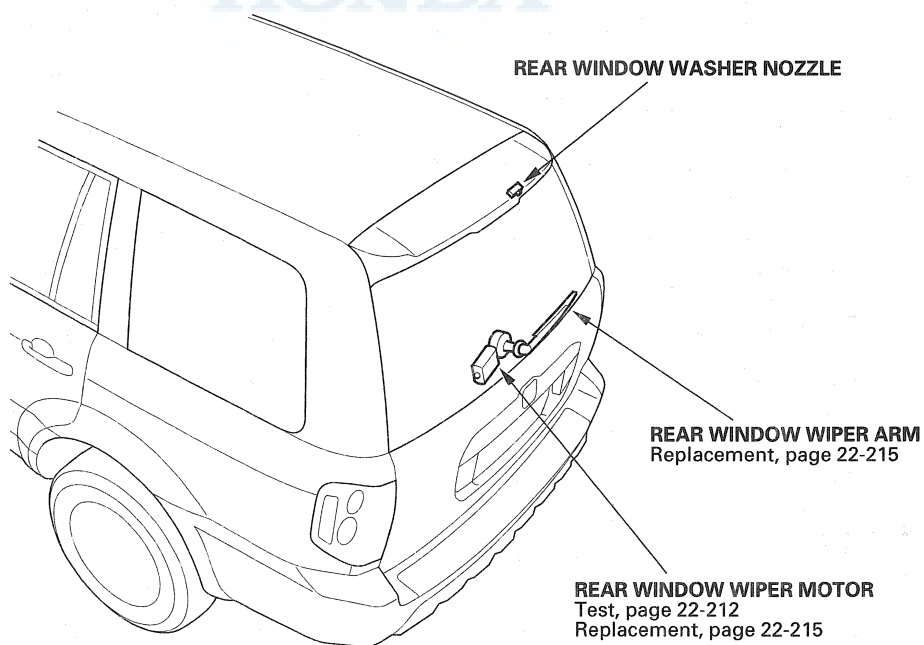
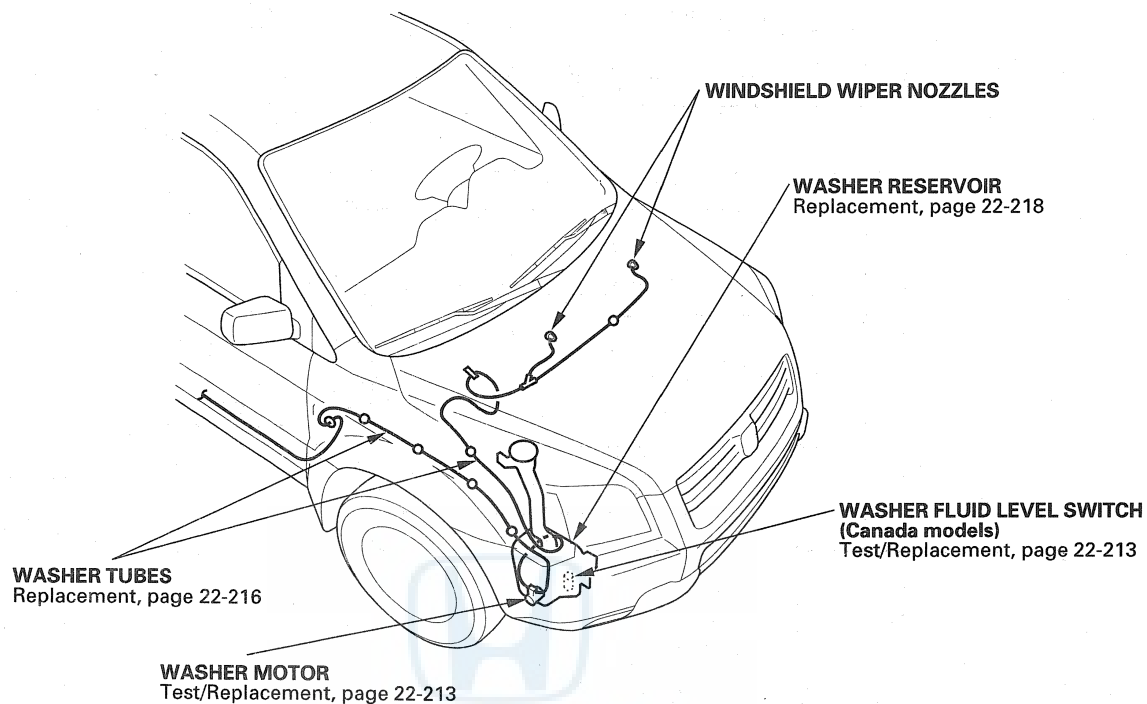


(cont'd)

Wipers/Washers

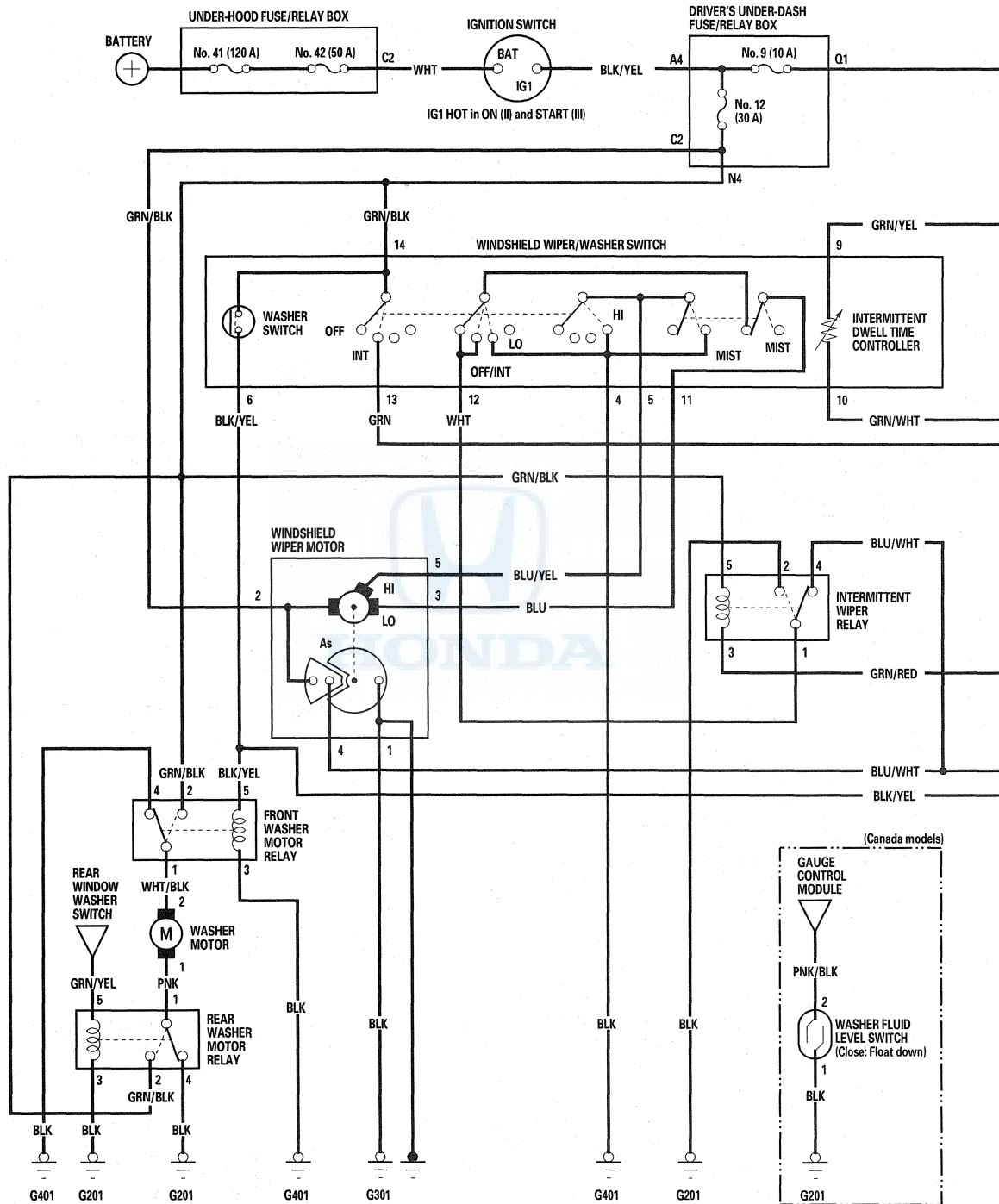
Component Location Index (cont'd)

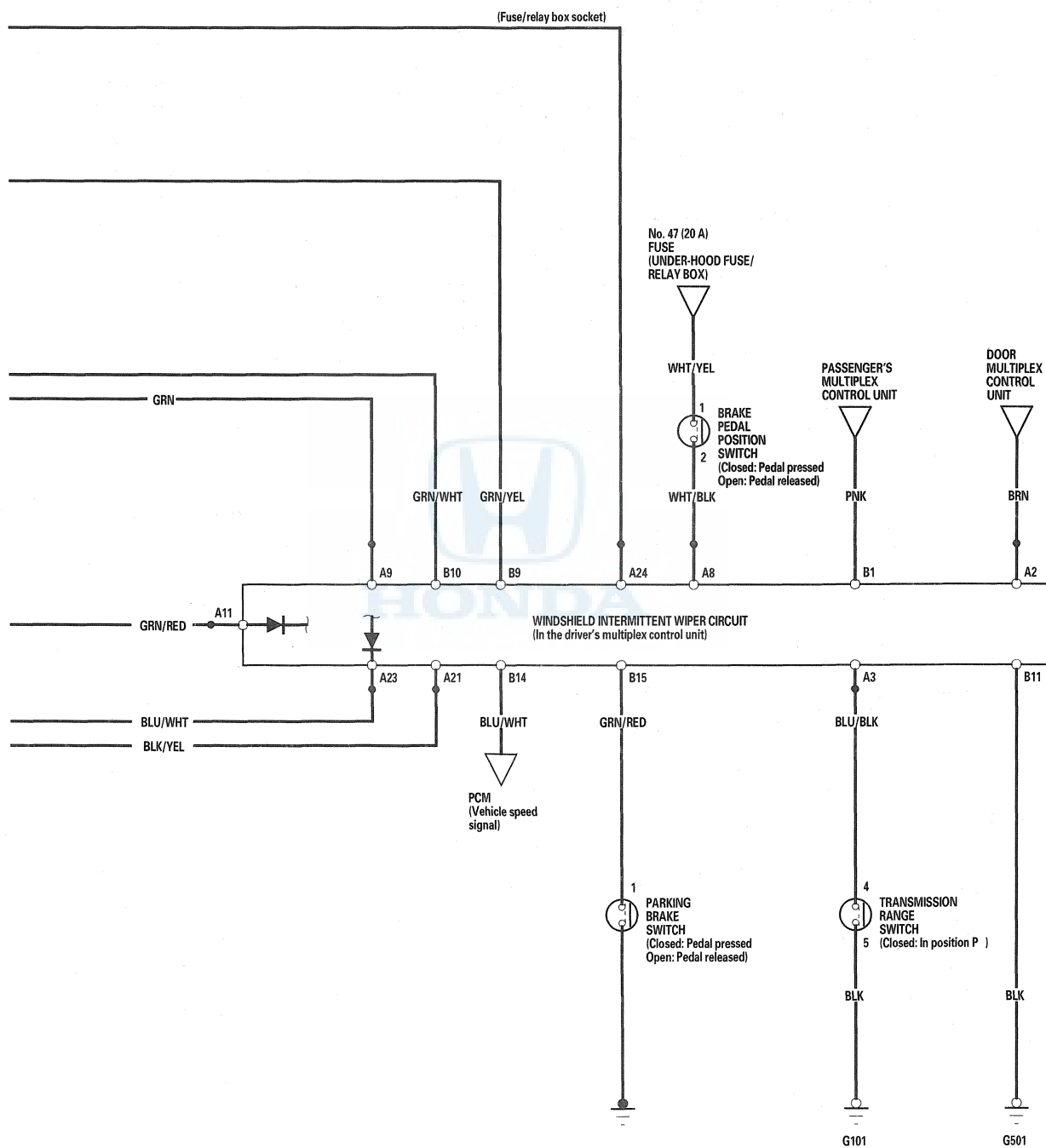
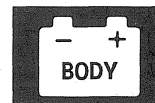




Wipers/Washers

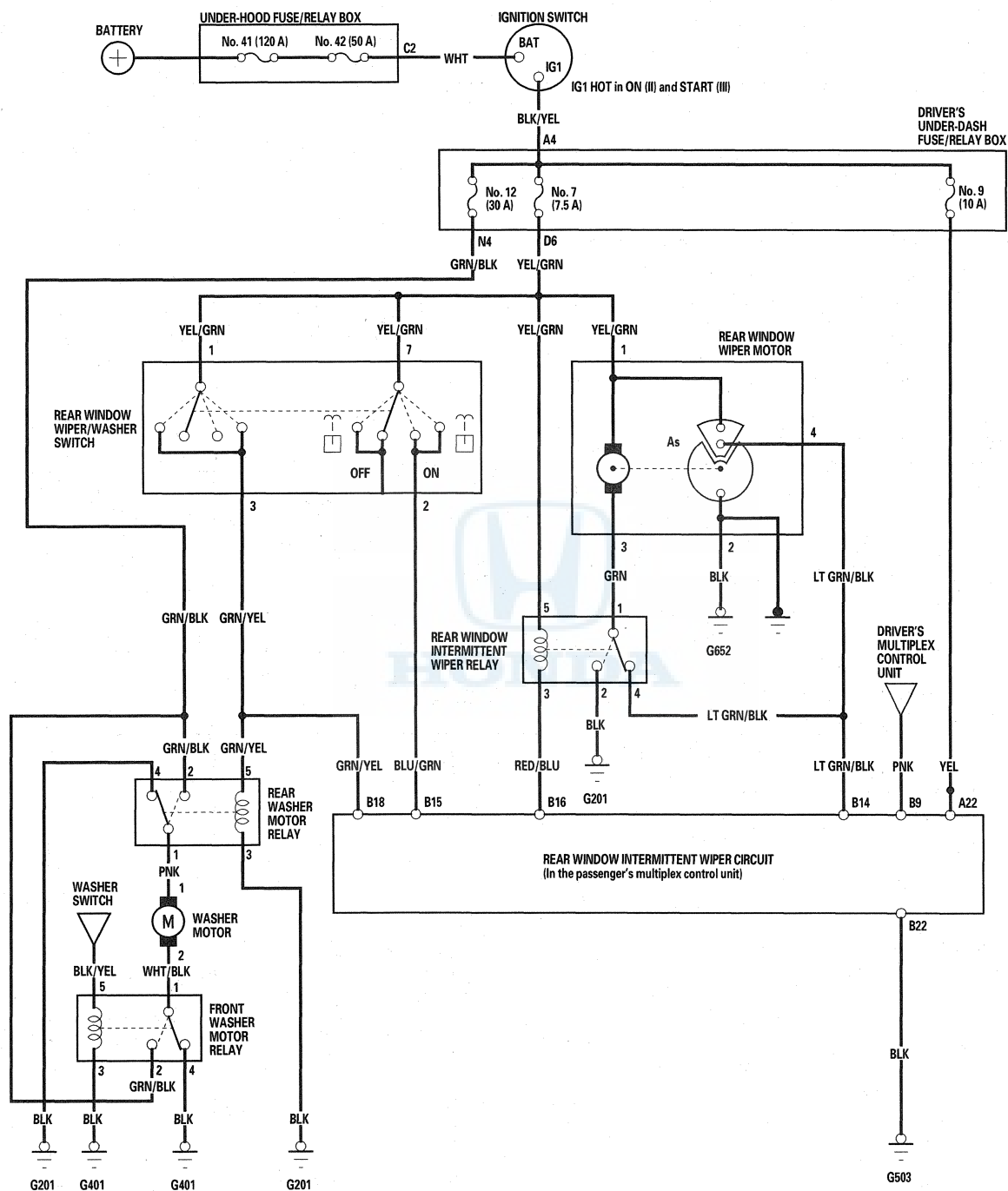
Circuit Diagram - Windshield





Wipers/Washers

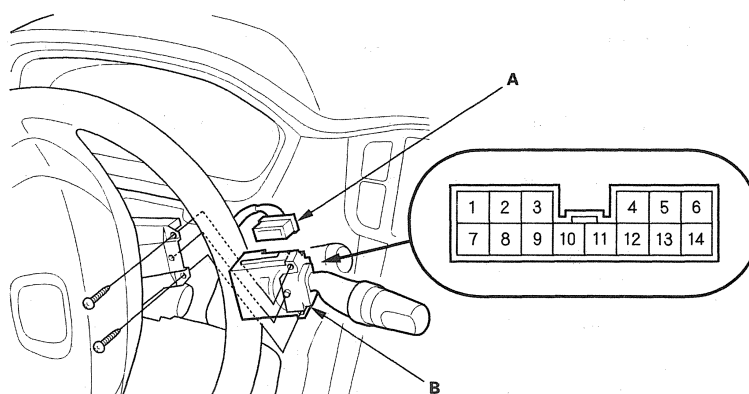
Circuit Diagram - Rear Window





Wiper/Washer Switch Test/Replacement

1. Remove the dashboard lower cover (see page 20-90).
2. Remove the steering column covers (see page 17-25).
3. Disconnect the 14P connector (A) from the wiper/washer switch (B).



4. Remove the two screws, then pull out the wiper/washer switch.
5. Inspect the connector terminals to be sure they are all making good contact.
 - If the terminals are bent, loose or corroded, repair them as necessary, and recheck the system.
 - If the terminals look OK, check for continuity between the terminals in each switch position according to the tables.

Windshield

Terminal Position	4	5	6	11	12	13	14	9		10
OFF				○—○						
INT				○—○		○—○				
LO	○—○			○						
HI	○—○									
Mist switch ON	○—○									
Washer switch ON			○				○			
Intermittent dwell time controller turned								○— ∞ —○		

Rear Window

Terminal Position	1	2	3	7
Washer switch ON and wiper switch OFF	○—○			
OFF				
ON		○—○		○—○
Wiper and washer switch ON	○—○	○—○	○—○	○—○

6. If the continuity check is not as specified, replace the switch.

Wipers/Washers

Control Unit Input Test

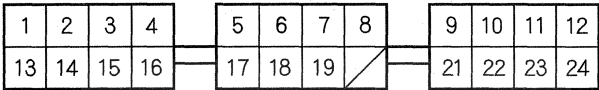
Windshield

- 1. Before testing the wiper/washer control functions, troubleshoot the multiplex control system (see page 22-244).

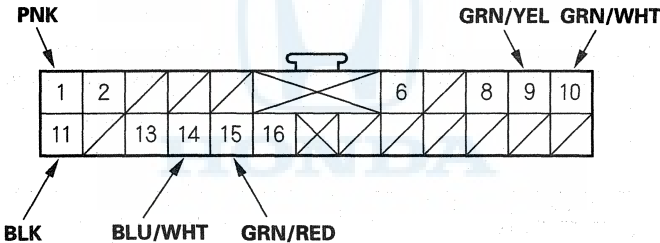
Driver's Multiplex Control Unit

- 2. Remove the driver's multiplex control unit from the driver's under-dash fuse/relay box, and disconnect its connector.
- 3. Inspect all connector and socket terminals to be sure they are making good contact.
 - If the terminals are bent, loose or corroded, repair them as necessary, and recheck the system.
 - If the terminals look OK, go to step 4.

DRIVER'S UNDER-DASH FUSE/RELAY BOX SOCKET
(Driver's multiplex control unit connector A)



DRIVER'S MULTIPLEX UNIT CONNECTOR B



Wire side of female terminals



4. With the driver's multiplex control unit still disconnected, make these input tests at the connector and driver's under-dash fuse/relay box sockets.

- If any test indicates a problem, find and correct the cause, then recheck the system.
- If all the input tests prove OK, driver's multiplex control unit must be faulty; replace it.

Cavity	Wire	Test condition	Test: Desired result	Possible cause if result is not obtained
B11	BLK	Under all conditions	Measure the voltage to ground: There should be less than 1 V.	<ul style="list-style-type: none"> • Poor ground (G501) • An open in the wire
A24	Fuse/relay box socket	Ignition switch ON (II)	Measure the voltage to ground: There should be battery voltage.	<ul style="list-style-type: none"> • Blown No. 9 (10 A) fuse in the driver's under-dash fuse/relay box • Faulty driver's under-dash fuse/relay box
A3		Shift lever in P position	Measure the voltage to ground: There should be less than 1 V.	<ul style="list-style-type: none"> • Faulty transmission range switch • Poor ground (G101) • An open in the wire
A8		Brake pedal pressed	Measure the voltage to ground: There should be battery voltage.	<ul style="list-style-type: none"> • Blown No. 47 (20 A) fuse in the under-hood fuse/relay box • Faulty brake pedal position switch • An open in the wire
B14	BLU/WHT	Under all conditions	Check for continuity to ground: There should be continuity.	An open in the wire
B15	GRN/RED	Parking brake pedal pressed	Check for continuity to ground: There should be continuity.	<ul style="list-style-type: none"> • Faulty parking brake switch • An open in the wire
B9	GRN/YEL	Intermittent dwell time control ring turned	Measure the resistance between the terminals: It should vary from 0 to about 30 k Ω as the ring is turned.	<ul style="list-style-type: none"> • Faulty intermittent dwell time controller • An open in the wire
B10	GRN/WHT			
A9	Fuse/relay box socket	Ignition switch ON (II) and wiper switch at INT	Measure the voltage to ground: There should be battery voltage.	<ul style="list-style-type: none"> • Blown No. 12 (30 A) fuse in the driver's under-dash fuse/relay box • Faulty wiper switch • Faulty driver's under-dash fuse/relay box • An open in the wire
A11		Ignition switch ON (II)	Measure the voltage to ground: There should be battery voltage.	<ul style="list-style-type: none"> • Blown No. 12 (30 A) fuse in the driver's under-dash fuse/relay box • Faulty windshield intermittent wiper relay • Faulty driver's under-dash fuse/relay box • An open in the wire
A21		Ignition switch ON (II) and washer switch ON	Measure the voltage to ground: There should be battery voltage.	<ul style="list-style-type: none"> • Blown No. 12 (30 A) fuse in the driver's under-dash fuse/relay box • Faulty washer switch • Faulty driver's under-dash fuse/relay box • An open in the wire
A23		Ignition switch ON (II) and windshield wiper motor in the PARK position	Measure the voltage to ground: There should be battery voltage.	<ul style="list-style-type: none"> • Blown No. 12 (30 A) fuse in the driver's under-dash fuse/relay box • Faulty windshield wiper motor • Faulty driver's under-dash fuse/relay box • An open in the wire

* 1: Make this test at driver's multiplex control unit connector B with all connectors reconnected

(cont'd)

Wipers/Washers

Control Unit Input Test (cont'd)

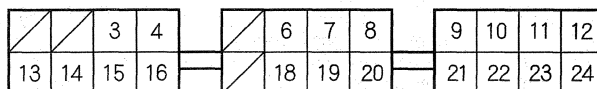
Rear Window

1. Before testing the wiper/washer control functions, troubleshoot the multiplex control system (see page 22-244).

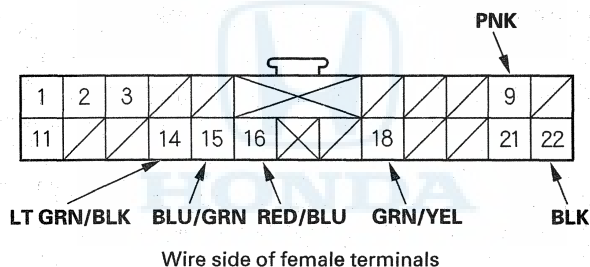
Passenger's Multiplex Control Unit

2. Remove the passenger's multiplex control unit from the passenger's under-dash fuse/relay box, and disconnect its connector.
3. Inspect all connector and socket terminals to be sure they are all making good contact.
 - If the terminals are bent, loose or corroded, repair them as necessary, and recheck the system.
 - If the terminals look OK, go to step 4.

PASSENGER'S UNDER-DASH FUSE/RELAY BOX SOCKET
(Passenger's multiplex control unit connector A)



PASSENGER'S MULTIPLEX CONTROL UNIT CONNECTOR B





4. With the passenger's multiplex control unit still disconnected, make these input tests at the connector and passenger's under-dash fuse/relay box sockets.

- If any test indicates a problem, find and correct the cause, then recheck the system.
- If all the input tests prove OK, the control unit must be faulty; replace the control unit.

Cavity	Wire	Test condition	Test: Desired result	Possible cause if result is not obtained
A22	Fuse/relay box socket	Ignition switch ON (II)	Measure the voltage to ground: There should be battery voltage.	<ul style="list-style-type: none"> • Blown No. 9 (10 A) fuse in the driver's under-dash fuse/relay box • Faulty driver's fuse/relay box • An open in the wire
B22*	BLK	Under all conditions	Check for continuity to ground: There should be continuity.	<ul style="list-style-type: none"> • Poor ground (G503) • An open in the wire
B16	RED/BLU	Ignition switch ON (II)	Attach to ground: The rear window wiper motor should run.	<ul style="list-style-type: none"> • Blown No. 7 (7.5 A) fuse in the driver's under-dash fuse/relay box • Faulty rear window intermittent wiper relay • An open in the wire
B14 · B16	LT GRN/BLK and RED/BLU	Ignition switch ON (II)	Attach B16 to ground, measure the voltage between B14 and ground: There should be 4 V or more with the wiper in the park position and 0 V as it sweeps.	<ul style="list-style-type: none"> • Blown No. 7 (7.5 A) fuse in the driver's under-dash fuse/relay box • Faulty rear window intermittent wiper relay • Faulty rear window wiper motor • An open in the wire
B15*	BLU/GRN	Ignition switch ON (II) and rear wiper switch ON	Measure the voltage to ground: There should be battery voltage.	<ul style="list-style-type: none"> • Blown No. 7 (7.5 A) fuse in the driver's under-dash fuse/relay box • Faulty wiper/washer switch • An open in the wire
B18*	GRN/YEL	Ignition switch ON (II) and washer switch ON	Measure the voltage to ground: There should be battery voltage.	<ul style="list-style-type: none"> • Blown No. 7 (7.5 A) fuse in the driver's under-dash fuse/relay box • Faulty wiper/washer switch • An open in the wire

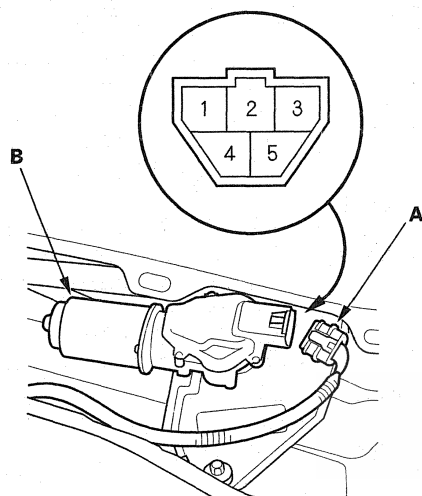
*: Make this test at passenger's multiplex control unit connector B with all connectors reconnected

Wipers/Washers

Wiper Motor Test

Windshield

1. Remove the cowl cover (see page 22-214).
2. Disconnect the windshield wiper motor connector (A) from the windshield wiper motor (B).



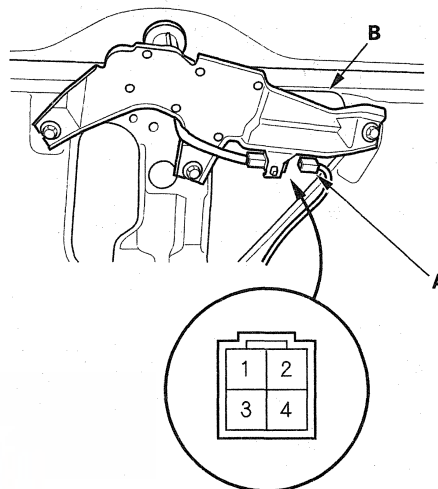
3. Test the motor by connecting battery power and ground according to the table.

Terminal Position	2	3	5
LOW SPEED	⊕	⊖	
HIGH SPEED	⊕		⊖

4. Connect an analog voltmeter between the No. 4 (⊕) and No. 1 (⊖) terminals, and run the motor at low or high speed. The voltmeter should indicate 0 V and 4 V or more alternately.
5. If the voltmeter does not indicate as specified, replace the wiper motor.

Rear Window

1. Remove the tailgate trim panel (see page 20-82).
2. Disconnect the 4P connector (A) from the rear window wiper motor (B).



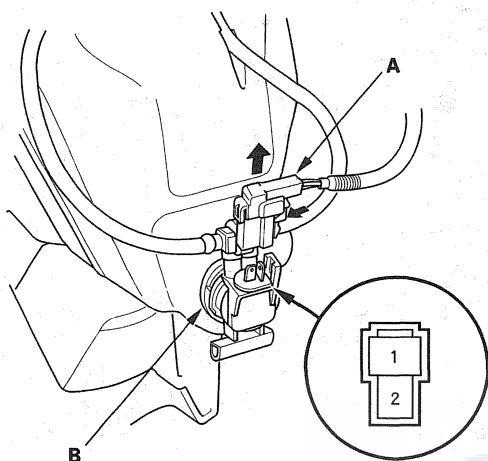
Terminal side of male terminals

3. Test the motor by connecting battery power to the rear window wiper motor 4P connector No. 1 terminal and grounding the No. 3 terminal. The motor should run. If the rear window wiper motor does not run or fails to run smoothly, replace the rear window wiper motor (see page 22-215).
4. Connect an analog voltmeter between the No. 4 (⊕) and No. 2 (⊖) terminals, and run the motor. The voltmeter should indicate 0 V and 4 V or more alternately.
5. If the voltmeter does not indicate as specified, replace the wiper motor.



Washer Motor Test/Replacement

1. Remove the right front inner fender (see page 20-161).
2. Disconnect the 2P connector (A) from the washer motor (B).



3. Test the motor by connecting battery power to the No. 1 (No. 2) terminal and ground the No. 2 (No. 1) terminal of the washer motor. The motor should run.

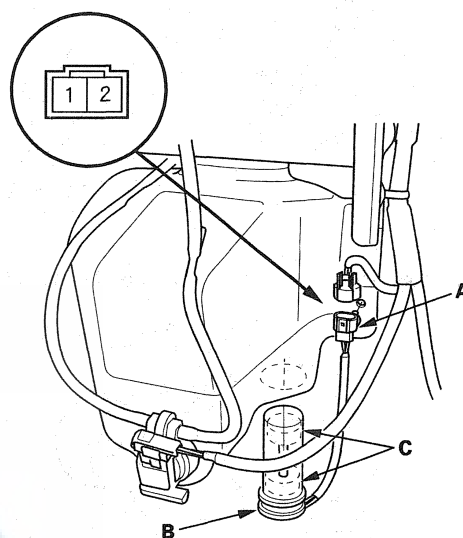
() : Rear window washer direction.

- If the motor does not run or fails to run smoothly, replace it.
- If the motor runs smoothly, but little or no washer fluid is pumped, check for a disconnected or blocked washer hose, or a clogged washer motor outlet.

Washer Fluid Level Switch Test/Replacement

Canada models

1. Remove the right front inner fender (see page 20-161).
2. Disconnect the 2P connector (A) from the washer fluid level switch (B).



3. Remove the washer fluid level switch from the reservoir.

NOTE: Fluid may flow out of the opening.

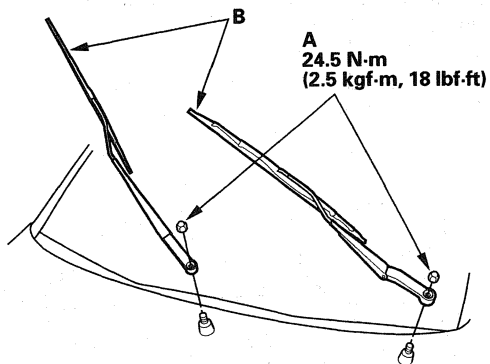
4. Check for continuity between the No. 1 and No. 2 terminals in each float switch position (C).
 - There should be continuity when the float is down.
 - There should be no continuity when the float is up.
5. If the continuity is not as specified, replace the float switch.

Wipers/Washers

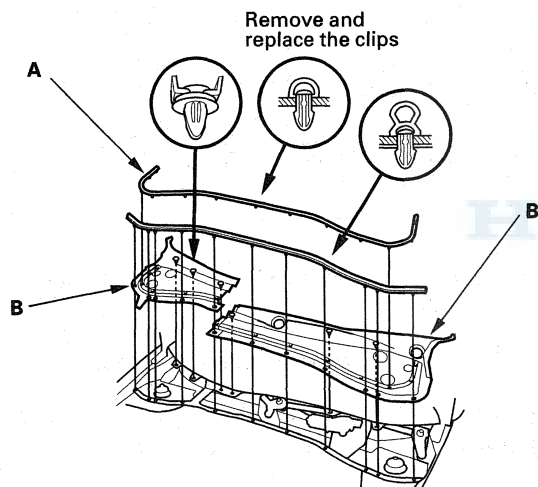
Wiper Motor Replacement

Windshield

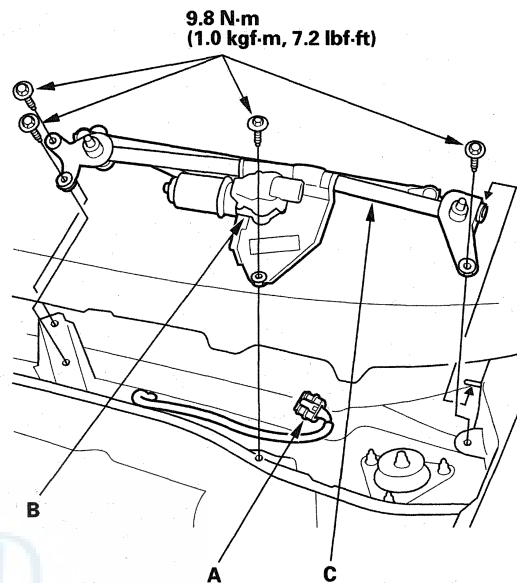
1. Remove the nuts (A) and the windshield wiper arms (B).



2. Remove the hood seal (A) and cowl covers (B).

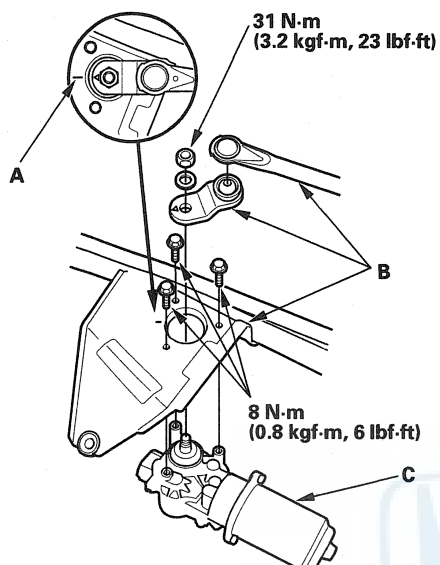


3. Disconnect the 5P connector (A) from the windshield wiper motor (B).



4. Remove the mounting bolts and the wiper linkage assembly (C).

5. Scribe a line (A) across the link and windshield wiper linkage to show the original adjustment. Separate the windshield wiper linkage (B) from the wiper motor (C).

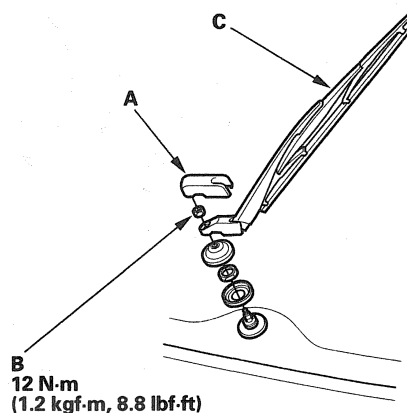


6. Install in the reverse order of removal, and note these items:

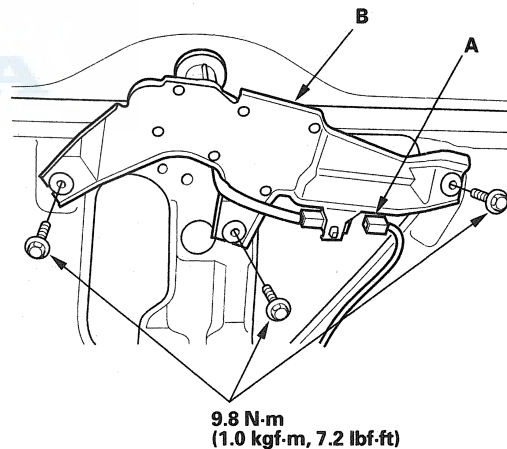
- Apply multipurpose grease to the moving parts.
- Before reinstalling the wiper arms, turn the wiper switch ON, then OFF to return the wiper shafts to the park position.
- If necessary, replace any damaged clips.
- Make sure the wiper motor operates properly.

Rear Window

1. Remove the cover (A), mounting nut (B) and rear window wiper arm (C).



2. Open the tailgate and remove the tailgate lower trim panel (see page 20-82).
3. Disconnect the 4P connector (A) from the rear window wiper motor (B).

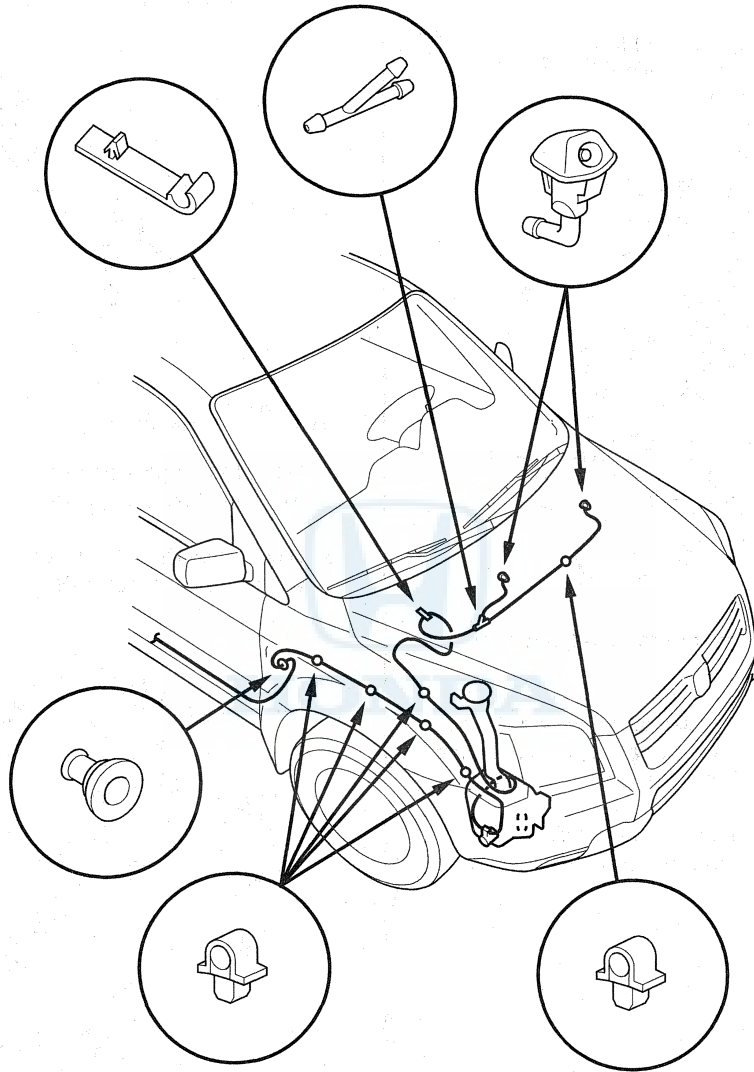


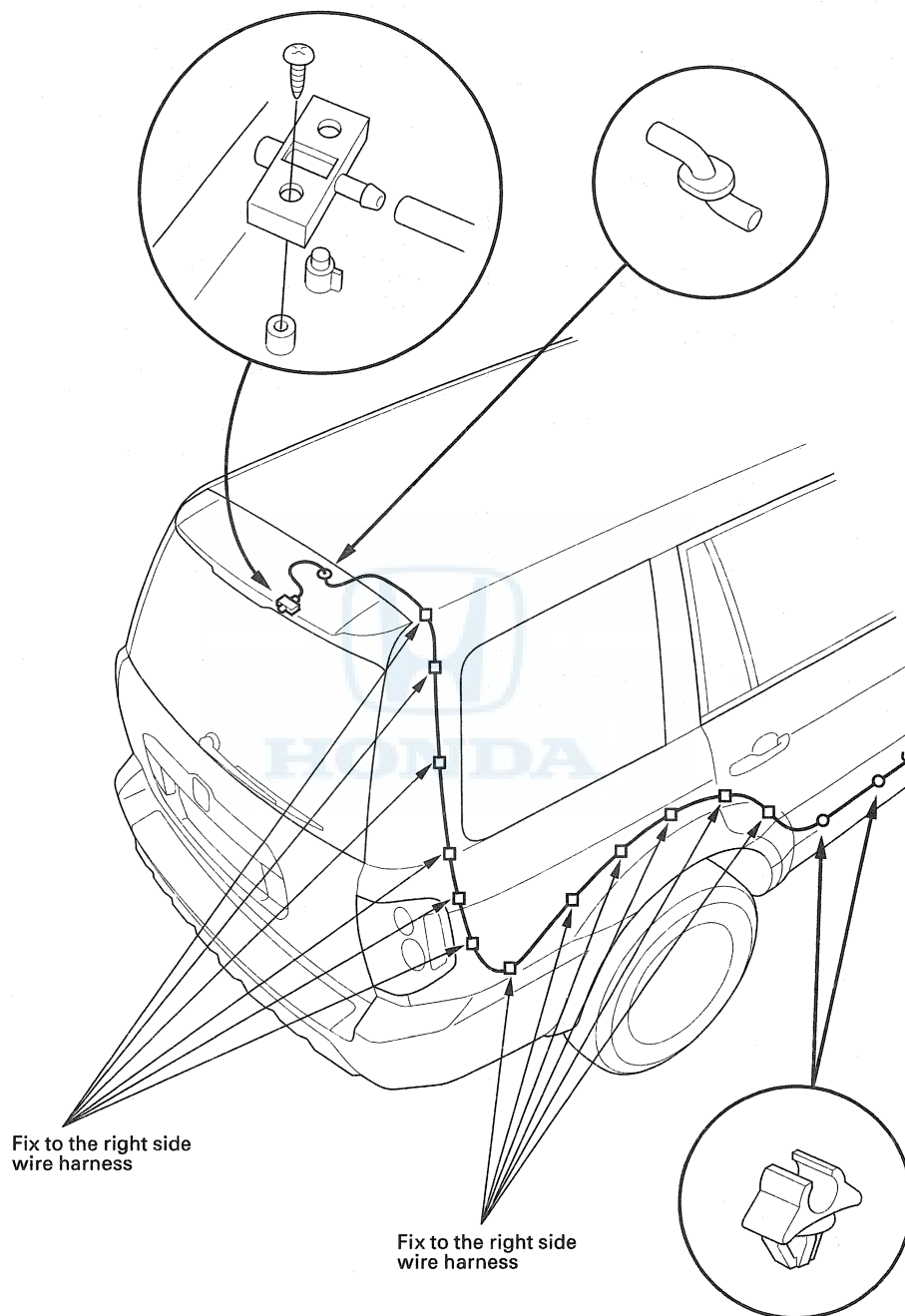
4. Remove the mounting bolts and the wiper motor.
5. Install in the reverse order of removal.

Wipers/Washers

Washer Tube Replacement

1. Remove the right front inner fender (see page 20-161).
2. Remove the washer nozzles and clips, then remove the tube.



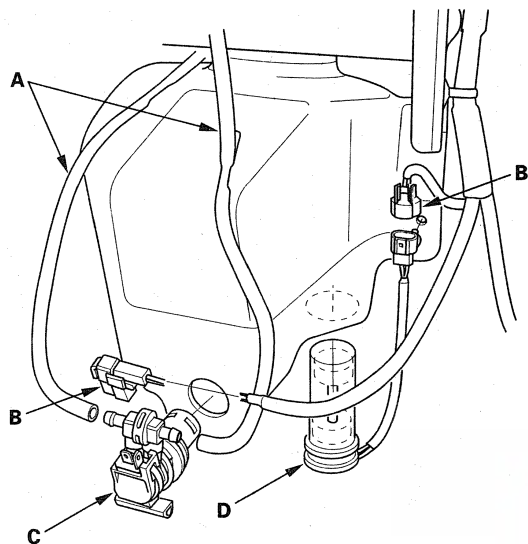


3. Install in the reverse order of removal. Take care not to pinch the washer tube. Check the washers operation.

Wipers/Washers

Washer Reservoir Replacement

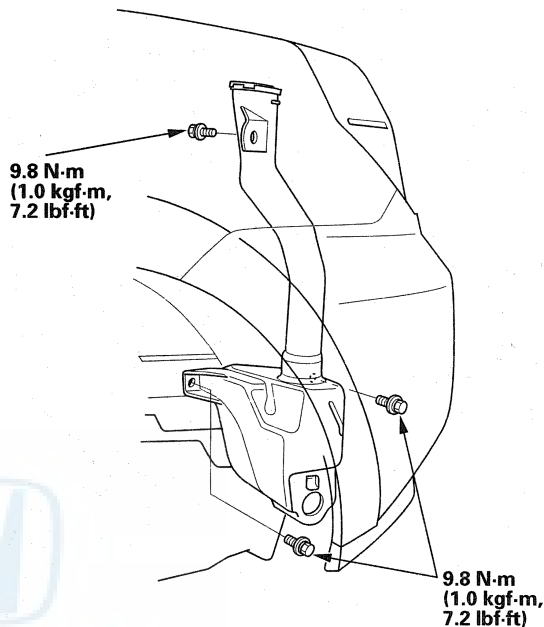
1. Remove the right front inner fender (see page 20-161).
2. Disconnect the washer tubes (A).



3. Disconnect the 2P connector (B) from the washer motor (C) and the washer fluid level switch (Canada models) (D).

4. Remove the three mounting bolts and washer reservoir.

Washer reservoir capacity: 4.5 L (4.8 US qts.)

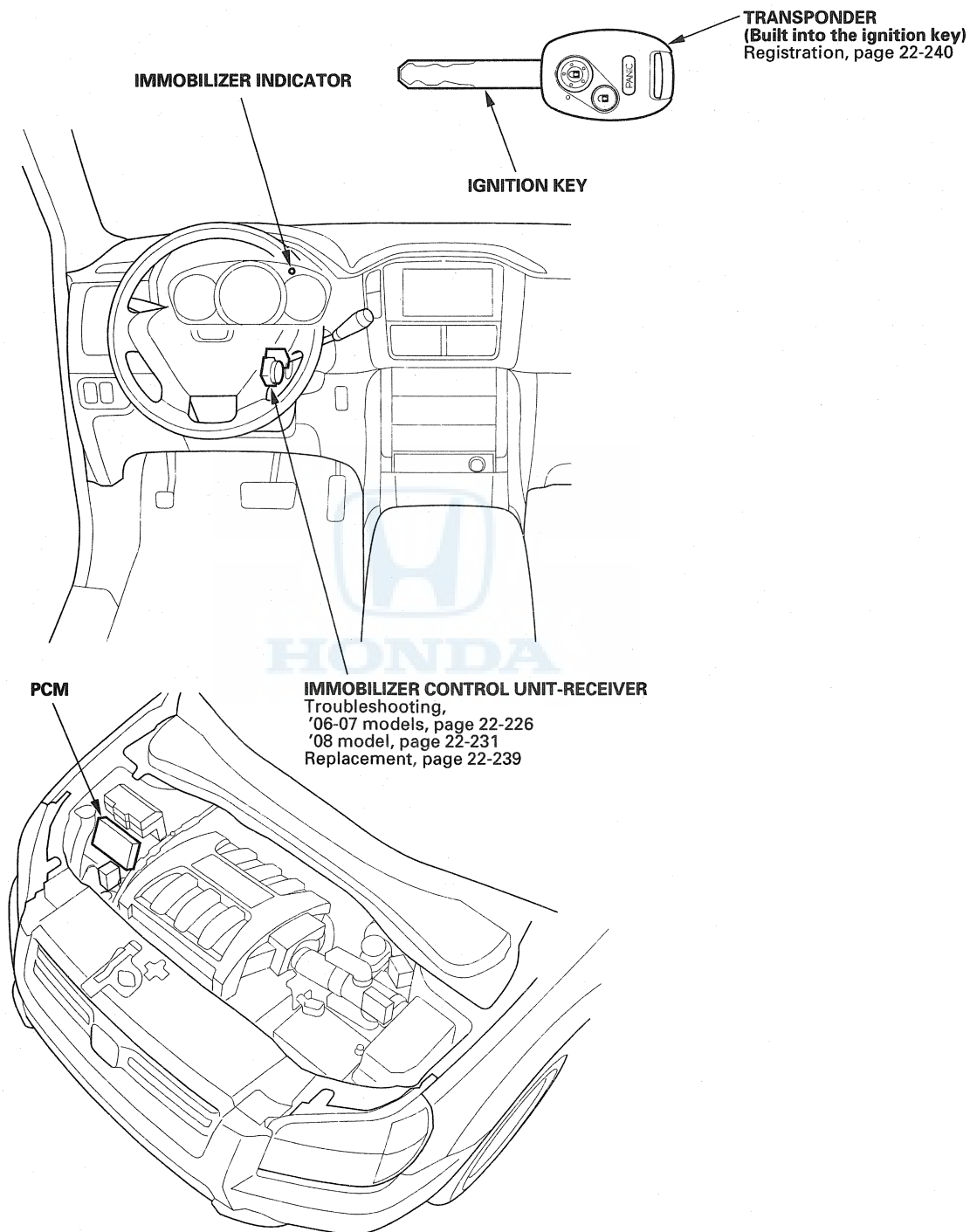


5. Install in the reverse order of removal. Make sure the washer motors operate properly.

Immobilizer System



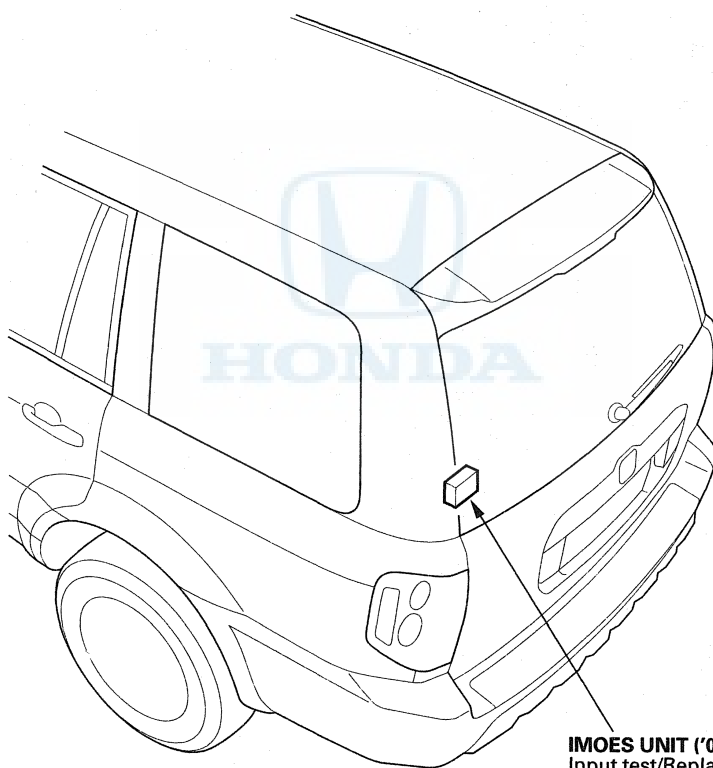
Component Location Index



(cont'd)

Immobilizer System

Component Location Index (cont'd)



IMOES UNIT ('08 model)
Input test/Replacement, page 22-237



System Description

The vehicle is equipped with a type IV immobilizer system that will disable the vehicle unless a programmed ignition key is used.

This system consists of a transponder located in the ignition key, an immobilizer control unit-receiver, an indicator, and the PCM.

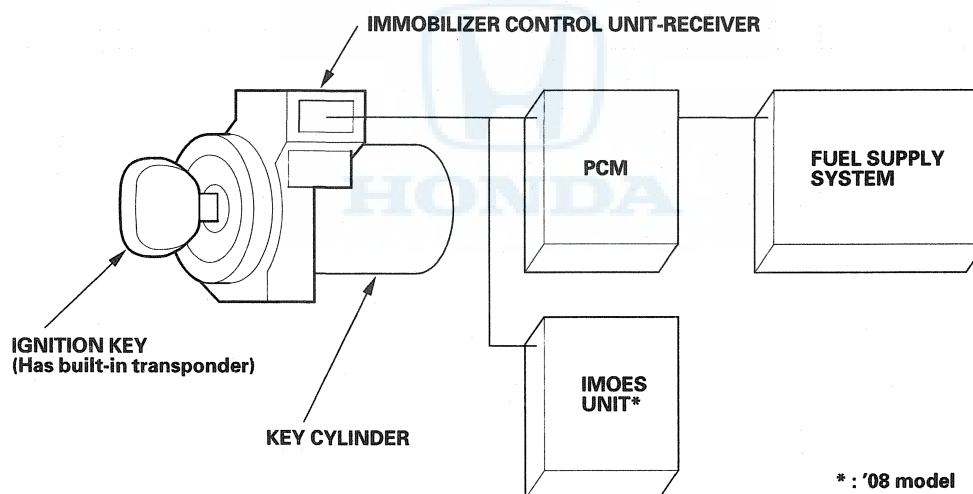
'06-07 models

When the key is inserted in the ignition switch and turned to the ON (II) position, the immobilizer control unit-receiver sends power to the transponder in the ignition key. The transponder then sends a coded signal back through the immobilizer control unit-receiver to the PCM. The code is a rolling type embedded in the receiver instead of the PCM. A handshake with the HDS is required at PCM repair and replacement, and all keys are required at control unit-receiver repair and replacement.

'08 model

When the immobilizer key is inserted into the ignition switch and turned to the ON (II) position, the immobilizer control unit-receiver sends power to the transponder in the ignition key. The transponder then sends a coded signal back to the immobilizer control unit-receiver which sends a coded signal to the imoes unit, which confirms the code and signals the PCM to supply power to the fuel pump circuit.

A handshake with the HDS is required at PCM or imoes unit repair or replacement, and all keys are required at immobilizer control unit-receiver repair or replacement.



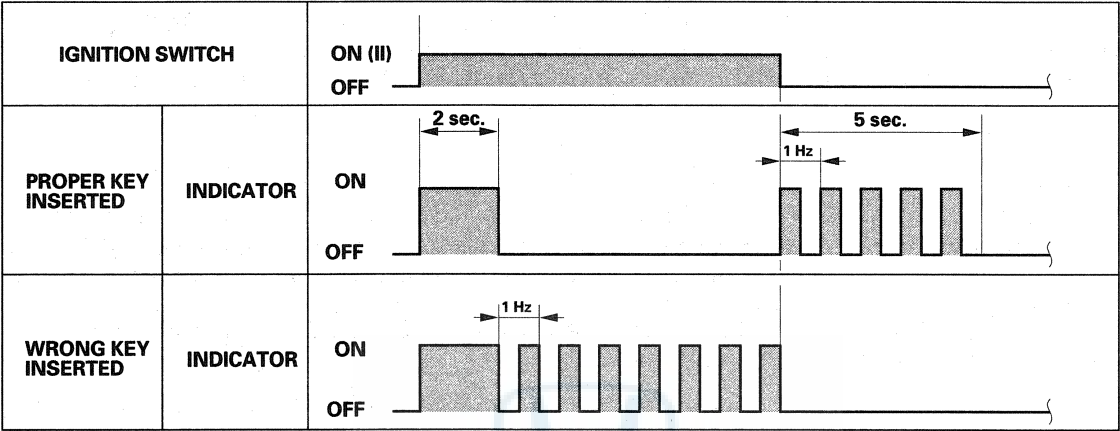
(cont'd)

Immobilizer System

System Description (cont'd)

- If a programmed key has been used, the immobilizer indicator will come on for about 2 seconds, then go off. When the ignition switch is turned OFF, the indicator will blink for about 5 seconds to signal that the unit has been set correctly, then the indicator will go off.
- If the wrong key has been used whose code was not received or recognized by the unit, the indicator will come on for about 2 seconds, then it will blink until the ignition switch is turned OFF.

IMMOBILIZER INDICATOR BLINKING PATTERN





System Check

NOTE: The HDS can be used to check the state of the immobilizer key registration and the IM OCD (S-Net) line by doing a system check.

1. Connect the HDS to the data link connector.
2. Turn the ignition switch ON (II).
3. Monitor the System Check in the Immobilizer Info with the HDS.
4. If the HDS displays the "Immobilizer system is normal", the immobilizer system is OK. If the HDS displays any other messages, check as follows:

Status Log No.	System Check	Possible Failures
A-1	Immobilizer system is not normal	<ul style="list-style-type: none"> This key is not registered in the immobilizer control unit-receiver. Try to register keys by using "KEYS". The communication was not good between the antenna and the immobilizer key by influence of metal such as key chains. The communication was not good between the antenna and the immobilizer key by battery voltage low.
A-2	Immobilizer system is not normal	<ul style="list-style-type: none"> Intermittent interruption between transponder and immobilizer control unit-receiver. The immobilizer key type is different. It is not for this vehicle but for another one or for other company's one. Key failure (transponder failure) The communication was not good between the antenna and the immobilizer key by influence of metal such as key chains. The communication was not good between the antenna and the immobilizer key by battery voltage low.
A-3	Immobilizer system is not normal	<ul style="list-style-type: none"> The ignition switch was turned on with a non-immobilizer key. The immobilizer key type is different. It is not for this vehicle but for another one or for other company's one. Key failure (transponder failure) The communication was not good between the antenna and the immobilizer key by influence of metal such as key chains. The communication was not good between the antenna and the immobilizer key by battery voltage low. Immobilizer control unit-receiver failure
B-1	Immobilizer system is not normal	<ul style="list-style-type: none"> The PCM was not registered. Try to register the PCM by using "REPLACE PCM". The communication was not good between the PCM and the immobilizer control unit-receiver by battery voltage low. The communication was not good between the immobilizer control unit-receiver and the PCM by influence of some noise.
B-2	Immobilizer system is not normal	<ul style="list-style-type: none"> The PCM was not registered. Try to register the PCM by using "REPLACE PCM". The communication was not good between the PCM and the immobilizer control unit-receiver by battery voltage low. The communication was not good between the immobilizer control unit-receiver and the PCM by influence of some noise.
C-1	Immobilizer system is not normal	The imoes unit was not registered. Try to register the imoes unit by using "REPLACE MICU/IMOES".
C-2	Immobilizer system is not normal	<ul style="list-style-type: none"> The imoes unit was not registered. Try to register the imoes unit by using "REPLACE MICU/IMOES". The communication was not good between the immobilizer control unit-receiver and the imoes unit by influence of some noise.
D-1	Immobilizer system is not normal	<ul style="list-style-type: none"> Harness short from the PCM to the immobilizer control unit-receiver. (IM OCD (S-Net) line short) The communication was not good between the PCM and the immobilizer control unit-receiver by battery voltage low. The communication was not good between the immobilizer control unit-receiver and the PCM by influence of some noise. Immobilizer control unit-receiver failure PCM failure
D-2	Immobilizer system is not normal	<ul style="list-style-type: none"> Blown fuse Harness open from the immobilizer control unit-receiver and the imoes unit. The communication was not good between the immobilizer control unit-receiver and the imoes unit by influence of some noise.
D-3	Immobilizer system is not normal	<ul style="list-style-type: none"> Blown fuse Harness open from the PCM to the immobilizer control unit-receiver. The communication was not good between the PCM and the immobilizer control unit-receiver by battery voltage low. The communication was not good between the immobilizer control unit-receiver and the PCM by influence of some noise. Immobilizer control unit-receiver failure PCM failure

Immobilizer System

Status Log

If you suspect there is an immobilizer system problem, the HDS can be used to check the number of times the immobilizer control unit-receiver doesn't permit the engine to run by checking the status log.

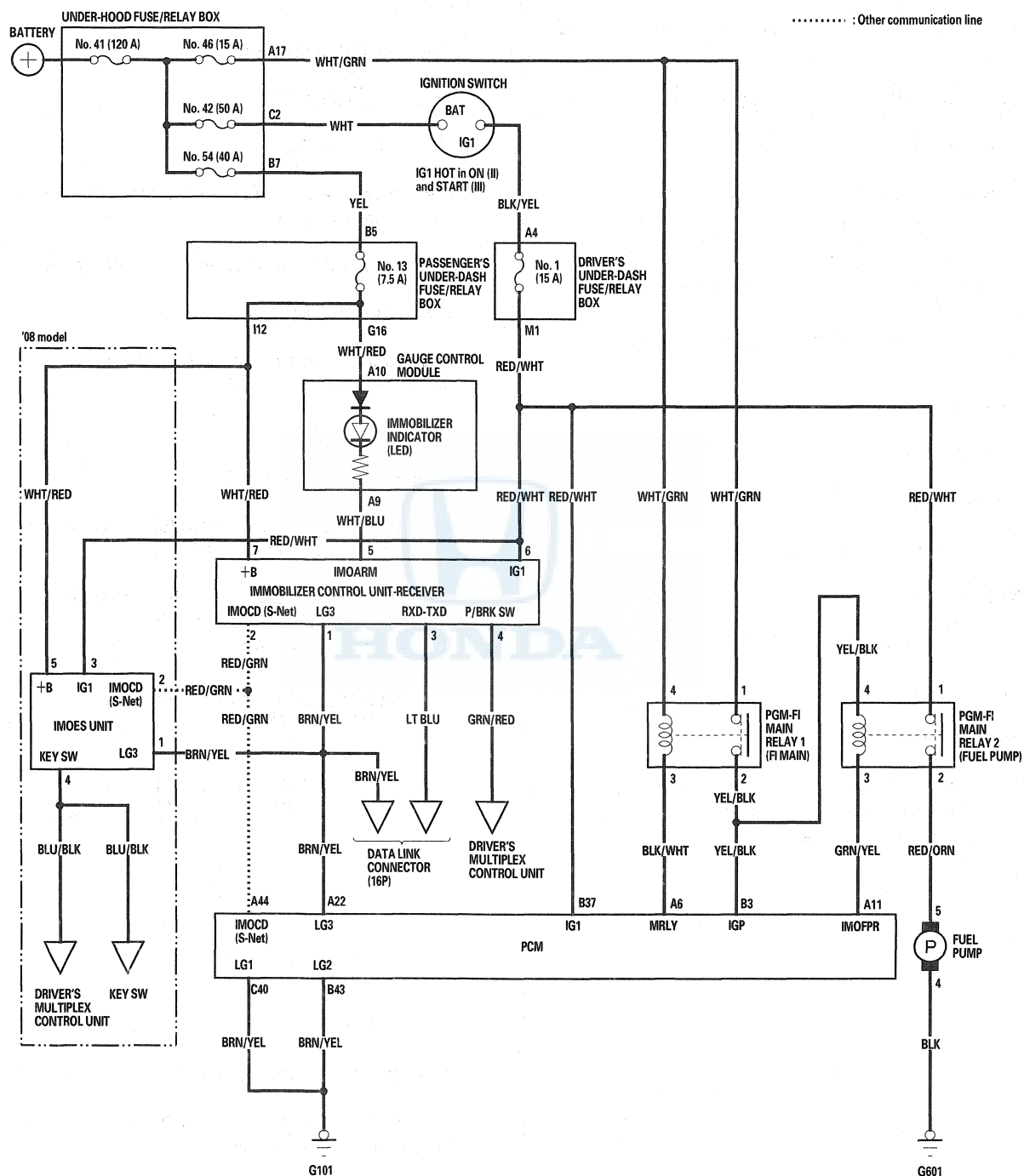
NOTE: The Status Log count can be reset by disconnecting the negative battery terminal or by removing the No. 13 (7.5 A) fuse in the passenger's under-dash fuse/relay box, or by disconnecting the 7P connector from the immobilizer control unit-receiver.

1. Connect the HDS to the data link connector.
2. Turn the ignition switch ON (II).
3. On the HDS screen, select Honda systems, select immobilizer set-up, select immobilizer information, then select status log.
4. Check the Status log count. Troubleshoot the status with the highest count first. If no counts are listed, the immobilizer system is OK. Continue with normal symptom troubleshooting.

Status Log No.	Detected Item	Probable Cause
A-1	KEY CODE MISMATCH (Code format normal, but code data is mismatch)	1. The key was not registered 2. Interference from metal such as key chains 3. Low battery voltage
A-2	KEY CODE MISMATCH (Code format failure)	1. Ignition switch was turn on with another type of immobilizer key or aftermarket key 2. Interference from metal such as key chains 3. Low battery voltage
A-3	KEY CODE MISMATCH (No key code or non-immobilizer key)	1. Ignition switch was turn on with another type of immobilizer key or aftermarket key 2. Interference from metal such as key chains 3. Low battery voltage 4. Key failure 5. Immobilizer control unit-receiver failure
B-1	PCM CODE MISMATCH (Code format normal, but code data is mismatch)	1. PCM was not registered correctly 2. Low battery voltage 3. Poor or loose terminal connections at the immobilizer control unit-receiver 4. Communication line electrical noise
B-2	PCM MISMATCH (Code format failure)	1. PCM was not registered correctly 2. Low battery voltage 3. Poor or loose terminal connections at the immobilizer control unit-receiver 4. Communication line electrical noise
D-1	IM OCD (S-Net) terminal PROBLEM (Short to ground)	1. Low battery voltage 2. Poor or loose terminal connections at the immobilizer control unit-receiver and the PCM 3. Communication line electrical noise
D-3	IM OCD (S-Net) terminal PROBLEM (Open line or PCM failure)	1. Open or short in the harness from the PCM to the immobilizer control unit-receiver 2. Low battery voltage 3. Poor or loose terminal connections at the immobilizer control unit-receiver and the PCM 4. Communication line electrical noise



Circuit Diagram



Immobilizer System

Troubleshooting

'06-07 models

1. Turn the ignition switch ON (II) with a programmed key.

2. Check to see if the immobilizer indicator comes on.

Does the indicator come on?

YES—Go to step 3.

NO—Go to step 25.

3. Check the Immobilizer Indicator operation.

Does the indicator come on for 2 seconds, then go off?

YES—Go to step 4.

NO—Go to step 6.

4. Try to crank the engine.

Does the starter motor operate?

YES—Go to step 5.

NO—Check the starter motor. ■

5. Try to start the engine.

Does the engine start?

YES—Check the Status Log in the immobilizer info with the HDS check the item with the highest count first (see page 22-224). ■

NO—Go to step 25.

6. Check to see if the immobilizer indicator comes on and blinks.

Does the indicator blink?

YES—Go to step 25.

NO—Go to step 7.

7. Disconnect the 7P connector from the immobilizer control unit-receiver.

8. Check to see if the immobilizer indicator goes off.

Does the indicator go off?

YES—Substitute a known-good immobilizer control unit-receiver and/or PCM. ■

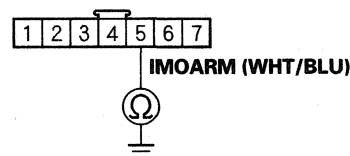
NO—Go to step 9.

9. Turn the ignition switch OFF.

10. Remove the gauge control module and disconnect connector A (20P) (see page 22-102).

11. Check for continuity between the immobilizer control unit-receiver 7P connector No. 5 (IMOARM) terminal and body ground.

IMMOBILIZER CONTROL UNIT-RECEIVER 7P CONNECTOR

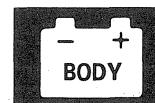


Wire side of female terminals

Is there continuity?

YES—Repair a short to ground in the wire. ■

NO—Faulty immobilizer indicator, replace the gauge control module. ■



12. Try to start the engine.

Does the engine start?

YES—Go to step 13.

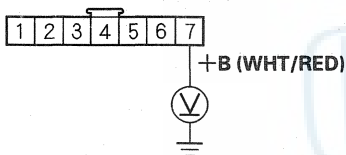
NO—Go to step 18.

13. Turn the ignition switch OFF.

14. Disconnect the 7P connector from the immobilizer control unit-receiver.

15. Measure the voltage between the immobilizer control unit-receiver 7P connector No. 7 (+B) terminal and body ground.

**IMMOBILIZER CONTROL UNIT-RECEIVER
7P CONNECTOR**



Wire side of female terminals

Is there battery voltage?

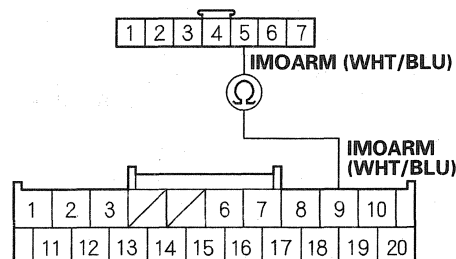
YES—Go to step 16.

NO—Faulty No. 13 (7.5 A) fuse in the passenger's under-dash fuse/relay box. If the fuse is OK, check for an open in the wire between the immobilizer control unit-receiver and passenger's under-dash fuse/relay box. ■

16. Remove the gauge control module and disconnect connector A (20P) (see page 22-102).

17. Check for continuity between the immobilizer control unit-receiver 7P connector No. 5 (IMOARM) terminal and gauge control module connector A (20P) No. 9 terminal.

IMMOBILIZER CONTROL UNIT-RECEIVER 7P CONNECTOR
Wire side of female terminals



GAUGE CONTROL MODULE CONNECTOR A (20P)
Wire side of female terminals

Is there continuity?

YES—Faulty immobilizer indicator, replace the gauge control module. ■

NO—Repair an open in the wire ■

18. Turn the ignition switch OFF.

19. Disconnect the 7P connector from the immobilizer control unit-receiver.

20. Turn the ignition switch ON (II).

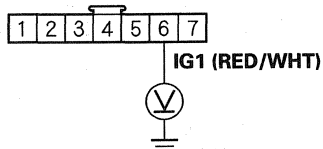
(cont'd)

Immobilizer System

Troubleshooting (cont'd)

21. Measure the voltage between the immobilizer control unit-receiver 7P connector No. 6 (IG1) terminal and body ground.

IMMOBILIZER CONTROL UNIT-RECEIVER 7P CONNECTOR



Wire side of female terminals

Is there battery voltage?

YES—Go to step 22.

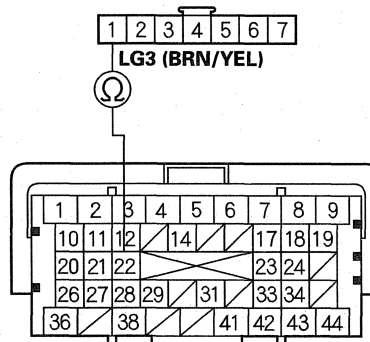
NO—Faulty No. 1 (15 A) fuse in the driver's under-dash fuse/relay box. If the fuse is OK, check for an open in the wire between the immobilizer control unit-receiver and under-hood fuse/relay box and check the PGM-FI main relay 1 (see page 22-82). ■

22. Turn the ignition switch OFF.

23. Jump the SCS line with the HDS, then disconnect PCM connector A (44P) (see page 11-8).

24. Check for continuity between the immobilizer control unit-receiver 7P connector No. 1 (LG3) terminal and PCM connector A (44P) No. 22 terminal.

IMMOBILIZER CONTROL UNIT-RECEIVER 7P CONNECTOR
Wire side of female terminals

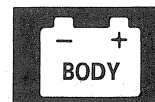


PCM CONNECTOR A (44P)
Wire side of female terminals

Is there continuity?

YES—Substitute a known-good immobilizer control unit-receiver and/or PCM. ■

NO—Repair an open in the wire. ■



25. Turn the ignition switch OFF.
26. Connect the HDS to the data link connector.
27. Turn the ignition switch ON (II).
28. Look at the System Check in the immobilizer info with the HDS (see page 22-223).

Is the immobilizer system normal?

YES—Go to fuel and emission systems symptom troubleshooting index. ■

NO—Go to step 29.

29. Verify the System Check display on the HDS for the following information:

- Harness short from the PCM to the immobilizer control unit-receiver. (IM OCD (S-Net) line short)
- The communication was not good between the PCM and the immobilizer control unit-receiver by the battery voltage low.
- The communication was not good between the immobilizer control unit-receiver and the PCM by influence of some noise.
- Immobilizer control unit-receiver failure.
- PCM failure.

Does the HDS display any of the above information?

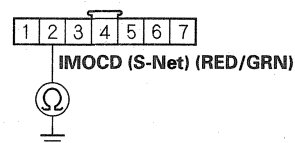
YES—Go to step 30.

NO—Go to step 34.

30. Turn the ignition switch OFF.
31. Disconnect the 7P connector from the immobilizer control unit-receiver.
32. Jump the SCS line with the HDS, then disconnect PCM connector A (44P) (see page 11-8).

33. Check for continuity between the immobilizer control unit-receiver 7P connector No. 2 (IM OCD (S-Net)) terminal and body ground.

**IMMOBILIZER CONTROL UNIT-RECEIVER
7P CONNECTOR**



Wire side of female terminals

Is there continuity?

YES—Repair a short to ground in the wire. ■

NO—Substitute a known-good immobilizer control unit-receiver and/or PCM. ■

34. Verify the System Check display on the HDS for the following information:

- Blown fuse.
- Harness open from the PCM and the immobilizer control unit-receiver.
- The communication was not good between the PCM and the immobilizer control unit-receiver by the battery voltage low.
- The communication was not good between the immobilizer control unit-receiver and the PCM by influence of some noise.
- Immobilizer control unit-receiver failure.
- PCM failure.

Does the HDS display any of the above information?

YES—Go to step 35.

NO—Check the Possible Failures shown on the System Check display (see page 22-223).

35. Turn the ignition switch OFF.
36. Disconnect the 7P connector from the immobilizer control unit-receiver.
37. Jump the SCS line with the HDS, then disconnect PCM connector A (44P) (see page 11-8).

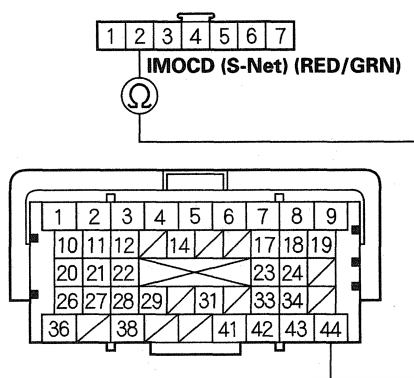
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Immobilizer System

Troubleshooting (cont'd)

38. Check for continuity between the immobilizer control unit-receiver 7P connector No. 2 (IM OCD (S-Net)) terminal and PCM connector A (44P) No. 44 terminal.

IMMOBILIZER CONTROL UNIT-RECEIVER 7P CONNECTOR
Wire side of female terminals

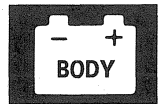


PCM CONNECTOR A (44P)
Wire side of female terminals

Is there continuity?

YES—Substitute a known-good immobilizer control unit-receiver and/or PCM. ■

NO—Repair an open in the wire. ■



'08 model

1. Turn the ignition switch ON (II) with a programmed key.

2. Check to see if the immobilizer indicator comes on.

Does the indicator come on?

YES—Go to step 3.

NO—Go to step 12.

3. Check the Immobilizer Indicator operation.

Does the indicator come on for 2 seconds, then go off?

YES—Go to step 4.

NO—Go to step 6.

4. Try to crank the engine.

Does the starter motor operate?

YES—Go to step 5.

NO—Check the starter motor. ■

5. Try to start the engine.

Does the engine start?

YES—Check the Status Log in the immobilizer info with the HDS. Troubleshoot the line with the highest number of counts first. If all are zero, the immobilizer system was not the problem (see page 22-224). ■

NO—Go to step 26.

6. Check to see if the immobilizer indicator comes on and blinks.

Does the indicator blink?

YES—Go to step 26.

NO—Go to step 7.

7. Disconnect the 7P connector from the immobilizer control unit-receiver.

8. Check to see if the immobilizer indicator goes off.

Does the indicator go off?

YES—Substitute a known-good immobilizer control unit-receiver and/or PCM. ■

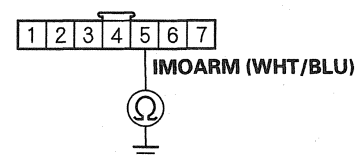
NO—Go to step 9.

9. Turn the ignition switch OFF.

10. Remove the gauge control module and disconnect connector A (20P) (see page 22-102).

11. Check for continuity between the immobilizer control unit-receiver 7P connector No. 5 (IMOARM) terminal and body ground.

IMMOBILIZER CONTROL UNIT-RECEIVER 7P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair a short to ground in the wire. ■

NO—Faulty immobilizer indicator, replace the gauge control module. ■

(cont'd)

Immobilizer System

Troubleshooting (cont'd)

12. Try to start the engine.

Does the engine start?

YES—Go to step 13.

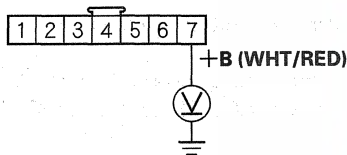
NO—Go to step 18.

13. Turn the ignition switch OFF.

14. Disconnect the 7P connector from the immobilizer control unit-receiver.

15. Measure the voltage between the immobilizer control unit-receiver 7P connector No. 7 (+B) terminal and body ground.

**IMMOBILIZER CONTROL UNIT-RECEIVER
7P CONNECTOR**



Wire side of female terminals

Is there battery voltage?

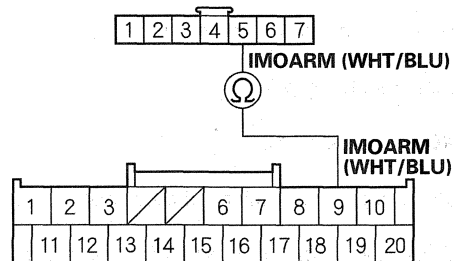
YES—Go to step 16.

NO—Faulty No. 13 (7.5 A) fuse in the passenger's under-dash fuse/relay box. If the fuse is OK, check for an open in the wire between the immobilizer control unit-receiver and passenger's under-dash fuse/relay box. ■

16. Remove the gauge control module and disconnect connector A (20P) (see page 22-102).

17. Check for continuity between the immobilizer control unit-receiver 7P connector No. 5 (IMOARM) terminal and gauge control module connector A (20P) No. 9 terminal.

IMMOBILIZER CONTROL UNIT-RECEIVER 7P CONNECTOR
Wire side of female terminals



GAUGE CONTROL MODULE CONNECTOR A (20P)
Wire side of female terminals

Is there continuity?

YES—Faulty immobilizer indicator, replace the gauge control module. ■

NO—Repair an open in the wire ■

18. Turn the ignition switch OFF.

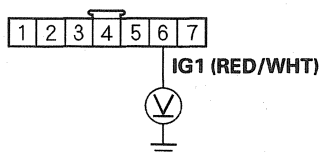
19. Disconnect the 7P connector from the immobilizer control unit-receiver.

20. Turn the ignition switch ON (II).



21. Measure the voltage between the immobilizer control unit-receiver 7P connector No. 6 (IG1) terminal and body ground.

IMMOBILIZER CONTROL UNIT-RECEIVER 7P CONNECTOR



Wire side of female terminals

Is there battery voltage?

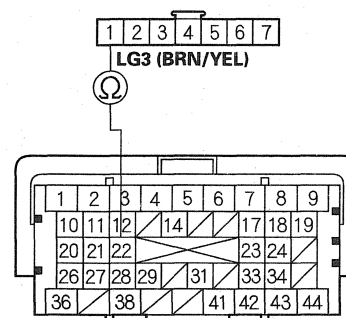
YES—Go to step 22.

NO—Faulty No. 1 (15 A) fuse in the driver's under-dash fuse/relay box. If the fuse is OK, check for an open in the wire between the immobilizer control unit-receiver and under-hood fuse/relay box and check PGM-FI main relay 1 (see page 22-82). ■

22. Turn the ignition switch OFF.
23. Jump the SCS line with the HDS, then disconnect PCM connector A (44P) (see page 11-8).

24. Check for continuity between the immobilizer control unit-receiver 7P connector No. 1 (LG3) terminal and PCM connector A (44P) No. 22 terminal.

IMMOBILIZER CONTROL UNIT-RECEIVER 7P CONNECTOR
Wire side of female terminals



PCM CONNECTOR A (44P)
Wire side of female terminals

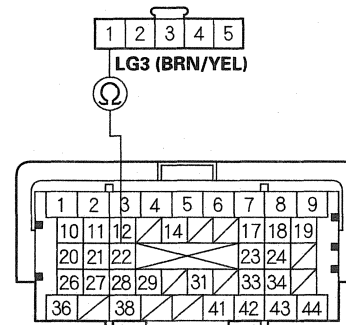
Is there continuity?

YES—Go to step 25.

NO—Repair an open in the wire. ■

25. Check for continuity between the imoes unit 5P connector No. 1 (LG3) terminal and PCM connector A (44P) No. 22 (LG3) terminal.

IMOES UNIT 5P CONNECTOR
Wire side of female terminals



PCM CONNECTOR A (44P)
Wire side of female terminals

Is there continuity?

YES—Substitute a known-good immobilizer control unit-receiver and/or imoes unit, and recheck. ■

NO—Repair an open in the wire. ■

(cont'd)

Immobilizer System

Troubleshooting (cont'd)

26. Turn the ignition switch OFF.
27. Connect the HDS to the data link connector.
28. Turn the ignition switch ON (II).
29. Look at the System Check in the immobilizer info with the HDS (see page 22-223).

Is the immobilizer system normal?

YES—Go to fuel and emission systems symptom troubleshooting index. ■

NO—Go to step 30.

30. Verify the System Check display on the HDS for the following information:
 - Harness short from the PCM to the immobilizer control unit-receiver. (IM OCD line short)
 - The communication was not good between the PCM and the immobilizer control unit-receiver by low battery voltage.
 - The communication was not good between the immobilizer control unit-receiver and the PCM by influence of some noise.
 - Immobilizer control unit-receiver failure.
 - PCM failure.

Does the HDS display any of the above information?

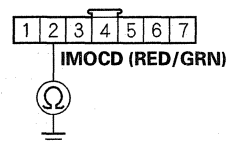
YES—Go to step 31.

NO—Go to step 37.

31. Turn the ignition switch OFF.
32. Disconnect the 7P connector from the immobilizer control unit-receiver.
33. Jump the SCS line with the HDS, then disconnect PCM connector A (44P) (see page 11-8).

34. Check for continuity between the immobilizer control unit-receiver 7P connector No. 2 (IM OCD (S-Net) terminal and body ground.

**IMMOBILIZER CONTROL UNIT-RECEIVER
7P CONNECTOR**



Wire side of female terminals

Is there continuity?

YES—Repair a short to ground in the wire. ■

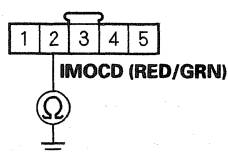
NO—Go to step 35.



35. Disconnect the imoes unit 5P connector.

36. Check for continuity between the imoes unit 5P connector No. 2 (IMOCD) terminal and body ground.

IMOES UNIT 5P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair short to ground in the wire. ■

NO—Substitute a known-good imoes unit, PCM and/or immobilizer control unit-receiver, and recheck. ■

37. Verify the System Check display on the HDS for the following information:

- Blown fuse.
- Harness open from the PCM and the immobilizer control unit-receiver.
- The communication was not good between the PCM and the immobilizer control unit-receiver by the battery voltage low.
- The communication was not good between the immobilizer control unit-receiver and the PCM by influence of some noise.
- Immobilizer control unit-receiver failure.
- PCM failure.

Does the HDS display any of the above information?

YES—Go to step 38.

NO—Check the Possible Failures shown on the System Check display (see page 22-223). ■

38. Turn the ignition switch OFF.

39. Disconnect the 7P connector from the immobilizer control unit-receiver.

40. Jump the SCS line with the HDS, then disconnect PCM connector A (44P) (see page 11-8).

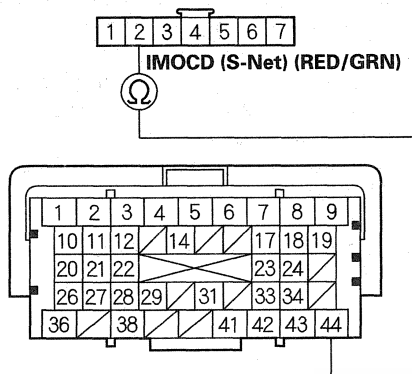
(cont'd)

Immobilizer System

Troubleshooting (cont'd)

41. Check for continuity between the immobilizer control unit-receiver 7P connector No. 2 (IMOCD (S-Net)) terminal and PCM connector A (44P) No. 44 terminal.

IMMOBILIZER CONTROL UNIT-RECEIVER 7P CONNECTOR
Wire side of female terminals



Is there continuity?

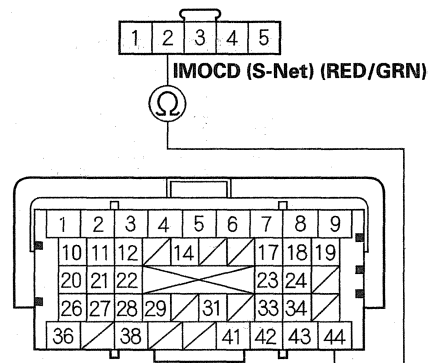
YES—Go to step 42.

NO—Repair an open in the wire. ■

42. Check for continuity between the imoes unit 5P connector No. 2 (IMOCD (S-Net)) terminal and PCM connector A (44P) No. 44 (IMOCD) terminal.

IMOES UNIT 5P CONNECTOR

Wire side of female terminals



Is there continuity?

YES—Substitute a known-good imoes unit and/or immobilizer control unit-receiver, and recheck the system. If the imoes unit and/or immobilizer control unit-receiver is OK, substitute a known-good PCM, and recheck. ■

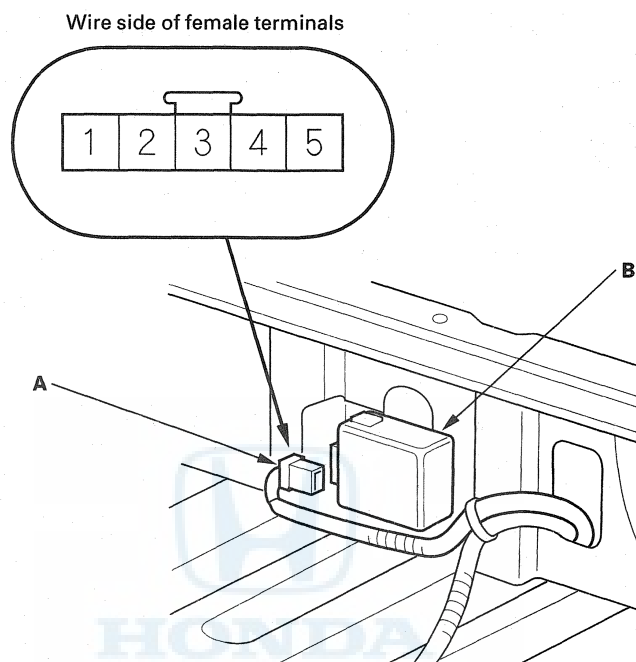
NO—Repair an open in the wire. ■



Imoes Unit Input Test/Replacement

'08 model

1. Remove the third row seat (see page 20-128).
2. Disconnect the 5P connector (A) from the imoes unit (B).



3. Inspect the connector and socket terminals to be sure they are all making good contact.
 - If the terminals are bent, loose or corroded, repair them as necessary and recheck the system.
 - If the terminals look OK, go to step 4.

(cont'd)

Immobilizer System

Imoes Unit Input Test/Replacement (cont'd)

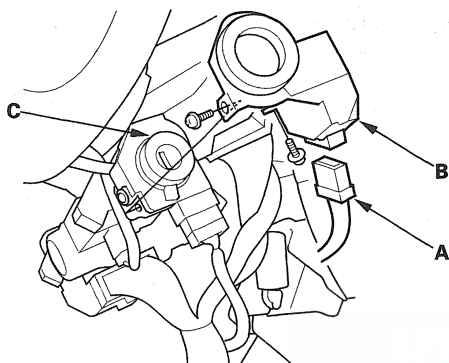
4. With the connectors still disconnected, make these input tests at the connector.

- If any test indicates a problem, find and correct the cause, then recheck the system.
- If all the input tests prove OK, replace the imoes unit, then do the imoes unit registration with the HDS, and make sure the immobilizer indicator blinks correctly.

Cavity	Wire	Test condition	Test: Desired result	Possible cause if result is not obtained
1	BRN/YEL LG3	Under all conditions NOTE: Disconnect PCM connector E (31P).	Check for continuity between the No. 1 terminal and PCM connector A (44P) No. 22 terminal: There should be continuity.	An open in the wire
5	WHT/RED +B	Under all conditions	Measure the voltage to ground: There should be battery voltage.	<ul style="list-style-type: none"> • Blown No. 54 (40 A) fuse in the under- hood fuse/relay box • Blown No. 13 (7.5 A) fuse in the passenger's under-dash fuse/relay box • An open in the wire
3	RED/WHT IG1	Ignition switch ON (II)	Measure the voltage to ground: There should be battery voltage.	<ul style="list-style-type: none"> • Blown No. 1 (15 A) fuse in the driver's under-dash fuse/relay box • An open in the wire
4	BLU/BLK KEY SW	Ignition key is in the ignition switch	Measure the voltage to ground: There should be less than 1 V.	<ul style="list-style-type: none"> • Faulty ignition key switch • An open in the wire • Poor ground (G501, G601)
		Ignition key is removed from the ignition switch	Measure the voltage to ground: There should be battery voltage.	<ul style="list-style-type: none"> • Faulty ignition key switch • A short to ground in the wire
2	RED/GRN IM OCD (S-Net)	Under all conditions NOTE: Disconnect PCM connector E (31P).	Check for continuity between the No. 2 terminal and PCM connector A (44P) No. 44 terminal: There should be continuity.	An open in the wire

Immobilizer Control Unit-Receiver Replacement

1. Remove the driver's dashboard lower cover (see page 20-90).
2. Remove the steering column covers (see page 17-25).
3. Disconnect the 7P connector (A) from the immobilizer control unit-receiver (B).



4. Remove the two screws and the immobilizer control unit-receiver from the ignition key cylinder (C).
5. Install the immobilizer control unit-receiver in the reverse order of removal.
6. After replacement, rewrite the unit with the HDS, then check the immobilizer system.

NOTE: You must have all of the customer's keys.

Immobilizer System

Immobilizer Key Registration

NOTE:

- The HDS is required for registration of the immobilizer keys.
- Check for aftermarket electrical equipment that can cause problems with transponder operation.
- The immobilizer control unit-receiver can store up to six immobilizer keys.

Add one new key

1. Have a registered key, a new immobilizer key that has been cut to fit the ignition switch, and the first password from the iN system.
2. Connect the HDS to the data link connector.
3. Turn the ignition switch ON (II).
4. Select "IMMOBILIZER" from the "SYSTEM SELECT" menu.
5. Select "Add and Delete Keys", then "Add 1 key".
6. Do the registration according to the instructions on the HDS screen.
7. Check if the engine can be started by the newly registered key. Check the keyless remote operation to make sure that it functions properly.

Delete or add multiple keys

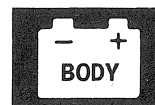
NOTE: If any of the registered keys were lost, do the following procedure to delete the lost registered key.

1. Have all registered keys, all new keys, and the first password.
2. Connect the HDS to the data link connector.
3. Turn the ignition switch ON (II).
4. Select "IMMOBILIZER" from the "SYSTEM SELECT" menu.
5. Select "Add and Delete Keys", or "Delete or Add Multiple Keys".
6. Do the registration according to the instruction of the HDS screen.
7. Check if the engine can be started by all the registered keys.

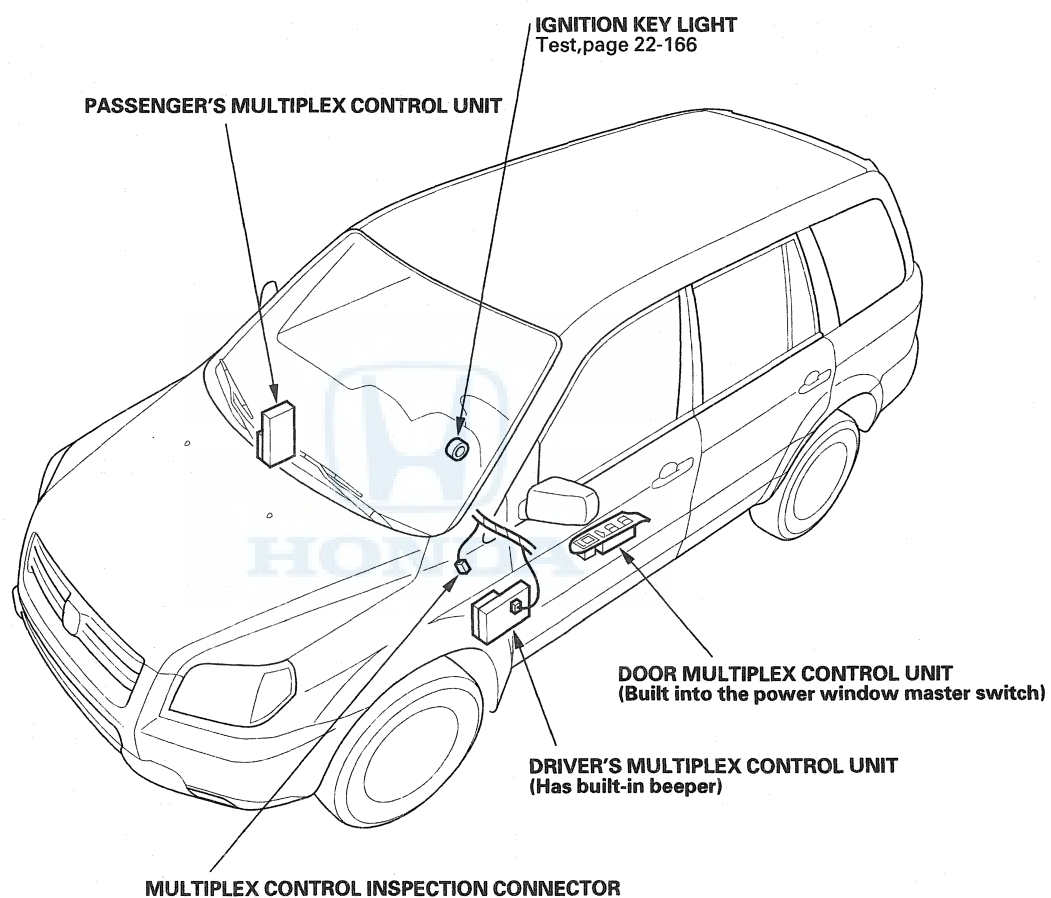
All keys are lost

1. Prepare all new keys and have the immobilizer PCM code.
2. Connect the HDS to the data link connector.
3. Turn the ignition switch ON (II).
4. Select "IMMOBILIZER" from the "SYSTEM SELECT" menu.
5. Select "Add and Delete Keys", then "ALL KEYS LOST".
6. Do the registration according to the instruction of the HDS screen.
7. Check if the engine can be started by all the registered keys.

Multiplex Control System

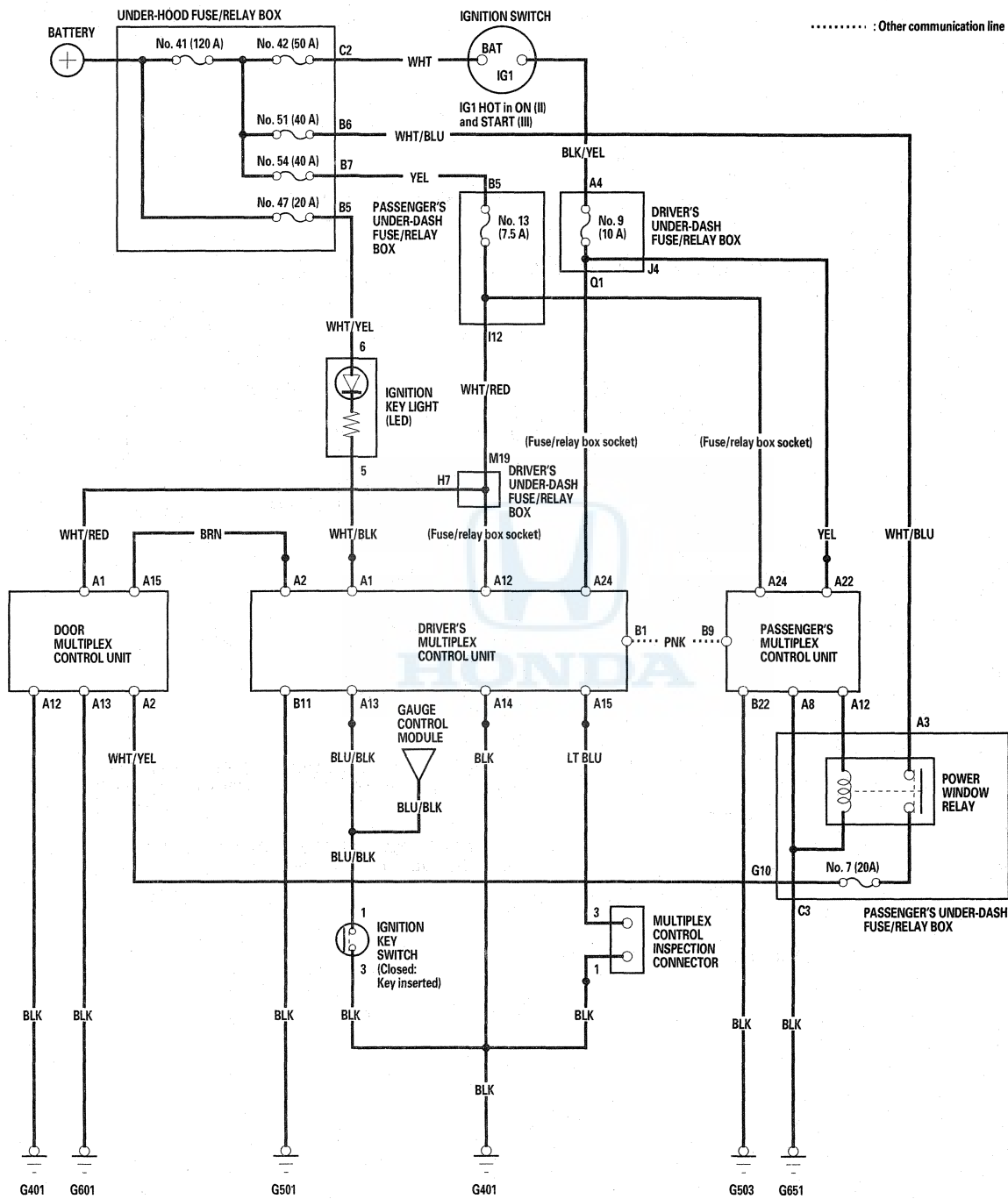


Component Location Index



Multiplex Control System

Circuit Diagram





System Description

The multiplex control system has four internal functions:

- Multiplexing (sends multiple signals over shared wires)
- Wake up/sleep modes (runs at full power only on demand to reduce battery draw)
- Fail-safe (fixes or ignores faulty signals)
- Self-diagnosis (Mode 1 for the system, Mode 2 for input lines)

The system controls the function of the following circuits

- Low oil pressure indicator
- Lights-on reminder
- Key-in reminder
- Key light timer
- Dash lights brightness control
- Entry light control
- Automatic lights-off
- Power door locks
- Power window (including key-off timer operation)
- Windshield wiper/washer (including speed sensitive intermittent wiper)
- Security alarm
- Rear window intermittent wiper

Multiplex Communication

To reduce the number of wire harnesses, digital signals are sent via shared multiplex communication lines rather than sending normal electrical signals through individual wires.

- The input signals from each switch are converted to digital signals at the central processing unit (CPU). The digital signals are sent from the transmitter unit to the receiver unit as serial signals.
- The transmitted signal is converted to a switch signal at the receiver unit, and it operates the related component.
- There are exclusive communication lines between each of the multiplex control units:
 - Door ↔ Driver's (between the door and the driver's multiplex control units) wire color: BRN
 - Driver's ↔ Passenger's (between the driver's and the passenger's multiplex control units) wire color: PNK

The control units always communicate via these lines when the system is operating, and they stop communicating when the system is OFF.

Wake-up and Sleep

The multiplex control system has "wake-up" and "sleep" functions to decrease parasitic draw on the battery when the ignition switch is OFF.

- In the sleep mode, the multiplex control unit stops the functions (communication and CPU control) when it is not necessary for the system to operate.
- As soon as any operation is requested (for example, door is unlocked), the related control unit in the sleep mode immediately wakes up and begins to function. This control unit also sends a wake-up signal to the other control units via the communication lines.
- When the ignition switch is turned OFF, and the driver's or front passenger's door is opened and closed, there is about a 15 second delay before the control units go from the wake-up mode to the sleep mode.
- If any door is open, the sleep mode will not function.
- If the key is in the ignition switch, the sleep mode will not function.
- If a door or tailgate key cylinder switch is shorted, the sleep mode will not function.
- When in the sleep mode, the current draw is reduced from 60—80 mA to less than 20 mA.

Fail-safe

To prevent improper operation, the multiplex control system has a fail-safe function. In the fail-safe mode, the output signal is fixed when any part of the system malfunctions (for example, a faulty control unit or communication line).

Each control unit has a hardware fail-safe function that fixes the output signal when there is any CPU malfunction, and a software fail-safe function that ignores the signal from the malfunctioning control unit and allows the rest of the system to operate normally.

Multiplex Control System

Troubleshooting

Special Tools Required

MPCS service connector 07WAZ-001010A

Mode 1

Description:

Mode 1 is a communication line and CPU self test. If a problem occurs on a communication wire or with an individual control unit the multiplex system will store a DTC as long as the fault is still present.

To Enter Mode 1:

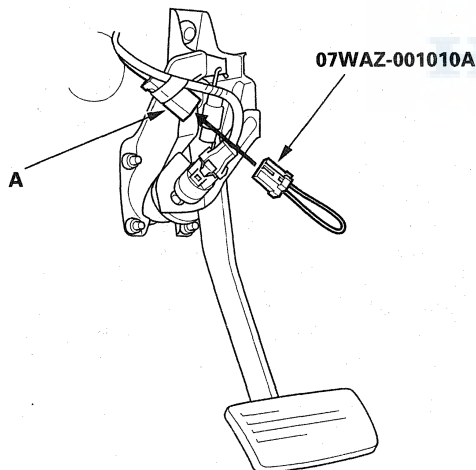
1. Check the No. 9 (10 A) fuse in the driver's under-dash fuse/relay box and the No. 13 (7.5 A) fuse in the passenger's under-dash fuse/relay box.

Are the fuses OK?

YES—Go to step 2.

NO—Find and repair the cause of the blown fuse. ■

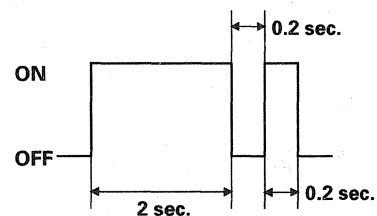
2. Connect the special tool to the multiplex control inspection connector (A).



3. Turn the ignition switch ON (II). If the driver's seat belt is unbuckled, the seat belt reminder will beep five times.

4. After about 5 seconds, the ignition key light should come on and the beeper should beep for 2 seconds, go off for 0.2 seconds, then blink and beep for 0.2 second. This means that you are in Mode 1 of the self-diagnosis function. Check self-diagnostic function Mode 1 for a diagnostic trouble code (DTC).

MODE 1: Ignition Key Light and Beeper



Did the multiplex system enter Mode 1?

YES—Go to step 5.

NO—Go to step 6.

5. Check for a DTC.

- If there are no DTCs present:
The ignition key light and beeper will not blink/beep again after the Mode 1 indication.
- If there is a DTC present:
About 1 second after entering Mode 1, the ignition key light and beeper indicate the DTC(s), then repeat it every 3 seconds. If there is more than one DTC, the system will indicate them in succeeding order.

Is there a DTC present?

YES—Follow the procedure in the chart. ■

NO—Go to Mode 2.

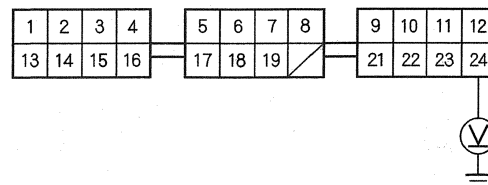


DTC(s)	Cause	Procedure
1	The driver's unit is not able to receive signals from the door unit.	Go to BRN wire communication line test.
2	The driver's unit is not able to receive signals from the passenger's unit.	Go to PNK wire communication line test.
3	Malfunction in the driver's unit.	Go to multiplex control system input test, if all inputs are OK, replace driver's multiplex control unit.
4	Signals from each unit do not match.	Confirm correct multiplex control units are installed.
5	The passenger's unit is not able to receive signals from the other units.	Go to multiplex control system input test, if all inputs are OK, replace passenger's multiplex control unit.
6	The door unit is not able to receive signals from the other units.	Go to multiplex control system input test, if all inputs are OK, replace door multiplex control unit.
1, 2 and 3 Simultaneously	Communication (BRN or PNK) wire is shorted, (12 V or Ground).	Go to shorted communication line test.

6. Remove the special tool from the MPCS inspection connector.
7. Remove driver's multiplex control unit from the driver's under-dash fuse/relay box.

8. Measure the voltage between the A24 terminal of the driver's under-dash fuse/relay box socket and body ground.

DRIVER'S MULTIPLEX CONTROL UNIT CONNECTOR A



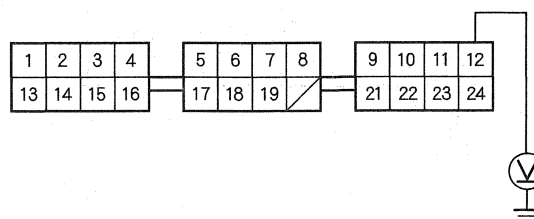
Is there battery voltage?

YES—Go to step 9.

NO—Replace the driver's under-dash fuse/relay box. ■

9. Turn the ignition switch ON (II).
10. Measure the voltage between A12 terminal of the driver's under-dash fuse/relay box socket and body ground.

DRIVER'S MULTIPLEX CONTROL UNIT CONNECTOR A



Is there battery voltage?

YES—Go to step 11.

NO—Repair an open in the wire between the No. 13 (7.5 A) fuse in the passenger's under-dash fuse/relay box and the driver's under-dash fuse/relay box socket. ■

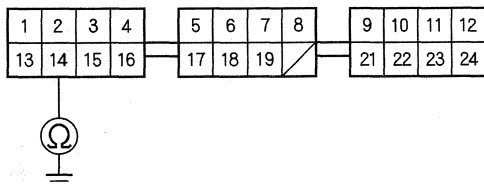
(cont'd)

Multiplex Control System

Troubleshooting (cont'd)

11. Check for continuity between the A14 terminal of the driver's under-dash fuse/relay box socket and body ground.

DRIVER'S MULTIPLEX CONTROL UNIT CONNECTOR A



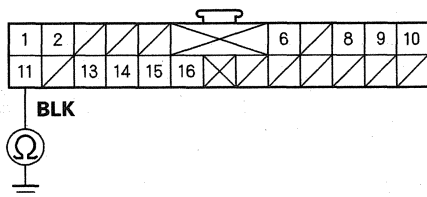
Is there continuity?

YES—Go to step 12.

NO—Repair an open in the wire between the driver's multiplex control unit connector and body ground. If the wire is OK, check for poor ground at G401. ■

12. Check for continuity between the B11 terminal of the driver's multiplex control unit connector and body ground.

DRIVER'S MULTIPLEX CONTROL UNIT CONNECTOR B (22P)



Wire side of female terminals

Is there continuity?

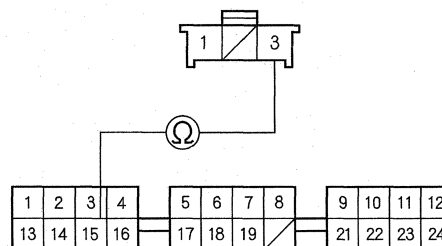
YES—Go to step 13.

NO—Repair an open in the wire between the driver's multiplex control unit connector and body ground. If the wire is OK, check for poor ground at G501. ■

13. Check for continuity between the No. 3 terminal of the MPCS inspection connector and the A15 terminal of the driver's under-dash fuse/relay box socket.

MULTIPLEX CONTROL INSPECTION CONNECTOR

Wire side of female terminals



DRIVER'S MULTIPLEX CONTROL UNIT CONNECTOR A

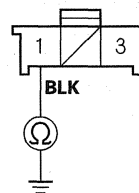
Is there continuity?

YES—Go to step 14.

NO—Faulty driver's under-dash fuse/relay box internal circuit between the inspection connector and the driver's under-dash fuse/relay box. Replace the driver's under-dash fuse/relay box. ■

14. Check for continuity between the No. 1 terminal of the multiplex control inspection connector and body ground.

MULTIPLEX CONTROL INSPECTION CONNECTOR

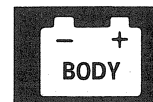


Wire side of female terminals

Is there continuity?

YES—If there is still no mode 1 indication, replace the driver's multiplex control unit and recheck the symptom.

NO—Repair an open in the wire between the inspection connector and body ground. If the wire is OK, check for a poor ground at G401. ■



Mode 2

Description:

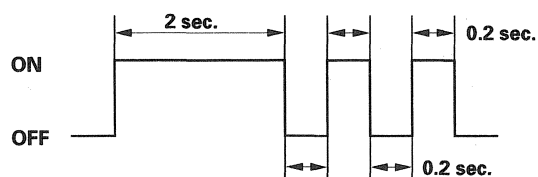
Mode 2 is an easy way to identify a problem circuit without having to test the circuit with a DVOM. Mode 2 will confirm a switch/circuit is working by flashing the ignition key light and sounding the beeper as the circuit is used. The multiplex control system will confirm inputs as they are grounded except for the following circuits:

- Turning the intermittent wiper ring (several confirmations as ring is turned).
- Turning the dash light illumination dimmer (several confirmations as the knob is turned).
- The Audio unit, Navigation display, RES display, DVD player (confirmation as any one component is disconnected).

To Enter Mode 2:

1. From Mode 1, disconnect the special tool from the multiplex control (MPCS) inspection connector for between 5 and 10 seconds, then reconnect it. The ignition key light should come on and the beeper should beep for 2 seconds, then blink/beep twice more at 0.2 second intervals. This indicates the system has entered Mode 2.

Mode 2: Ignition Key Light and Beeper



NOTE: To cancel Mode 2, disconnect the special tool from the multiplex control inspection connector for more than 10 seconds or turn the ignition switch OFF.

2. Operate the switches as described in the charts.

NOTE:

- A second key is necessary to test the key cylinder switches. If only one key is available, cut a second key from a non-immobilizer type key blank for the test.
- When testing the door lock knob switches, make sure all three passenger doors are locked. After unlocking the door, make sure to return the door lock knob switch to the lock position, otherwise the test results will be inaccurate.

Passenger's Multiplex Control Unit

First start with the front passenger's door lock knob switch in the lock position
Right rear door lock knob switch (UNLOCK)
Front Passenger's door lock switch (LOCK/UNLOCK)
Front Passenger's door switch (OPEN)
Right rear door switch (OPEN)
Rear window wiper switch (WASHER/WIPER/INT)
Tailgate key cylinder (LOCK/UNLOCK)
Security input for the radio, navigation system or, DVD player, or rear controller and screen. Test by disconnecting and reconnecting the radio, navigation system or, DVD player, or rear controller and screen connector.

Driver's Multiplex Control Unit

Dash lights brightness controller (ROTATE)
Driver's door switch (OPEN)
Left rear door switch (OPEN)
Left rear door lock knob switch (UNLOCK)
Tailgate latch switch (OPEN)
Driver's seat belt switch (UNBUCKLED)
Windshield wiper/washer switch (except MIST switch)
Brake pedal position switch (Brake switch) (PRESSED)
Parking brake switch (ON)
Hood switch (OPEN)
Headlight or combination switch (ON)

(cont'd)

Multiplex Control System

Troubleshooting (cont'd)

Door Multiplex Control Unit
Driver's door lock knob switch (LOCK/UNLOCK)
Driver's key cylinder switch (LOCK/UNLOCK)
Driver's door lock switch (LOCK/UNLOCK)
Driver's key cylinder switch (UNLOCK)
Power window master switch (the passenger's switches) (UP/DOWN)

Did the multiplex control system confirm all the circuits by flashing the ignition key light and sounding the beeper?

YES—The multiplex system is OK, if the symptom is still present, go to the input test for the system with the problem (see chart below), or refer to multiplex control unit input test (see page 22-250).

■

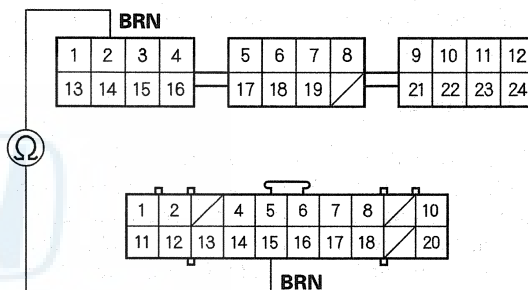
System
Power door locks (see page 22-280)
Security (see page 22-280)
Keyless (see page 22-280)
Power windows (Includes key-off timer operation) (see page 22-260)
Entry light control, Key light timer (see page 22-167)
Wiper controls (front and rear) (see page 22-208)
Automatic lights off (see page 22-137)
Reminder chimes (Key-in, lights-on, parking brake, seat belt) (see page 22-118)
Low oil pressure indicator (see page 22-121)

NO—Find the open or short in the circuit that was not confirmed by the multiplex control system. If the circuit is OK, replace the multiplex control unit that monitors the circuit. ■

BRN Wire Communication Line Test

1. Remove the driver's multiplex control unit from the driver's under-dash fuse/relay box.
2. Carefully pry off the driver's door switch trim (see page 20-6).
3. Disconnect door multiplex control unit connector A (20P).
4. Check for continuity between the A2 terminal of the driver's under-dash fuse/relay box socket and the No. 15 terminal of door multiplex control unit connector A (20P).

DRIVER'S MULTIPLEX CONTROL UNIT CONNECTOR A



DOOR MULTIPLEX CONTROL UNIT CONNECTOR A (20P)

Wire side of female terminals

Is there continuity?

YES—Replace the multiplex control unit most closely related to the failure. ■

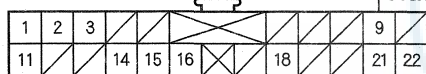
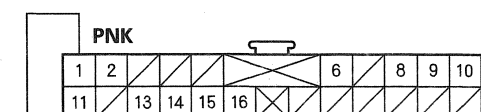
NO—Repair an open in the wire between the door multiplex control unit connector and the driver's under-dash fuse/relay box. If the wire is OK, replace the driver's under-dash fuse/relay box. ■



PNK Wire Communication Line Test

1. Disconnect driver's multiplex control unit connector B (22P).
2. Disconnect passenger's multiplex control unit connector B (22P).
3. Check for continuity between the B1 terminal of the driver's multiplex control unit connector B (22P) and the B9 terminal of the passenger's multiplex control unit connector B (22P).

**DRIVER'S MULTIPLEX CONTROL
UNIT CONNECTOR B (22P)**
Wire side of female terminals



**PASSENGER'S MULTIPLEX CONTROL
UNIT CONNECTOR B (22P)**
Wire side of female terminals

Is there continuity?

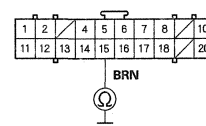
YES—Replace the multiplex control unit most closely related to the failure. ■

NO—Repair an open in the wire between the driver's multiplex control unit connector B (22P) and passenger's multiplex control unit connector B (22P). ■

Shorted Communication Line Test

1. Remove the driver's multiplex control unit from the driver's under-dash fuse/relay box.
2. Carefully pry off the driver's door switch trim (see page 20-6)
3. Disconnect door multiplex control unit connector A (20P).
4. Disconnect passenger's multiplex control unit connector B (22P).
5. Check for continuity between the No. 15 terminal of door multiplex control unit connector A (20P) and body ground.

DOOR MULTIPLEX CONTROL UNIT CONNECTOR A (20P)



Wire side of female terminals

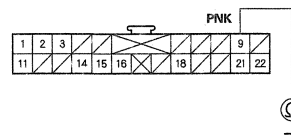
Is there continuity?

YES—Repair short to ground in the wire between the door multiplex control unit connector and body ground. ■

NO—Go to step 6.

6. Check for continuity between the B9 terminal of passenger's multiplex control unit connector B (22P) and body ground.

**PASSENGER'S MULTIPLEX CONTROL
UNIT CONNECTOR B (22P)**



Wire side of female terminals

Is there continuity?

YES—Repair short to ground in the wire between the passenger's multiplex control unit connector and the driver's multiplex control unit connector. ■

NO—Replace the driver's multiplex control unit and recheck the symptom. ■

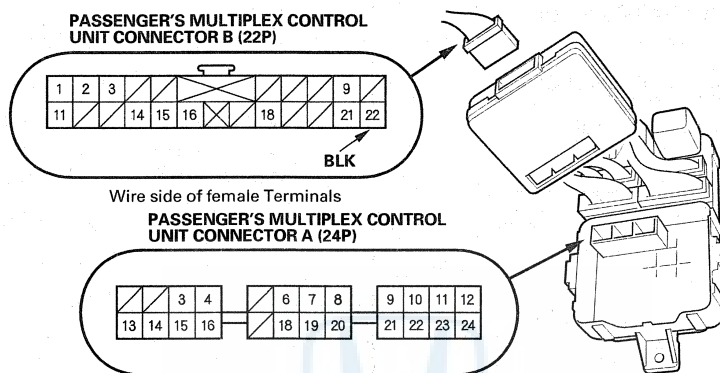
Multiplex Control System

Multiplex Control Unit Input Test

Before performing the multiplex control unit input test, do the multiplex troubleshooting (Mode 1 and Mode 2).

Passenger's Unit

1. Remove the passenger's multiplex control unit from the passenger's under-dash fuse/relay box.
2. Inspect the connector and socket terminals to be sure they are all making good contact.
 - If the terminals are bent, loose or corroded, repair them as necessary, and recheck the system.
 - If the terminals look OK, go to step 3.



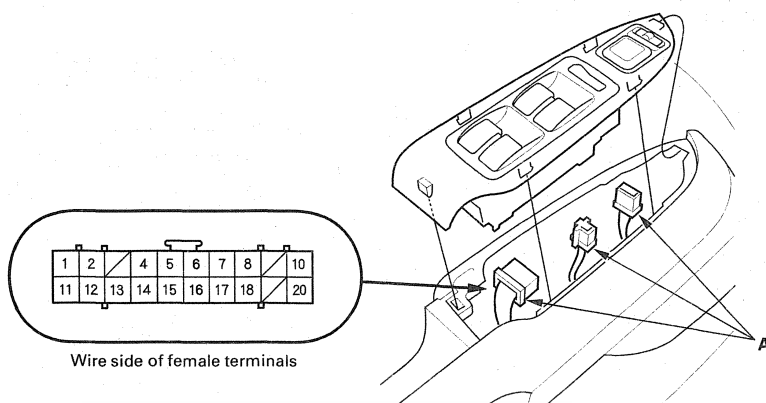
3. Make the following input tests at connector B (22P) and passenger's under-dash fuse/relay box socket connector A.
Be careful not to spread the fuse box connectors.
 - If any test indicates a problem, find and correct the cause, then recheck the system.
 - If all the input tests prove OK, go to step 4.

Cavity	Wire	Test condition	Test: Desired result	Possible cause if result is not obtained
B22*	BLK	Under all conditions	Measure the voltage to ground: There should be less than 1 V.	<ul style="list-style-type: none">• Poor ground (G503)• An open in the wire
A24	Fuse/relay box socket	Under all conditions	Measure the voltage to ground: There should be battery voltage.	<ul style="list-style-type: none">• Blown No. 13 (7.5 A) fuse in the passenger's under-dash fuse/relay box• Blown No. 54 (40 A) fuse in the under-hood fuse/relay box• Faulty passenger's under-dash fuse/relay box
A8		Under all conditions	Measure the voltage to ground: There should be less than 1 V.	<ul style="list-style-type: none">• Poor ground (G651)• An open in the wire
A22		Ignition switch ON (II)	Measure the voltage to ground: There should be battery voltage.	<ul style="list-style-type: none">• Blown No. 9 (10 A) fuse in the driver's under-dash fuse/relay box• An open in the wire
A12		Under all conditions	Attach A12 to battery voltage: Power window relay should click and measure the voltage between No. 7 (20 A) fuse and ground: There should be battery voltage.	<ul style="list-style-type: none">• Poor ground (G651)• Faulty passenger's fuse box• Faulty power window relay• An open in the wire• Blown No. 51 (40 A) fuse in the under-hood fuse/relay box

*: Make this test with all connectors reconnected

Door Unit

4. Carefully pry off the driver's door switch trim (see page 20-6).
5. Disconnect the connectors (A).



6. Inspect the connector and socket terminals to be sure they are all making good contact.
 - If the terminals are bent, loose or corroded, repair them as necessary, and recheck the system.
 - If the terminals look OK, go to step 7.
7. Make the following input tests at connector A (20P).
 - If any test indicates a problem, find and correct the cause, then recheck the system.
 - If all the input tests prove OK, go to step 8.

Cavity	Wire	Test condition	Test: Desired result	Possible cause if result is not obtained
A1	WHT/RED	Under all conditions	Measure the voltage to ground: There should be battery voltage.	<ul style="list-style-type: none"> • Blown No. 13 (7.5 A) fuse in the passenger's under-dash fuse/relay box • Blown No. 54 (40 A) fuse in the under-hood fuse/relay box • An open in the wire
A2	WHT/YEL	Ignition switch ON (II) and passenger's multiplex terminal A12 connected to battery voltage	Measure the voltage to ground on A2: There should be battery voltage.	<ul style="list-style-type: none"> • Blown No. 51 (40 A) fuse in the under-hood fuse/relay box • Blown No. 7 (20 A) fuse in the passenger's under-dash fuse/relay box • Faulty power window relay • An open in the wire
A12 ^{*1}	Fuse/relay box socket			
A12 ^{*2}	BLK	Under all conditions	Measure the voltage to ground: There should be less than 1 V.	<ul style="list-style-type: none"> • Poor ground (G401) • An open in the wire
A13 ^{*2}	BLK	Under all conditions	Measure the voltage to ground: There should be less than 1 V.	<ul style="list-style-type: none"> • Poor ground (G601) • An open in the wire

* 1: Passenger's multiplex control unit connector A

* 2: Make this test with all connectors reconnected

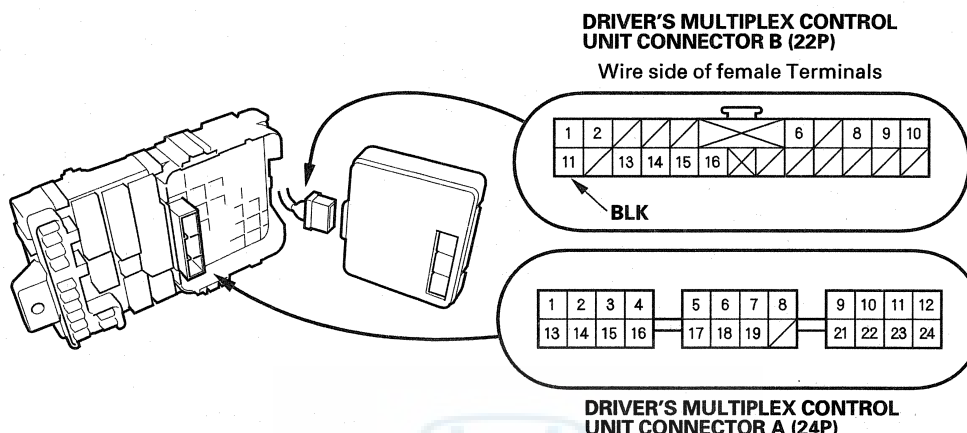
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Multiplex Control System

Multiplex Control Unit Input Test (cont'd)

Driver's Unit

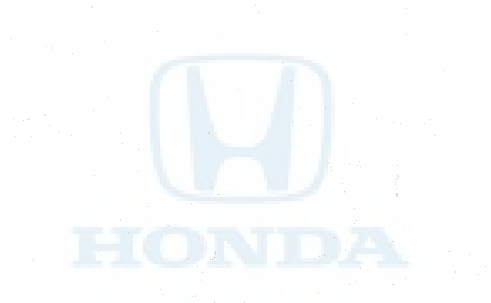
8. Remove the driver's multiplex control unit from the driver's under-dash fuse/relay box.
9. Inspect the connector and socket terminals to be sure they are all making good contact.
 - If the terminals are bent, loose or corroded, repair them as necessary, and recheck the system.
 - If the terminals look OK, go to step 10.



10. Make the following input tests at 22P connector B and the driver's under-dash fuse/relay box socket connector A. Be careful not to spread the fuse box connectors.
 - If any test indicates a problem, find and correct the cause, then recheck the system.
 - If all the input tests prove OK, one of the multiplex control units (door, driver's or passenger's) must be faulty. Substitute a known-good control unit for the one that's most closely related to the failure, then recheck. If the symptom continues, replace the next most likely control unit until the symptom goes away.

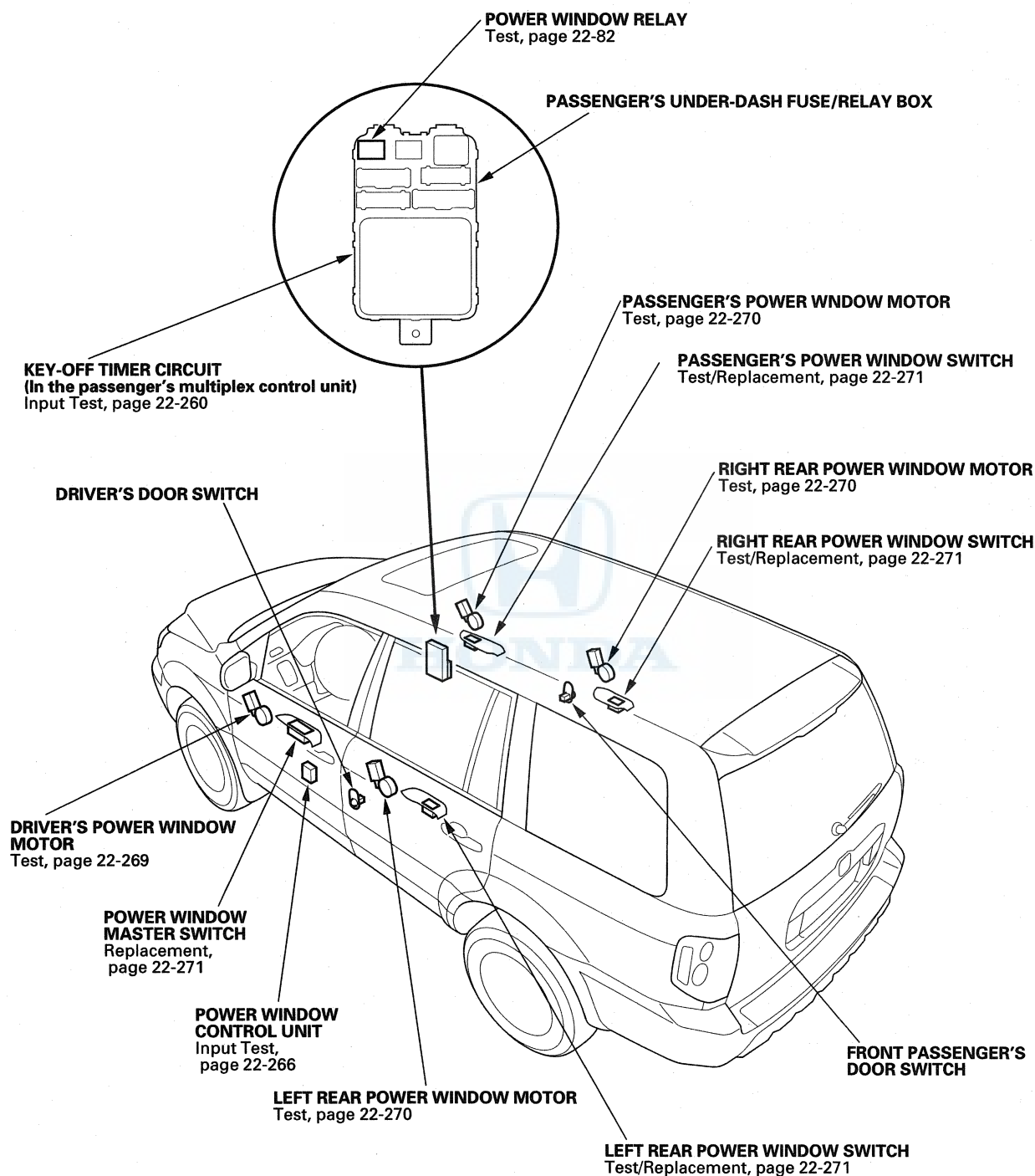
Cavity	Wire	Test condition	Test: Desired result	Possible cause if result is not obtained
B11*	BLK	Under all conditions	Measure the voltage to ground: There should be less than 1 V.	<ul style="list-style-type: none"> • Poor ground (G501) • An open in the wire
A12	Fuse/relay box socket	Under all conditions	Measure the voltage to ground: There should be battery voltage.	<ul style="list-style-type: none"> • Blown No. 13 (7.5 A) fuse in the passenger's under-dash fuse/relay box • Blown No. 54 (40 A) fuse in the under-hood fuse/relay box • An open in the wire
A14		Under all conditions	Check for continuity to ground: There should be continuity.	<ul style="list-style-type: none"> • Poor ground (G401) • An open in the wire
A24		Ignition switch ON (II)	Measure the voltage to ground: There should be battery voltage.	<ul style="list-style-type: none"> • Blown No. 9 (10 A) fuse in the driver's under-dash fuse/relay box • An open in the wire
A13		Ignition key is inserted into the ignition switch	Check for continuity to ground: There should be continuity.	<ul style="list-style-type: none"> • Faulty ignition key switch • An open in the wire • Poor ground (G401)
		Ignition key removed from the ignition switch	Check for continuity to ground: There should be no continuity.	<ul style="list-style-type: none"> • Faulty ignition key switch • A short to ground in the wire
A1		Under all conditions	Attach to ground: Ignition key light should come on.	<ul style="list-style-type: none"> • Blown No. 47 (20 A) fuse in the under-hood fuse/relay box • Blown LED • An open in the wire
A15		Short the multiplex control inspection connector terminals with the special tool	Check for continuity to ground: There should be continuity.	<ul style="list-style-type: none"> • Poor ground (G401) • Faulty driver's fuse/relay box • An open in the wire
		Remove the special tool from the multiplex control inspection connector	Check for continuity to ground: There should be no continuity.	A short to ground in the wire

* : Make this test with all connectors reconnected



Power Windows

Component Location Index

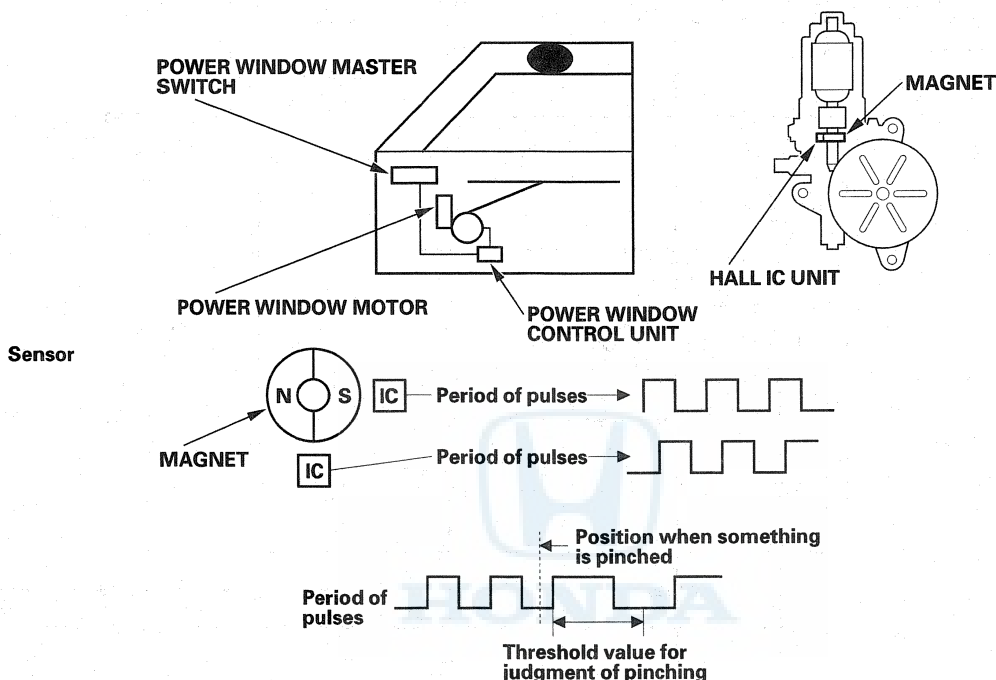




System Description

The driver's window will stop and automatically open if you pinch your hand or something during auto-up operation. The system is composed of the power window master switch, the power window control unit and the driver's power window motor.

The power window motor incorporates a pulser which generates pulses during the motor's operation and sends the pulses to the power window control unit. As soon as the power window control unit detects no pulses from the pulser, the control unit makes the power window motor stop and reverse.



Resetting the Power Window Control Unit

Resetting the power window control unit is required after performing the following procedures

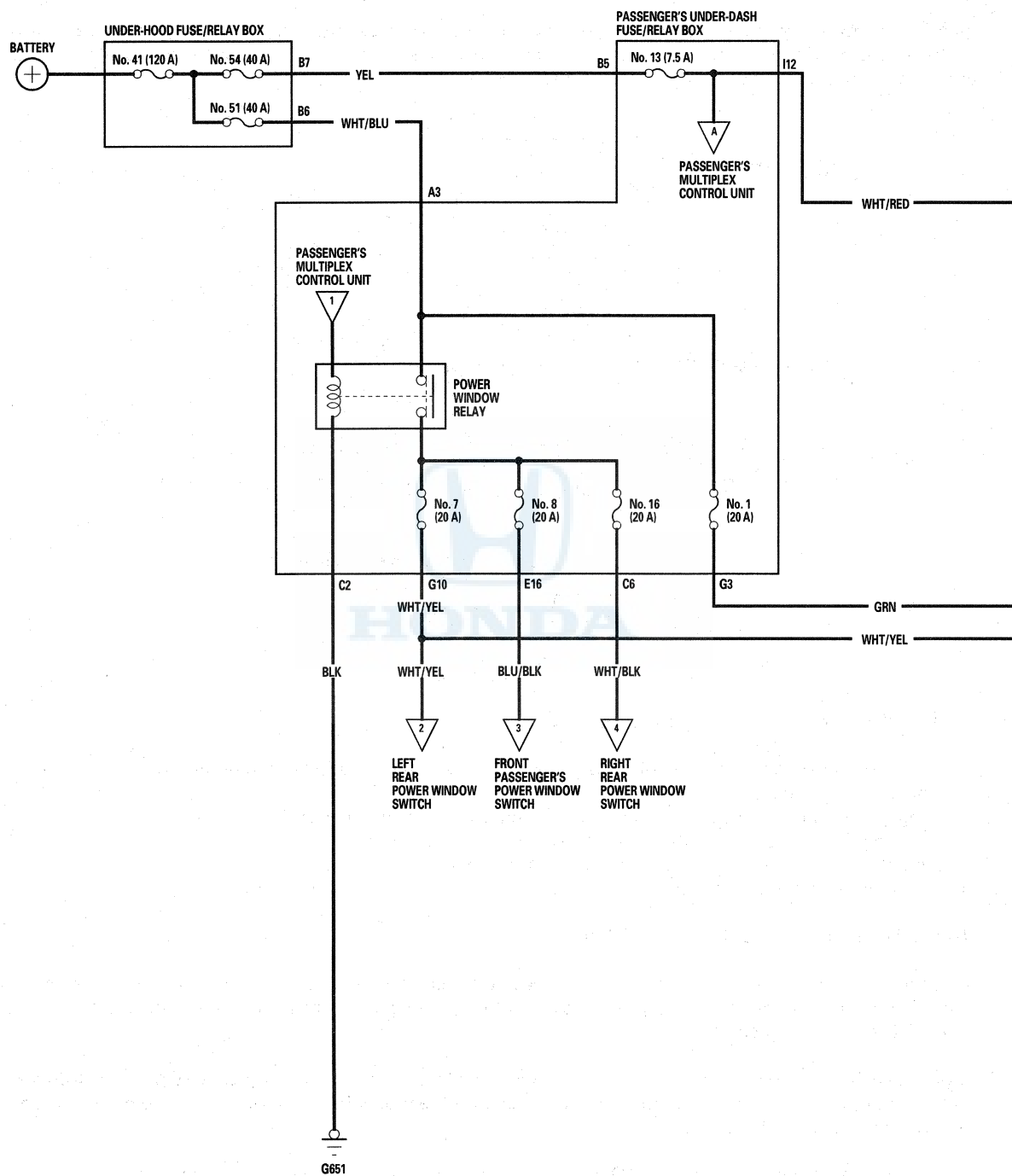
- Disconnecting the battery.
- Removing the No. 1 (20 A) fuse in the passenger's under-dash fuse/relay box.
- Disconnecting the 18P connector from the power window control unit.
- Removing the window regulator, glass or glass run channel.
- Disconnecting the driver's door wire harness.

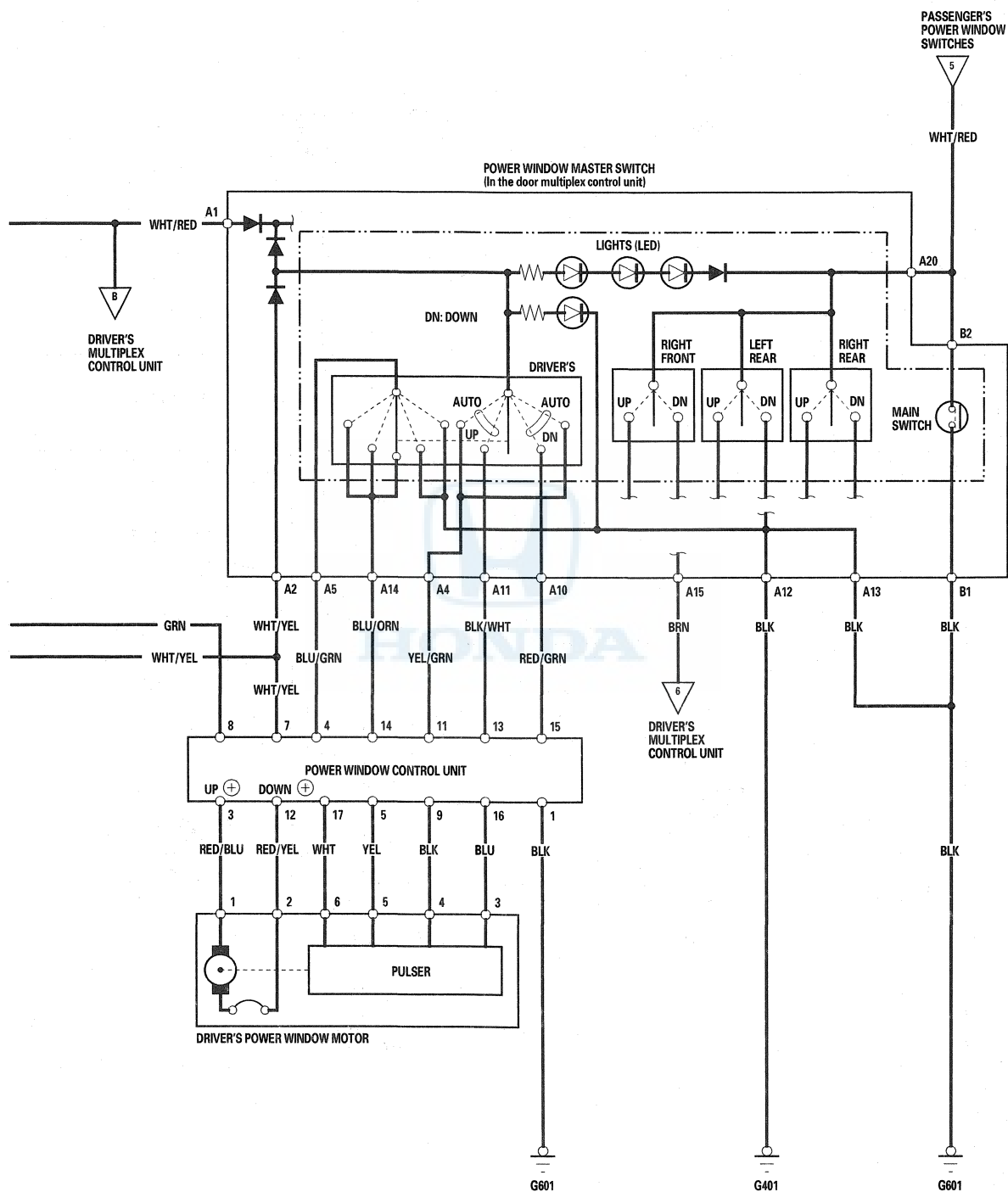
1. Turn the ignition switch OFF, then back ON (II).
2. Move the driver's power window all the way down by holding the driver's power window switch firmly down to the second detent, when the window reaches the bottom, hold the driver's power window switch in the AUTO DOWN position for 2 seconds.
3. Move the driver's power window all the way up without stopping by holding the driver's power window switch firmly up to the second detent, when the window reaches the top, hold the driver's power window switch in the AUTO UP position for 2 seconds.

If the power window does not work in AUTO, reset the power window master switch according to the above procedures again.

Power Windows

Circuit Diagram

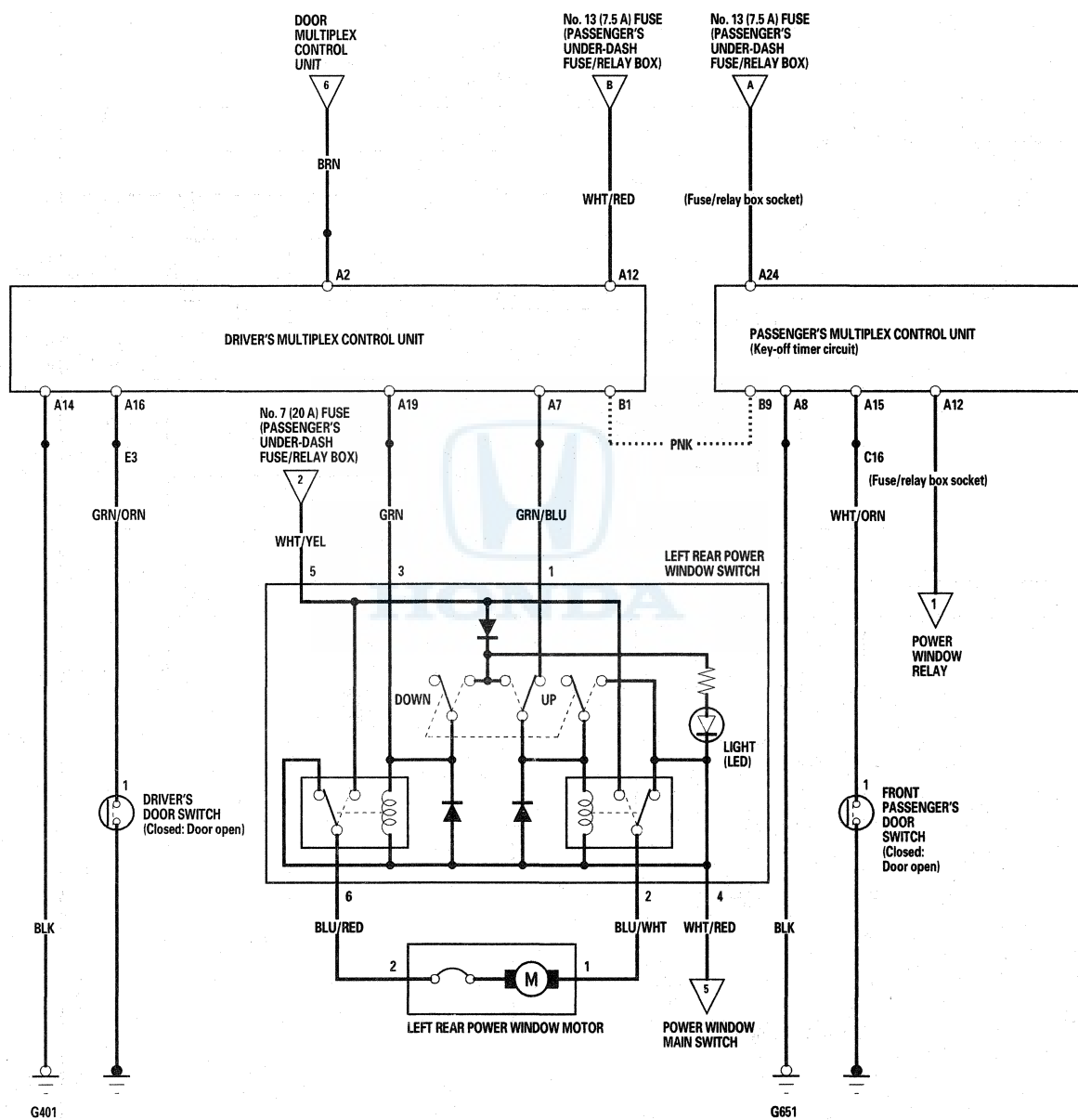


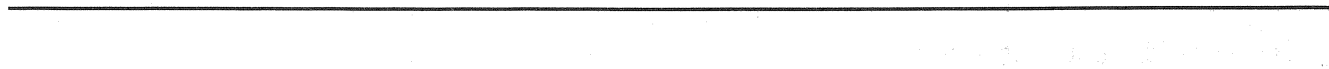


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Power Windows

Circuit Diagram (cont'd)





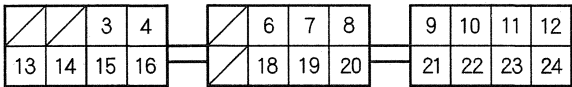
Power Windows

Control Unit Input Test

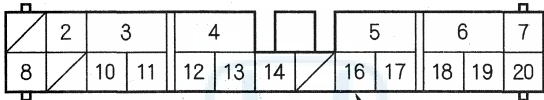
Passenger's Unit

1. Before testing the power window control functions, troubleshoot the multiplex control system (see page 22-244).
2. Remove the passenger's multiplex control unit from the passenger's under-dash fuse/relay box, and disconnect its connector.
3. Inspect the connector and socket terminals to be sure they are all making good contact.
 - If the terminals are bent, loose or corroded, repair them as necessary, and recheck the system.
 - If the terminals look OK, go to step 4.

PASSENGER'S UNDER-DASH FUSE/RELAY BOX SOCKET
(Passenger's multiplex control unit connector A)



PASSENGER'S UNDER-DASH FUSE/RELAY BOX CONNECTOR C



WHT/ORN

Wire side of female terminals



4. With the passenger's multiplex control unit still disconnected, make these input tests at the passenger's under-dash fuse/relay box socket.

- If any test indicates a problem, find and correct the cause, then recheck the system.
- If all the input tests prove OK, go to step 5.

Cavity	Wire	Test condition	Test: Desired result	Possible cause if result is not obtained
A24	Fuse/relay box socket	Under all conditions	Measure the voltage to ground: There should be battery voltage.	<ul style="list-style-type: none"> • Blown No. 13 (7.5 A) fuse in the passenger's under-dash fuse/relay box • Faulty passenger's under-dash fuse/relay box
A12	Fuse/relay box socket	Jump A12 to battery voltage	The power window relay should make a click sound and there should be 12 V at fuses 7, 8 and 16.	<ul style="list-style-type: none"> • Faulty power window relay • Poor ground (G651) • Blown No. 51 (40 A) fuse in the under-hood fuse/relay box • An open in the wire
A8	Fuse/relay box socket	Under all conditions	Check for continuity to ground: There should be continuity.	<ul style="list-style-type: none"> • Poor ground (G651) • An open in the wire
A19	Fuse/relay box socket	With power window main switch ON, jump A12 and A19 to battery voltage	Check the front passenger's power window motor operation: The window should go down.	<ul style="list-style-type: none"> • Poor ground (G601, G651) • Blown No. 8 (20 A) fuse in the passenger's under-dash fuse/relay box • Faulty power window master switch • Faulty front passenger's power window switch • Faulty front passenger's power window motor • An open in the wire
A18 · A12	Fuse/relay box socket	With power window main switch ON, jump A18 and A12 to battery voltage	Check the front passenger's power window motor operation: The window should go up.	
A7 · A12	Fuse/relay box socket	With power window main switch ON, jump A7 and A12 to battery voltage	Check the right rear power window motor operation: The window should go down.	
A6	Fuse/relay box socket	With power window main switch ON, jump A6 and A12 to battery voltage	Check the right rear power window motor operation: The window should go up.	<ul style="list-style-type: none"> • Poor ground (G601, G651) • Blown No. 16 (20 A) fuse in the passenger's under-dash fuse/relay box • Faulty power window master switch • Faulty right rear power window switch • Faulty right rear power window motor • An open in the wire
C16*	WHT/ORN	Front passenger's door open	Measure the voltage to ground: There should be less than 1 V.	<ul style="list-style-type: none"> • Faulty front passenger's door switch • An open in the wire • A short to ground in the wire
		Front passenger's door closed	Measure the voltage to ground: There should be 5 V or more.	

* : Reconnect the connector to the passenger's multiplex control unit.

(cont'd)

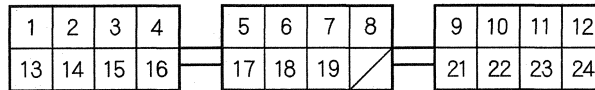
Power Windows

Control Unit Input Test (cont'd)

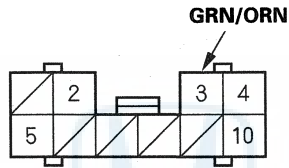
Driver's Unit

5. Remove the driver's multiplex control unit from the driver's under-dash fuse/relay box.
6. Inspect all connector and socket terminals to be sure they are all making good contact.
 - If the terminals are bent, loose or corroded, repair them as necessary, and recheck the system.
 - If the terminals look OK, go to step 7.

DRIVER'S UNDER-DASH FUSE/RELAY BOX SOCKET (Driver's multiplex control unit connector A)



DRIVER'S UNDER-DASH FUSE/RELAY BOX CONNECTOR E



Wire side of female terminals

7. With the driver's multiplex control unit still disconnected, make these input tests at the driver's under-dash fuse/relay box socket.
- If any test indicates a problem, find and correct the cause, then recheck the system.
 - If all the input tests prove OK, go to step 8.

Cavity	Wire	Test condition	Test: Desired result	Possible cause if result is not obtained
A12	Fuse/relay box socket	Under all conditions	Measure the voltage to ground: There should be battery voltage.	<ul style="list-style-type: none"> Blown No. 13 (7.5 A) fuse in the passenger's under-dash fuse/relay box An open in the wire
A14			Check for continuity to ground: There should be continuity.	<ul style="list-style-type: none"> Poor ground (G401) An open in the wire



8. With the driver's multiplex control unit still disconnected, make these input tests at the driver's under-dash fuse/relay box socket.
 9. Remove the passenger's multiplex control unit from the passenger's under-dash fuse/relay box and connect fuse/relay box socket terminal A12 to battery voltage. This turns the power window relay on.
- If any test indicates a problem, find and correct the cause, then recheck the system.
 - If all the input tests prove OK, go to step 10.

Cavity	Wire	Test condition	Test: Desired result	Possible cause if result is not obtained
A19	Fuse/relay box socket	With power window main switch ON, jump A6 to battery voltage	Check the left rear power window motor operation: The window should go down.	<ul style="list-style-type: none"> • Poor ground (G601, G651) • Blown No. 7 (20 A) fuse in the passenger's under-dash fuse/relay box • Faulty left rear switch • Faulty power window master switch • An open in the wire
A7	Fuse/relay box socket	With power window main switch ON, jump A18 to battery voltage	Check the left rear power window motor operation: The window should go up.	<ul style="list-style-type: none"> • Poor ground (G601, G651) • Blown No. 7 (20 A) fuse in the passenger's under-dash fuse/relay box • Faulty left rear switch • Faulty power window master switch • An open in the wire
E3*	GRN/ORN	Driver's door open	Measure the voltage to ground: There should be less than 1 V.	<ul style="list-style-type: none"> • Faulty driver's door switch • An open in the wire
		Driver's door closed	Measure the voltage to ground: There should be 5 V or more.	<ul style="list-style-type: none"> • Faulty driver's door switch • A short to ground in the wire

*: Reconnect the connector to the passenger's multiplex control unit.

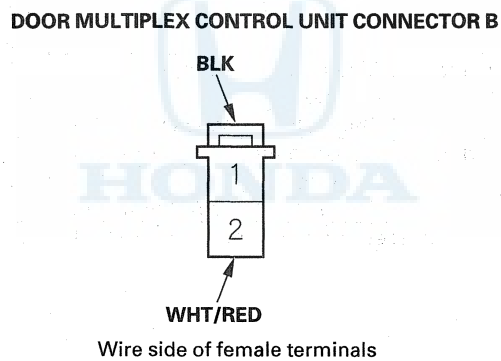
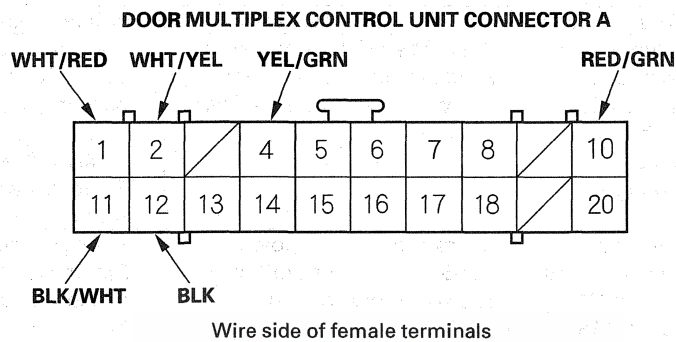
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Power Windows

Control Unit Input Test (cont'd)

Door Unit

- 10. Remove the door multiplex control unit from the driver's door, and disconnect its connectors.
- 11. Inspect the connector and socket terminals to be sure they are all making good contact.
 - If the terminals are bent, loose or corroded, repair them as necessary, and recheck the system.
 - If the terminals look OK, go to step 12.





12. Reconnect the connector to the door multiplex control unit, and make these input tests at the connectors.

- If any test indicates a problem, find and correct the cause, then recheck the system.
- If all the input tests prove OK, go to step 13.

NOTE: For the terminals A4, A5, A10, A11, and A14, refer to the power window control unit input test (see page 22-266).

Cavity	Wire	Test condition	Test: Desired result	Possible cause if result is not obtained
A1	WHT/RED	Under all conditions	Measure the voltage to ground: There should be battery voltage.	<ul style="list-style-type: none"> • Blown No. 13 (7.5 A) fuse in the passenger's under-dash fuse/relay box • Faulty passenger's fuse/relay box • An open in the wire
A2	WHT/YEL	Ignition switch ON (II) with power window relay jumped	Measure the voltage to ground: There should be battery voltage.	<ul style="list-style-type: none"> • Blown No. 7 (20 A) fuse in the passenger's under-dash fuse/relay box • Faulty passenger's multiplex control unit • Faulty power window relay • Poor ground (G601) • An open in the wire
A12	BLK	Under all conditions	Measure the voltage to ground: There should be less than 1 V.	<ul style="list-style-type: none"> • Poor ground (G401, G601) • An open in the wire
A13				
B1				
A20	WHT/RED	Ignition and main switch ON	Measure the voltage to ground: There should be battery voltage.	<ul style="list-style-type: none"> • An open in the wire • Blown No. 7 (20 A) fuse in the passenger's under-dash fuse/relay box
B2	WHT/RED			

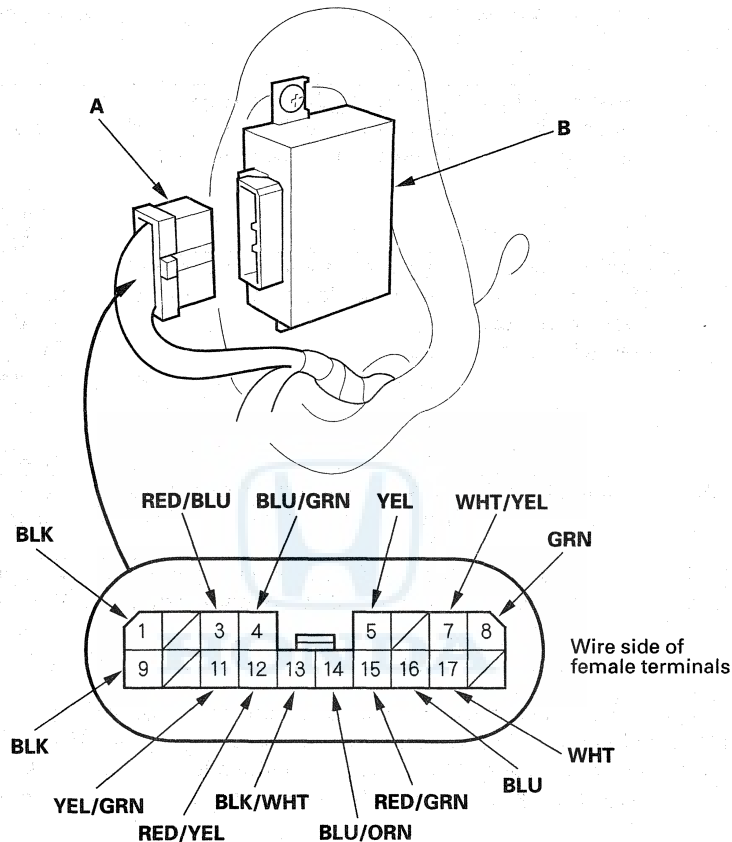
13. If all the input tests prove OK, one of the control units must be faulty. Substitute a known-good control unit for the one that is most likely at fault using the chart below, then check the system. If the system works properly, the original control unit is faulty; replace it. If there is still a malfunction, substitute a known-good control unit for the next most likely unit to be at fault, and recheck. If the system works properly, the original unit is faulty; replace it.

Affected window	Most likely control unit
Driver's power window	Door multiplex control unit or power window control unit
Front passenger's power window from power window master switch	Passenger's multiplex control unit
Right rear power window from power window master switch	Passenger's multiplex control unit
Left rear power window from power window master switch	Driver's multiplex control unit

Power Windows

Power Window Control Unit Input Test

1. Remove the driver's door panel (see page 20-6), but leave the driver's door subharness connector connected to the driver's door wire harness.
2. Disconnect the 18P connector (A) from the power window control unit (B).



3. Inspect the connector and socket terminals to be sure they are all making good contact.
- If the terminals are bent, loose or corroded, repair them as necessary, and recheck the system.
 - If the terminals look OK, go to step 4.



4. Reconnect the connector to the control unit, and make these input tests at the connectors.

- If any test indicates a problem, find and correct the cause, then recheck the system.
- If all the input tests prove OK, go to step 5.

Cavity	Wire	Test condition	Test: Desired result	Possible cause if result is not obtained
1	BLK	Under all conditions	Measure the voltage to ground: There should be less than 1 V.	<ul style="list-style-type: none"> • Poor ground (G601) • An open in the wire
8	GRN	Under all conditions**	Measure the voltage to ground. There should be battery voltage.	<ul style="list-style-type: none"> • Blown No. 1 (20 A) fuse in the passenger's under-dash fuse/relay box • An open in the wire
7	WHT/YEL	Ignition switch ON (II) and passenger's multiplex terminal A12 connected to battery voltage	Measure the voltage to ground: There should be battery voltage.	<ul style="list-style-type: none"> • Blown No. 7 (20 A) fuse in the passenger's under-dash fuse/relay box • Faulty power window relay • An open in the wire
13	BLK/WHT	Ignition switch ON (II) and driver's power window switch UP	Measure the voltage to ground: There should be battery voltage.	<ul style="list-style-type: none"> • Faulty power window master switch • An open in the wire
11	YEL/GRN	Ignition switch ON (II) and driver's power window switch AUTO UP Ignition switch ON (II) and driver's power window switch AUTO DOWN		
15	RED/GRN	Ignition switch ON (II) and driver's power window switch DOWN		
17	WHT	Ignition switch ON (II)	Measure the voltage between the No. 17 (+) and No. 9 (–) terminals: There should be battery voltage.	<ul style="list-style-type: none"> • Faulty driver's power window motor • Faulty pulser • An open in the wire • Faulty power window control unit
9	BLK			
5	YEL	While operating the driver's power window switch	Measure the voltage between the No. 5 (+) and No. 9 (–) terminals: There should be pulse voltage 0–5 V (an analog voltmeter needle should move back and forth alternately; a digital voltmeter should show the average voltage of about 2.5 V).	
16	BLU	While operating the driver's power window switch	Measure the voltage between the No. 16 (+) and No. 9 (–) terminals: There should be pulse voltage 0–5 V (an analog voltmeter needle should move back and forth alternately; a digital voltmeter should show the average voltage of about 2.5 V).	
17	WHT	Ignition switch ON (II)	Measure the voltage between terminal No. 17 and body ground: There should be battery voltage.	<ul style="list-style-type: none"> • Faulty power window control unit • A short to ground in the wire • Faulty driver's power window motor

* 1: Make sure the driver's door subharness is connected

* 2: Passenger's multiplex control unit connector

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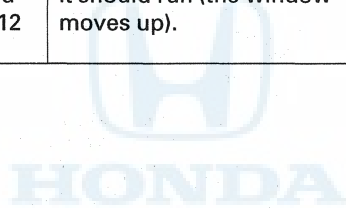
Power Windows

Power Window Control Unit Input Test (cont'd)

5. Disconnect the 18P connector from the power window control unit, then make these input tests at the connector.

- If any test indicates a problem, find and correct the cause, then recheck the system.
- If all the input tests prove OK, the control unit must be faulty; replace it.

Cavity	Wire	Test condition	Test: Desired result	Possible cause if result is not obtained
4	BLU/GRN	Driver's power window switch DOWN	Check for continuity to ground: There should be continuity.	<ul style="list-style-type: none">• Poor ground (G401, G601)• Faulty power window master switch• An open in the wire
4 14	BLU/GRN BLU/ORN	Driver's power window switch OFF	Check for continuity between the No. 4 and No. 14 terminals: There should be continuity.	<ul style="list-style-type: none">• Faulty power window master switch• An open in the wire
3	RED/BLU	Connect the battery power to the No. 12 (+) and ground the No. 3 (−) terminals	Check for driver's power window motor operation: It should run (the window moves down).	<ul style="list-style-type: none">• Faulty driver's power window motor• An open in the wire
12	RED/YEL	Connect the battery power to the No. 3 (+) and ground the No. 12 (−) terminals	Check for driver's power window motor operation: It should run (the window moves up).	<ul style="list-style-type: none">• Faulty driver's power window motor• An open in the wire

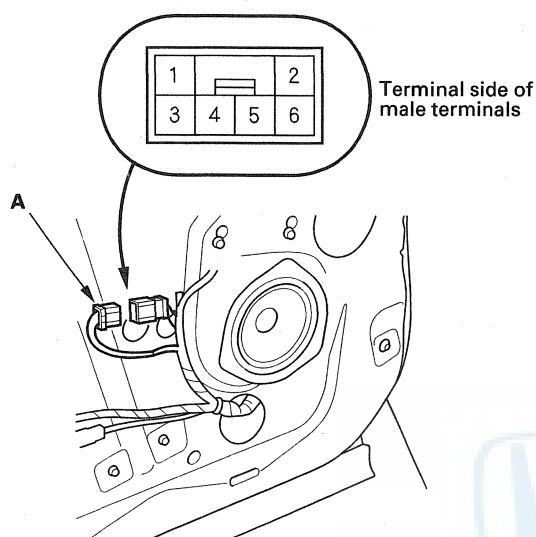




Driver's Power Window Motor Test

Motor Test

1. Remove the driver's door panel (see page 20-6).
2. Disconnect the 6P connector (A) from the power window motor.



3. Test the motor in each direction by connecting battery power and ground according to the table. When the motor stops running, disconnect one lead immediately.

Terminal	1	2
Direction		
UP	⊕	⊖
DOWN	⊖	⊕

4. If the motor does not run or does not run smoothly, replace it.

Pulser Test

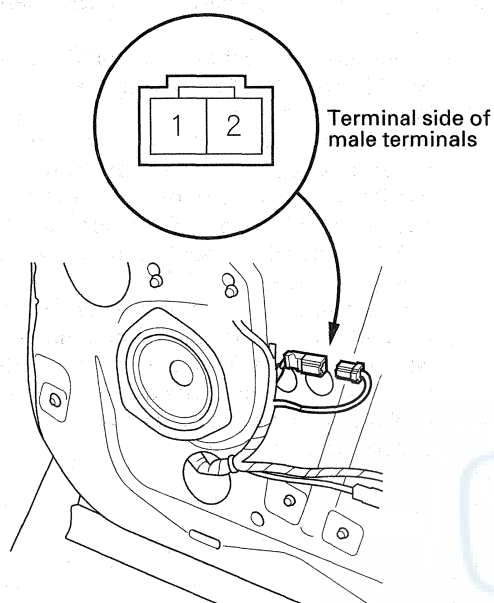
5. Reconnect the 6P connector to the power window motor.
6. Measure the voltage between the terminals.

- There should be battery voltage between the No. 6 (+) and No. 4 (−) terminals when the ignition switch is ON (II).
- Connect an analog voltmeter between the No. 5 (+) and No. 4 (−) terminals, and run the power window motor at down or up. The voltmeter needle should move back and forth alternately (a digital voltmeter should show the average voltage between 0–5 V).
- Connect an analog voltmeter between the No. 3 (+) and No. 4 (−) terminals, and run the power window motor at down or up. The voltmeter needle should move back and forth alternately (a digital voltmeter should show the average voltage between 0–5 V).

Power Windows

Passenger's Power Window Motor Test

1. Remove the passenger's door panel (see page 20-6).
2. Disconnect the 2P connector from the power window motor.



3. Test the motor by connecting battery power and ground according to the table. When the motor stops running, disconnect one lead immediately.

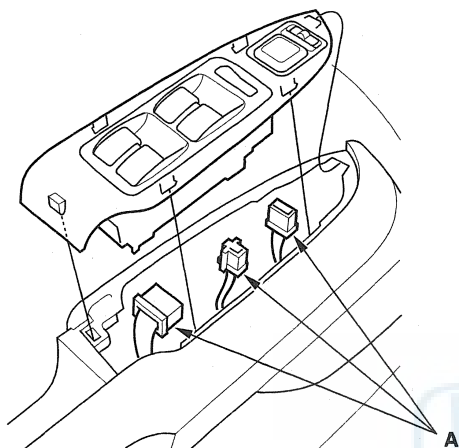
Terminal	1	2
Direction		
UP	⊕	⊖
DOWN	⊖	⊕

4. If the motor does not run or fails to run smoothly, replace it.

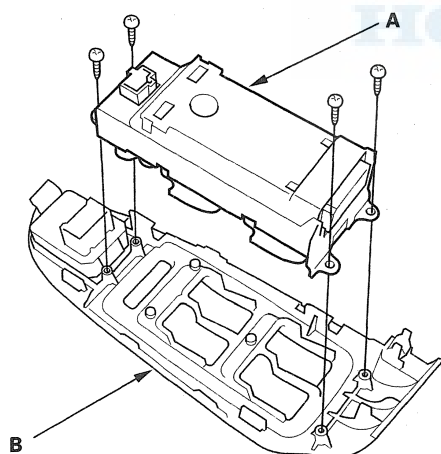


Power Window Master Switch Replacement

1. Carefully pry off the driver's door switch trim (see page 20-6).
2. Disconnect the power mirror and power window switch connectors (A).



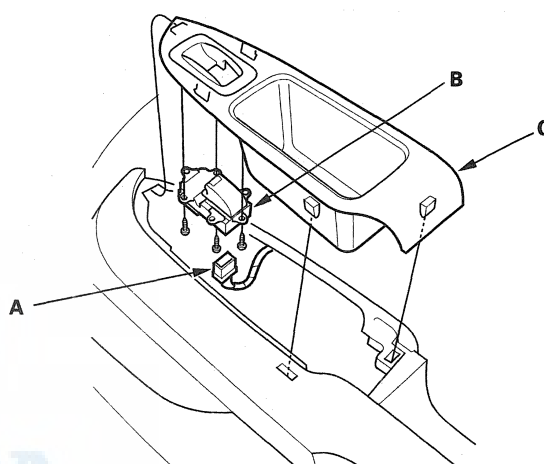
3. Remove the four mounting screws, then remove the master switch (A) from the panel (B).



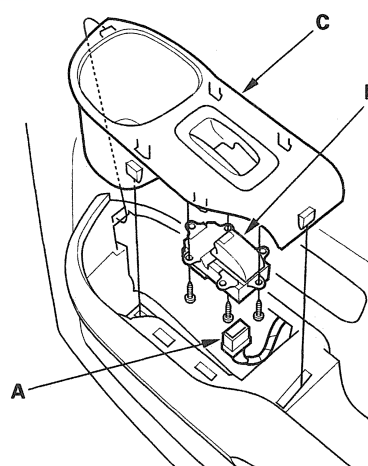
Passenger's Power Window Switch Test/Replacement

1. Carefully pry off the door switch trim (see page 20-6).
2. Disconnect the 6P connector (A) from the power window switch (B), then remove the three mounting screws and the power window switch from the switch trim (C).

Front Passenger's



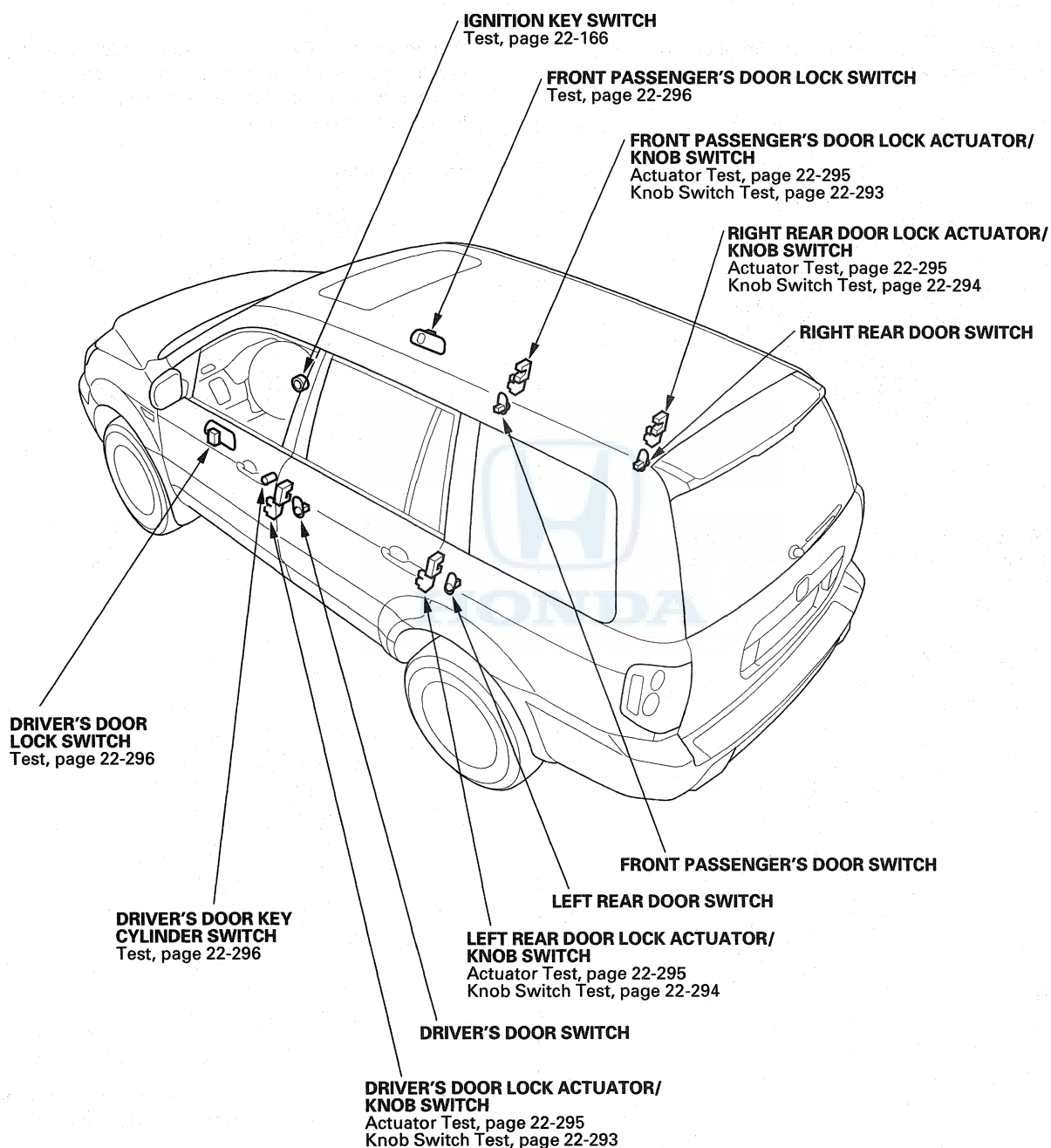
Rear

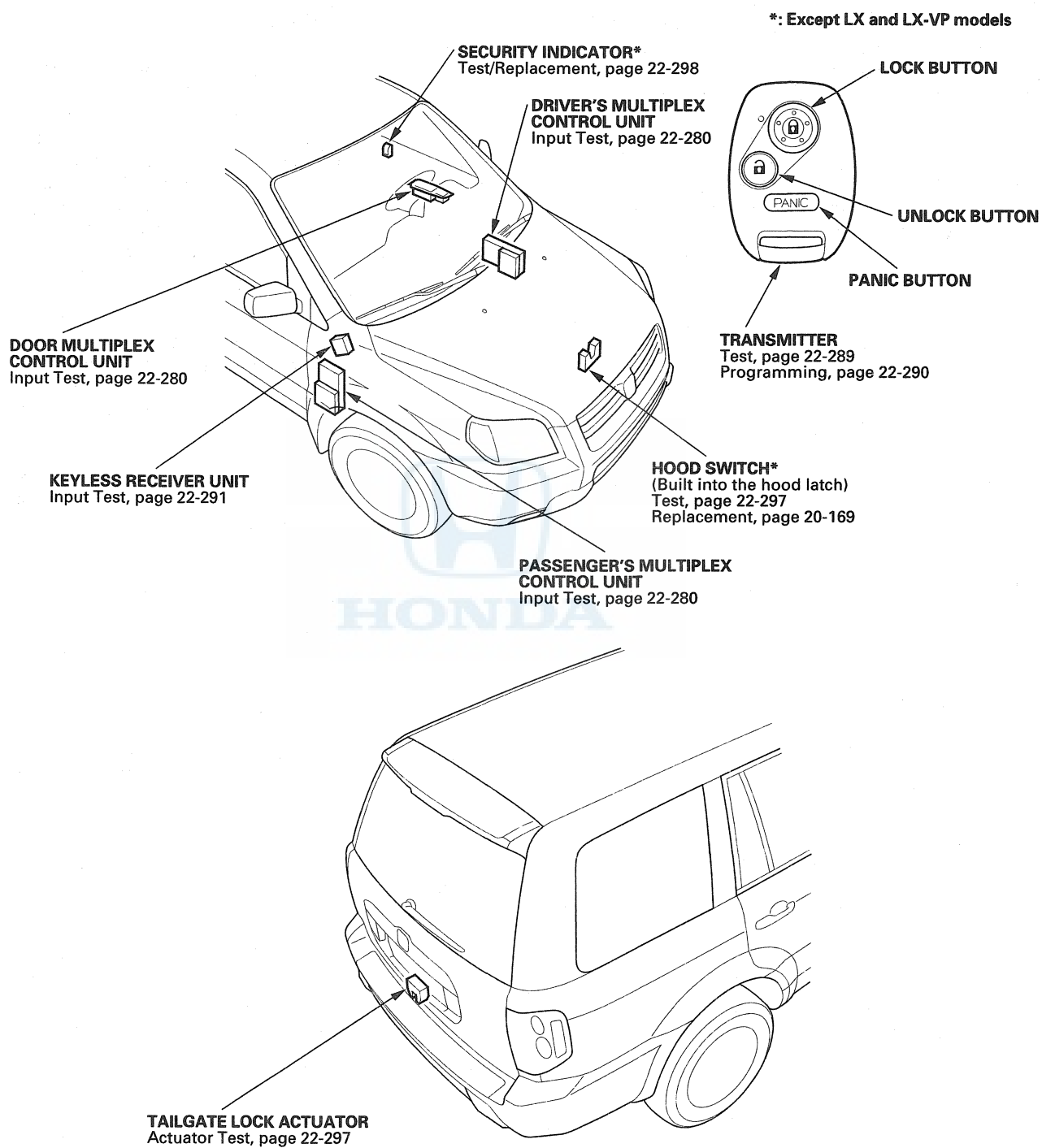


3. Swap the window switch with another known-good switch and test. If the original window switch is faulty, replace it.

Keyless/Power Door Locks/Security System

Component Location Index





Keyless/Power Door Locks/Security System

System Description

Security Alarm System

The security alarm system is armed automatically after the doors, hood, and tailgate are closed and locked. For the system to arm, the ignition switch must be off, the key must be removed, and the security control unit must receive signals that the doors, hood, and tailgate are closed and locked. The alarm can be disarmed at any time by unlocking either door with the key or the remote transmitter.

When everything is closed and locked, the only control unit inputs that are grounded, and have 0 volts, are the driver's door lock knob switch, the audio unit, DVD player, rear controller and screen, and the navigation display. In other words, all of the other switches are open, including the key cylinder switches, and they have about 10 V. 10 seconds after the doors and tailgate are locked with the key or the lock knob (with the door open), or immediately after the doors are locked with the LOCK button on the remote transmitter, the security system arms, and the security indicator on the door flashes. If the security indicator does not flash, the system is not arming. Check the doors, hood, and tailgate to see if they are closed. A beep to confirm the security alarm system is armed will sound if the LOCK button is pressed a second time within 5 seconds.

If one of the switches is misadjusted or there is a short in the system, the system will not arm. As long as the control unit continues to receive a ground signal, it senses that the vehicle is not closed and locked, and the system will not arm. Conversely, a switch that is slightly misadjusted can sound an alarm for no apparent reason. In this case, a significant change in outside temperature, the vibration of a passing truck, or someone bumping into the vehicle could cause the alarm to sound. There is no glass breakage or motion detector feature.

If anything is opened or improperly unlocked after the system is armed, the control unit receives a ground signal from that switch, and the 10 V reference drops to 0 V. If the audio unit, navigation display, DVD player, or rear controller and screen is disconnected, the input loses its ground, and the input voltage goes to 10 V. The system sounds the alarm when any of these things occur:

- The ignition switch is turned ON (II).
- A door or tailgate is forced open.
- A door is unlocked without using the key or the remote transmitter.
- The hood is opened.
- The audio unit, navigation display, DVD player, or rear controller and screen is disconnected.
- The panic mode is activated.

When the system sounds the alarm, the horns sound and the exterior lights flash for 2 minutes. The alarm can be stopped at any time by unlocking either door with the key or by pressing any button on the remote transmitter.

Panic Mode

The panic mode allows the security system to sound the alarm with the remote transmitter in order to attract attention. When the PANIC button is pressed and held for 2 seconds, the alarm will sound and the exterior lights will flash for about 30 seconds.

The panic mode can be canceled at anytime by pressing any button on the remote transmitter or by turning the ignition switch ON (II). The panic mode will not function if the ignition switch is ON (II).



Keyless Entry System

The security alarm system is integrated with the keyless entry and multiplex systems. The passenger's multiplex control unit receives LOCK (arm) and UNLOCK (disarm), and Panic signals from the keyless entry control unit. The keyless entry system allows you to lock and unlock the vehicle with the remote transmitter. When you press the LOCK button, all doors lock. When you press the UNLOCK button once, only the driver's door unlocks. The other doors and the tailgate will unlock when you press the button a second time.

When the switch for the front individual light is in the center position (rear individual lights is in "door" position), they will come on when you press the UNLOCK button. If you do not open a door, the lights will go off in about 30 seconds, the doors will automatically relock, and the security system will reararm. If you relock the doors with the remote transmitter within 30 seconds, the lights will go off immediately.

You cannot lock the doors with the remote transmitter if a door or the tailgate is not fully closed, or if the key is in the ignition switch. If the tailgate or hood is not closed, the doors will lock and unlock, but the security system will not arm until the tailgate and hood are closed.

The system will signal you when the doors lock and unlock by flashing the parking lights, side marker lights, and taillights: once when they lock, and twice when they unlock.

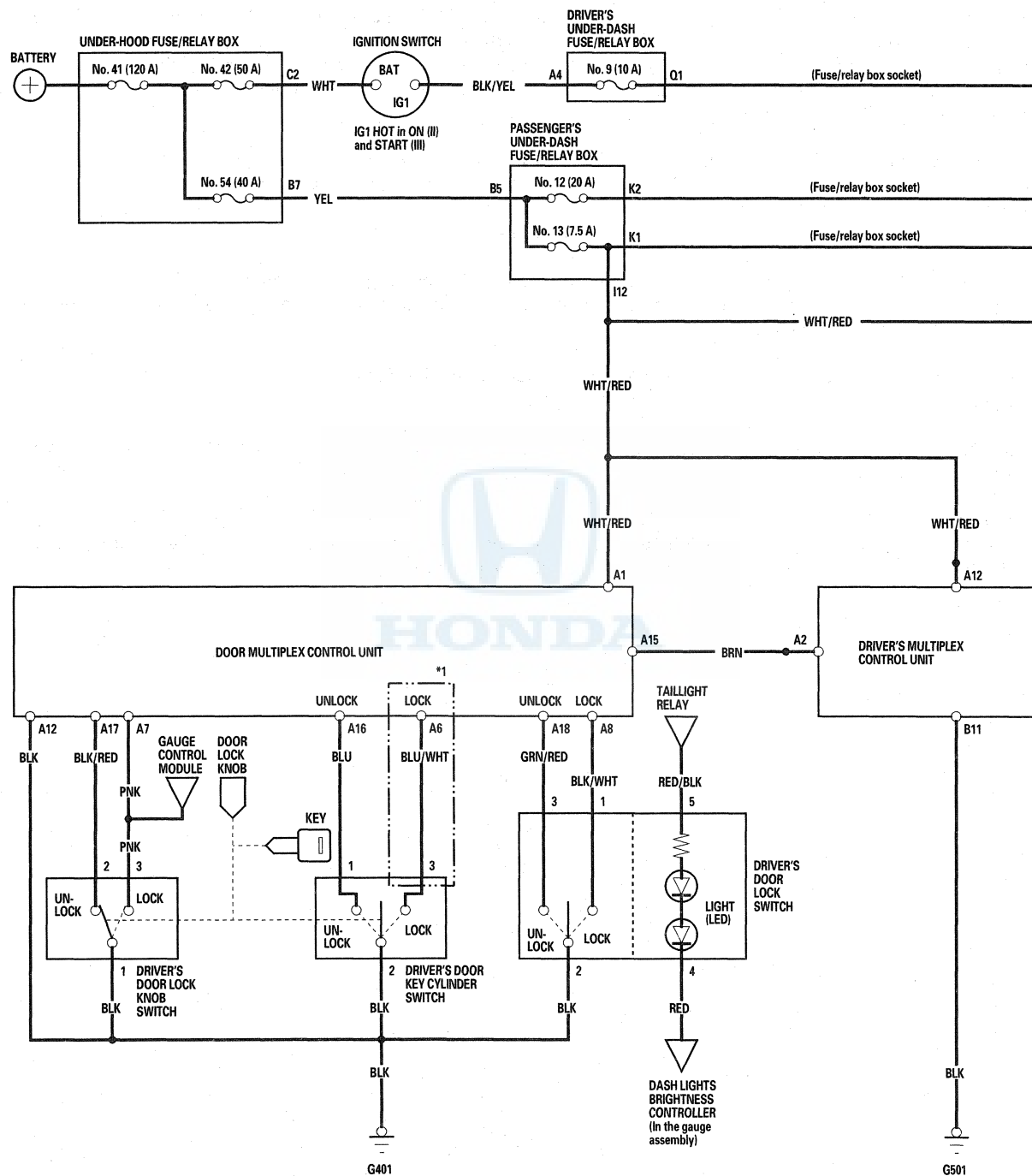
When you press the LOCK button a second time within 5 seconds after you have locked the doors, the horns will sound once to verify that vehicle is secure and the security system will be set.

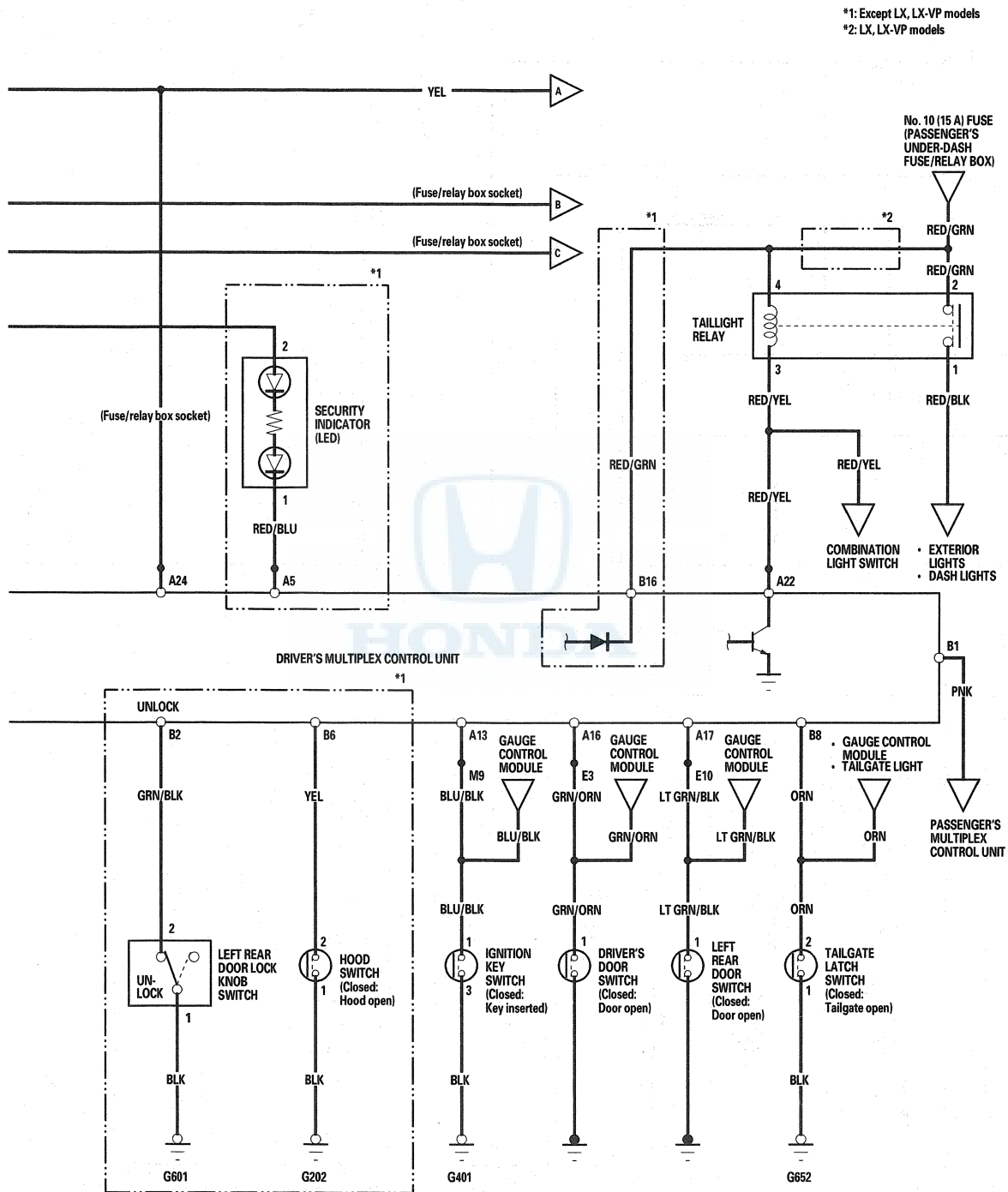
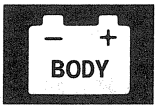
If the lights do not flash, make sure the doors, the hood, and the tailgate are closed and locked. The most common failure is a door, hood, tailgate, lock knob, ignition key, or door key cylinder input. Check that the security indicator blinks. If the security alarm system does not arm, refer to the multiplex mode or security input tests.

HONDA

Keyless/Power Door Locks/Security System

Circuit Diagram

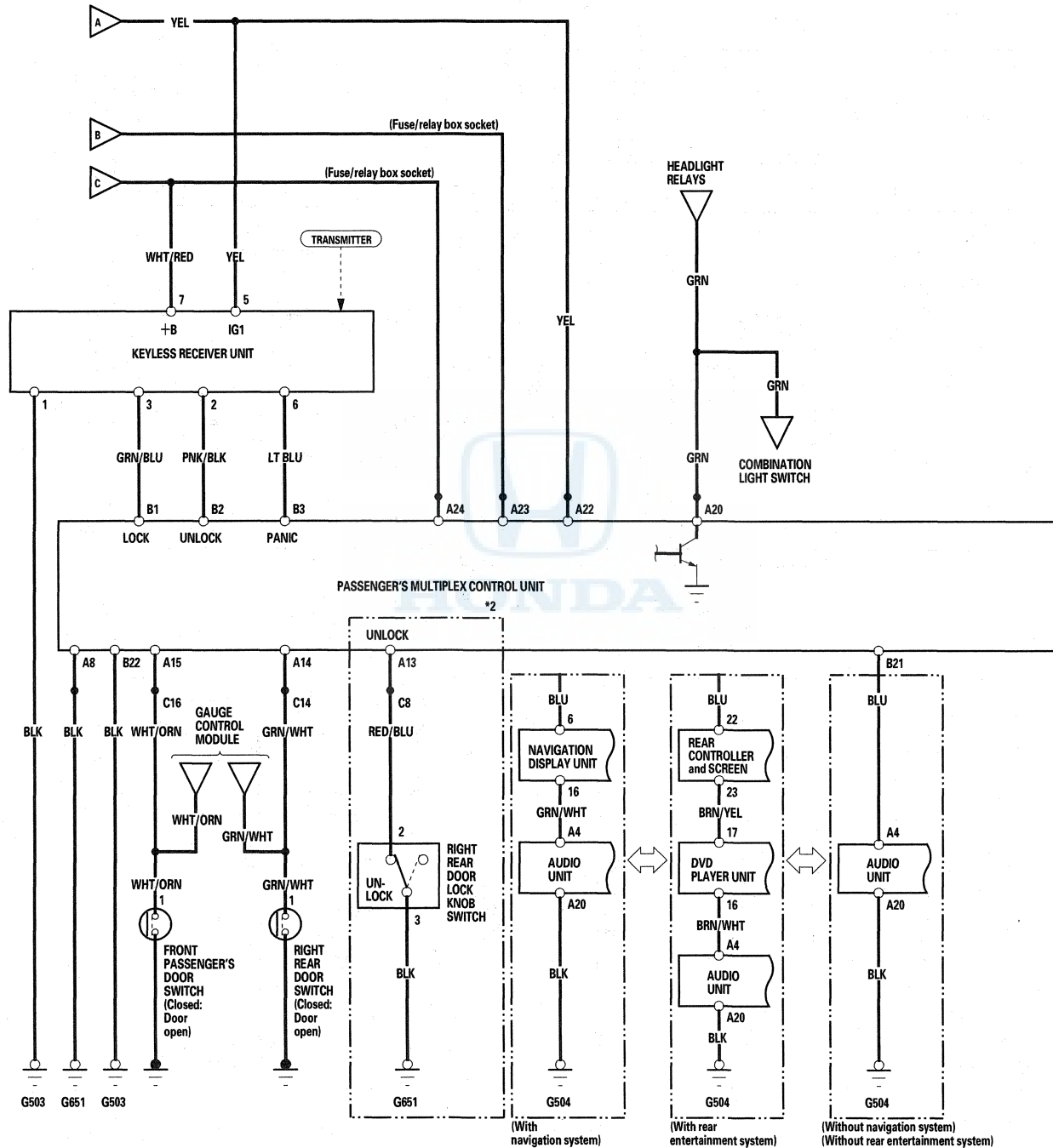


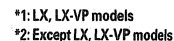


(cont'd)

Keyless/Power Door Locks/Security System

Circuit Diagram (cont'd)





Keyless/Power Door Locks/Security System

Control Unit Input Test

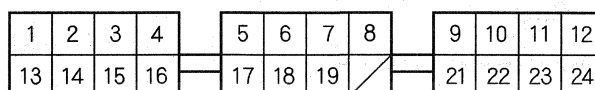
NOTE: These tests cover the door, driver's, and passenger's multiplex control units.

1. Before testing the power door lock and security control functions, troubleshoot the multiplex control system (see page 22-244).

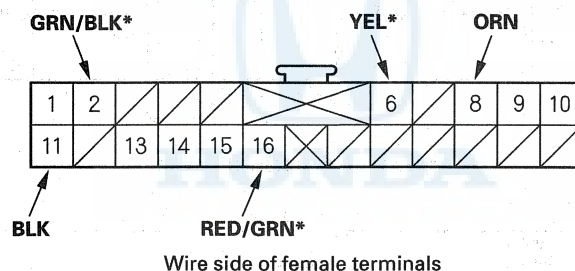
Driver's Unit

2. Remove the driver's multiplex control unit from the driver's under-dash fuse/relay box.
3. Inspect the connector and socket terminals to be sure they are all making good contact.
 - If the terminals are bent, loose or corroded, repair them as necessary, and recheck the system.
 - If the terminals look OK, go to step 4.

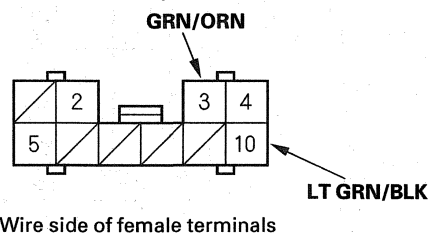
DRIVER'S UNDER-DASH FUSE/RELAY BOX SOCKET
(Driver's multiplex control unit connector A)



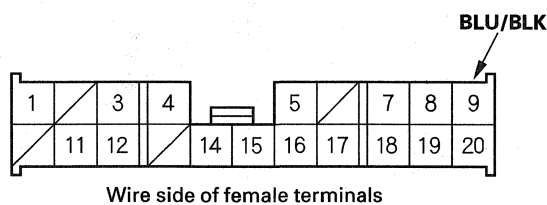
DRIVER'S MULTIPLEX UNIT CONNECTOR B



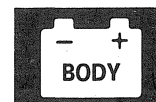
DRIVER'S UNDER-DASH FUSE/RELAY BOX CONNECTOR E



DRIVER'S UNDER-DASH FUSE/RELAY BOX CONNECTOR M



*: Except LX and LX-VP models



4. With the driver's multiplex control unit still disconnected, make these input tests at the connector and driver's under-dash fuse/relay box sockets.

- If any test indicates a problem, find and correct the cause, then recheck the system.
- If all the input tests prove OK, go to step 5.

Cavity	Wire	Test condition	Test: Desired result	Possible cause if result is not obtained
A12	Fuse/relay box socket	Under all conditions	Measure the voltage to ground: There should be battery voltage.	<ul style="list-style-type: none"> • Blown No. 13 (7.5 A) fuse in the passenger's under-dash fuse/relay box • Faulty driver's fuse/relay box • An open in the wire
A24		Ignition switch ON (II)	Measure the voltage to ground: There should be battery voltage.	<ul style="list-style-type: none"> • Blown No. 9 (10 A) fuse in the driver's under-dash fuse/relay box • Faulty driver's fuse/relay box
A5*		Under all conditions	Attach to ground: The security indicator should come on.	<ul style="list-style-type: none"> • Blown No. 13 (7.5 A) fuse in the passenger's under-dash fuse/relay box • Faulty security indicator • Faulty driver's fuse/relay box • An open in the wire
A22*		Connect B16 to battery voltage and A22 to ground	The parking lights and dash lights should come on.	<ul style="list-style-type: none"> • Blown No. 10 (15 A) fuse in the passenger's under-dash fuse/relay box • Faulty taillight relay • Faulty driver's fuse/relay box • An open in the wire
B16*	RED/GRN	Combination light switch OFF	Check for continuity to ground: There should be no continuity.	<ul style="list-style-type: none"> • Faulty taillight relay • Faulty combination light switch • Faulty driver's fuse/relay box • An open in the wire • A short to ground in the wire
		Combination light switch ON and jump B16 to battery voltage	The parking lights and dash lights should come on.	<ul style="list-style-type: none"> • Blown No. 10 (15 A) fuse in the passenger's under-dash fuse/relay box • Faulty taillight relay • Faulty combination light switch • Faulty driver's fuse/relay box • An open in the wire

* : Except LX and LX-VP models

(cont'd)

Keyless/Power Door Locks/Security System

Control Unit Input Test (cont'd)

5. Reconnect the driver's multiplex control unit to the driver's under-dash fuse/relay box, and perform the following input tests at the appropriate connectors on the back of the driver's under-dash fuse/relay box.

For driver's under-dash fuse/relay box connector socket location (see page 22-68).

- If any test indicates a problem, find and correct the cause, then recheck the system.
- If all the input tests prove OK, go to step 6.

Cavity	Wire	Test condition	Test: Desired result	Possible cause if result is not obtained
B2*	GRN/BLK	Wake up the multiplex system by locking all doors and tailgate with the power door lock switch; Left rear door lock knob switch unlocked	Measure the voltage to ground: There should be less than 1 V.	<ul style="list-style-type: none"> • Poor ground (G601) • Faulty left rear door lock knob switch • An open in the wire
		Wake up the multiplex system by locking all doors and tailgate with the power door lock switch; Left rear door lock knob switch locked	Measure the voltage to ground: There should be 5 V or more.	<ul style="list-style-type: none"> • Faulty left rear door lock knob switch • A short to ground in the wire
B6*	YEL	Hood open	Measure the voltage to ground: There should be less than 1 V.	<ul style="list-style-type: none"> • Poor ground (G202) • Faulty hood switch • An open in the wire
		Hood closed	Measure the voltage to ground: There should be 5 V or more.	<ul style="list-style-type: none"> • Faulty hood switch • A short to ground in the wire
B8	ORN	Tailgate open	Measure the voltage to ground: There should be less than 1 V.	<ul style="list-style-type: none"> • Poor ground (G652) • Faulty tailgate latch switch • An open in the wire
		Tailgate closed	Measure the voltage to ground: There should be 5 V or more.	<ul style="list-style-type: none"> • Faulty tailgate latch switch • A short to ground in the wire
E3	GRN/ORN	Driver's door open	Measure the voltage to ground: There should be less than 1 V.	<ul style="list-style-type: none"> • Faulty driver's door switch • An open in the wire
		Driver's door closed	Measure the voltage to ground: There should be 5 V or more.	<ul style="list-style-type: none"> • Faulty driver's door switch • A short to ground in the wire
E10	LT GRN/BLK	Left rear door open	Measure the voltage to ground: There should be less than 1 V.	<ul style="list-style-type: none"> • Faulty left rear door switch • An open in the wire
		Left rear door closed	Measure the voltage to ground: There should be 5 V or more.	<ul style="list-style-type: none"> • Faulty left rear door switch • A short to ground in the wire
M9	BLU/BLK	Ignition key is in the ignition switch	Measure the voltage to ground: There should be 5 V or more.	<ul style="list-style-type: none"> • Poor ground (G401) • Faulty ignition key switch • An open in the wire
		Ignition key is out of the ignition switch	Measure the voltage to ground: There should be less than 1 V.	<ul style="list-style-type: none"> • Faulty ignition key switch • A short to ground in the wire
B11	BLK	Under all conditions	Measure the voltage to ground: There should be less than 1 V.	<ul style="list-style-type: none"> • Poor ground (G501) • An open in the wire

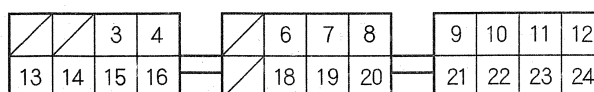
*: Except LX and LX-VP models



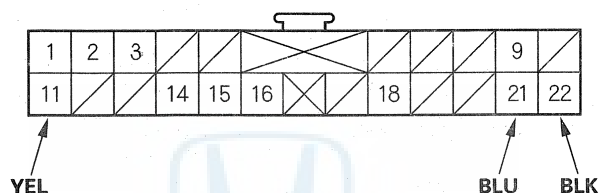
Passenger's Unit

6. Remove the passenger's multiplex control unit from the passenger's under-dash fuse/relay box, and disconnect its connector.
7. Inspect the connector and socket terminals to be sure they are all making good contact.
 - If the terminals are bent, loose or corroded, repair them as necessary, and recheck the system.
 - If the terminals look OK, go to step 8.

PASSENGER'S UNDER-DASH FUSE/RELAY BOX SOCKET
(Passenger's multiplex control unit connector A)

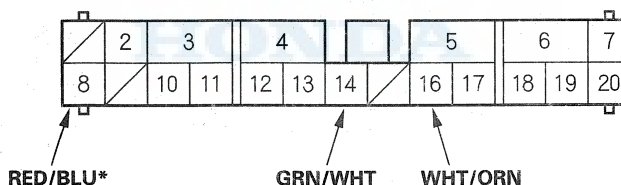


PASSENGER'S MULTIPLEX CONTROL UNIT CONNECTOR B



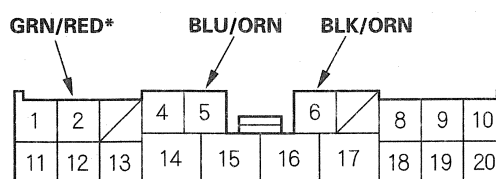
Wire side of female terminals

PASSENGER'S UNDER-DASH FUSE/RELAY BOX CONNECTOR C



Wire side of female terminals

PASSENGER'S UNDER-DASH FUSE/RELAY BOX CONNECTOR E



Wire side of female terminals

*: Except LX and LX-VP models

(cont'd)

Keyless/Power Door Locks/Security System

Control Unit Input Test (cont'd)

8. With the passenger's multiplex control unit still disconnected, make these input tests at the connectors and the passenger's under-dash fuse/relay box sockets.

- If any test indicates a problem, find and correct the cause, then recheck the system.
- If all the input tests prove OK, go to step 9.

Cavity	Wire	Test condition	Test: Desired result	Possible cause if result is not obtained
A8	Fuse/relay box socket	Under all conditions	Check for continuity to ground: There should be continuity.	<ul style="list-style-type: none"> • Poor ground (G651) • Faulty passenger's fuse/relay box • An open in the wire
A9		Under all conditions	Attach to ground: Horns should sound.	<ul style="list-style-type: none"> • Blown No. 47 (20 A) fuse in the under-hood fuse/relay box • Faulty passenger's fuse/relay box • Faulty horn relay • Faulty horn • An open in the wire
A20		Under all conditions	Attach to ground: Headlights should come on.	<ul style="list-style-type: none"> • Faulty headlight relay 1 or 2 • Faulty passenger's fuse/relay box • An open in the wire
A22		Ignition switch ON (II)	Measure the voltage to ground: There should be battery voltage.	<ul style="list-style-type: none"> • Blown No. 9 (10 A) fuse in the driver's under-dash fuse/relay box • Faulty driver's fuse/relay box • Faulty passenger's fuse/relay box • An open in the wire
A23		Under all conditions	Measure the voltage to ground: There should be battery voltage.	<ul style="list-style-type: none"> • Blown No. 12 (20 A) fuse in the passenger's under-dash fuse/relay box • Faulty passenger's fuse/relay box
A24		Under all conditions	Measure the voltage to ground: There should be battery voltage.	<ul style="list-style-type: none"> • Blown No. 13 (7.5 A) fuse in the passenger's under-dash fuse/relay box • Faulty passenger's fuse/relay box
A10	Fuse/relay box socket	Jump A10 to battery voltage and B11 to body ground.	Check driver's door lock operation: The door should lock.	<ul style="list-style-type: none"> • Faulty driver's door lock actuator • Faulty passenger's fuse/relay box • An open in the wire
B11*	YEL		Check passenger's doors lock operation: The doors should lock.	<ul style="list-style-type: none"> • Faulty passenger's door lock actuator • Faulty passenger's fuse/relay box • An open in the wire
A10	Fuse/relay box socket		Check tailgate lock operation: The tailgate should lock.	<ul style="list-style-type: none"> • Faulty tailgate lock actuator • Faulty passenger's fuse/relay box • An open in the wire
A11				
B21	BLU	Under all conditions	Check for continuity to ground: There should be continuity.	<ul style="list-style-type: none"> • Poor ground (G504) • Faulty connections at the audio unit, DVD player, rear controller and screen, navigation display unit • Faulty audio unit, DVD player unit, rear controller and screen, navigation display unit • Faulty passenger's fuse/relay box • An open in the wire

*: Except LX and LX-VP models



9. Reconnect the passenger's multiplex control unit to the passenger's under-dash fuse/relay box, and perform the following input tests at the appropriate connectors on the passenger's under-dash fuse/relay box.

For passenger's under-dash fuse/relay box connector socket location (see page 22-69).

- If any test indicates a problem, find and correct the cause, then recheck the system.
- If all the input tests prove OK, go to step 10.

Cavity	Wire	Test condition	Test: Desired result	Possible cause if result is not obtained
C8	RED/BLU NOTE: Front passenger's door lock knob switch in the locked position	Wake up the multiplex system by locking all doors and tailgate with the power door lock switch; Right rear door lock knob switch unlocked	Measure the voltage to ground: There should be less than 1 V.	<ul style="list-style-type: none"> • Poor ground (G651) • Faulty right rear door lock actuator • An open in the wire
		Wake up the multiplex system by locking all doors and tailgate with the power door lock switch; Right rear door lock knob switch locked	Measure the voltage to ground: There should be 5 V or more.	<ul style="list-style-type: none"> • Faulty right rear door lock actuator • A short to ground in the wire
E2	GRN/RED NOTE: Right rear door lock knob switch in the locked position	Wake up the multiplex system by locking all doors and tailgate with the power door lock switch; Front passenger's door lock knob switch unlocked	Measure the voltage to ground: There should be less than 1 V.	<ul style="list-style-type: none"> • Poor ground (G651) • Faulty front passenger's door lock actuator • An open in the wire
		Wake up the multiplex system by locking all doors and tailgate with the power door lock switch; Front passenger's door lock knob switch locked	Measure the voltage to ground: There should be 5 V or more.	<ul style="list-style-type: none"> • Faulty front passenger's door lock actuator • A short to ground in the wire
B21	BLU	Under all conditions	Measure the voltage to ground: There should be battery voltage.	<ul style="list-style-type: none"> • Poor ground (G504) • Poor connection at audio unit, DVD player, rear controller and screen, navigation display unit • Faulty audio unit, DVD player unit, rear controller and screen, navigation display unit • An open in the wire
B22	BLK	Under all conditions	Measure the voltage to ground: There should be less than 1 V.	<ul style="list-style-type: none"> • Poor ground (G503) • Faulty passenger's fuse/relay box • An open in the wire

*: Except LX and LX-VP models

(cont'd)

Keyless/Power Door Locks/Security System

Control Unit Input Test (cont'd)

Cavity	Wire	Test condition	Test: Desired result	Possible cause if result is not obtained
C14	GRN/WHT	Right rear door open	Measure the voltage to ground: There should be less than 1 V.	<ul style="list-style-type: none"> Faulty right rear door switch An open in the wire
		Right rear door closed	Measure the voltage to ground: There should be 5 V or more.	<ul style="list-style-type: none"> Faulty right rear door switch A short to ground in the wire
C16	WHT/ORN	Front passenger's door open	Measure the voltage to ground: There should be less than 1 V.	<ul style="list-style-type: none"> Faulty front passenger's door switch An open in the wire
		Front passenger's door closed	Measure the voltage to ground: There should be 5 V or more.	<ul style="list-style-type: none"> Faulty front passenger's door switch A short to ground in the wire
E5	BLU/ORN	Front passenger's door lock switch in UNLOCK	Measure the voltage to ground: There should be less than 1 V.	<ul style="list-style-type: none"> Poor ground (G651) Faulty front passenger's door lock switch An open in the wire
		Front passenger's door lock switch in neutral position	Measure the voltage to ground: There should be 5 V or more.	<ul style="list-style-type: none"> Faulty front passenger's door lock switch A short to ground in the wire
E6	BLK/ORN	Front passenger's door lock switch in LOCK	Measure the voltage to ground: There should be less than 1 V.	<ul style="list-style-type: none"> Poor ground (G651) Faulty front passenger's door lock switch An open in the wire
		Front passenger's door lock switch in neutral position	Measure the voltage to ground: There should be 5 V or more.	<ul style="list-style-type: none"> Faulty front passenger's door lock switch A short to ground in the wire

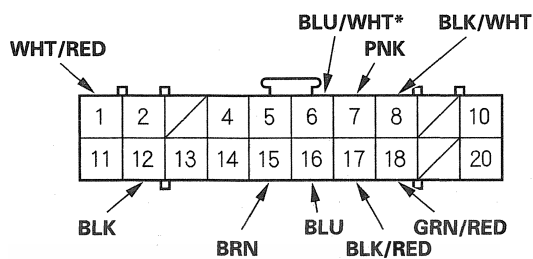




Door Unit

10. Remove the door multiplex control unit, and disconnect its connector.
11. Inspect the connector and socket terminals to be sure they are making good contact.
 - If the terminals are bent, loose or corroded, repair them as necessary, and recheck the system.
 - If the terminals look OK, go to step 12.

DOOR MULTIPLEX CONTROL UNIT CONNECTOR A



Wire side of female terminals

*: Except LX and LX-VP models

(cont'd)

Keyless/Power Door Locks/Security System

Control Unit Input Test (cont'd)

12. Reconnect the connector to the control unit, and make these input tests at the connector.

- If any test indicates a problem, find and correct the cause, then recheck the system.
- If all the input tests prove OK, go to step 13.

Cavity	Wire	Test condition	Test: Desired result	Possible cause if result is not obtained
A1	WHT/RED	Under all conditions	Measure the voltage to ground: There should be battery voltage.	<ul style="list-style-type: none"> • Blown No. 13 (7.5 A) fuse in the passenger's under-dash fuse/relay box • An open in the wire
A12	BLK	Under all conditions	Measure the voltage to ground: There should be less than 1 V.	<ul style="list-style-type: none"> • Poor ground (G401) • An open in the wire
A6	BLU/WHT	Driver's door key cylinder switch in LOCK	Measure the voltage to ground: There should be less than 1 V.	<ul style="list-style-type: none"> • Faulty driver's door key cylinder switch • Poor ground (G401) • An open in the wire • A short to ground in the wire
		Driver's door key cylinder switch in the neutral position	Measure the voltage to ground: There should be 5 V or more.	
		Driver's door key cylinder switch in UNLOCK	Measure the voltage to ground: There should be 5 V or more.	
A16	BLU	Driver's door key cylinder switch in UNLOCK	Measure the voltage to ground: There should be less than 1 V.	<ul style="list-style-type: none"> • Faulty driver's door key cylinder switch • Poor ground (G401) • An open in the wire • A short to ground in the wire
		Driver's door key cylinder switch in the neutral position	Measure the voltage to ground: There should be 5 V or more.	
		Driver's door key cylinder switch in LOCK	Measure the voltage to ground: There should be 5 V or more.	
A7	PNK	Driver's door lock knob locked	Measure the voltage to ground: There should be less than 1 V.	<ul style="list-style-type: none"> • Faulty driver's door lock actuator • Poor ground (G401) • An open in the wire
		Driver's door lock knob unlocked	Measure the voltage to ground: There should be 5 V or more.	<ul style="list-style-type: none"> • Faulty driver's door lock actuator • A short to ground in the wire
A17	BLK/RED	Driver's door lock knob unlocked	Measure the voltage to ground: There should be less than 1 V.	<ul style="list-style-type: none"> • Faulty driver's door lock actuator • Poor ground (G401) • An open in the wire
		Driver's door lock knob locked	Measure the voltage to ground: There should be 5 V or more.	<ul style="list-style-type: none"> • Faulty driver's door lock actuator • A short to ground in the wire
A8	BLK/WHT	Driver's door lock switch in LOCK	Measure the voltage to ground: There should be less than 1 V.	<ul style="list-style-type: none"> • Faulty driver's door lock switch • Poor ground (G401) • An open in the wire
		Driver's door lock switch in the neutral position	Measure the voltage to ground: There should be 5 V or more.	<ul style="list-style-type: none"> • Faulty driver's door lock switch • A short to ground in the wire
A18	GRN/RED	Driver's door lock switch in UNLOCK	Measure the voltage to ground: There should be less than 1 V.	<ul style="list-style-type: none"> • Faulty driver's door lock switch • Poor ground (G401) • An open in the wire
		Driver's door lock switch in the neutral position	Measure the voltage to ground: There should be 5 V or more.	<ul style="list-style-type: none"> • Faulty driver's door lock switch • A short to ground in the wire

*: Except LX and LX-VP models

13. If all the input tests prove OK, one of the control units must be faulty. Substitute a known-good control unit for the one that is most likely at fault, then recheck the system. If the system works properly, the original control unit is faulty; replace it. If there is still a malfunction, substitute a known-good control unit for the next most likely unit to be at fault, and recheck. If the system works properly, the original unit is faulty; replace it.



Transmitter Test

NOTE:

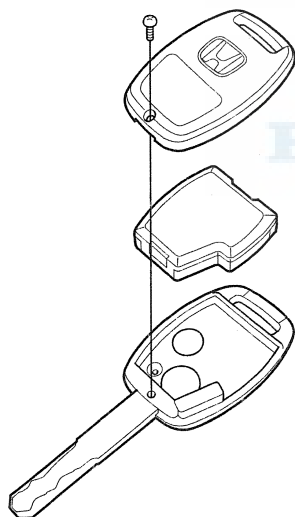
- If the doors unlock or lock with the transmitter, but the LED on the transmitter does not come on, the LED is faulty; replace the transmitter.
- If any door or the tailgate is open, you cannot lock the door and tailgate with the transmitter.
- If you unlocked the doors with the transmitter, but do not open any of the doors within 30 seconds, the doors relock automatically.
- The doors do not lock or unlock with the transmitter if the ignition key is inserted in the ignition switch.

1. Press the lock or unlock button five or six times to reset the transmitter.

- If the locks work, the transmitter is OK. ■
- If the locks don't work, go to step 2.

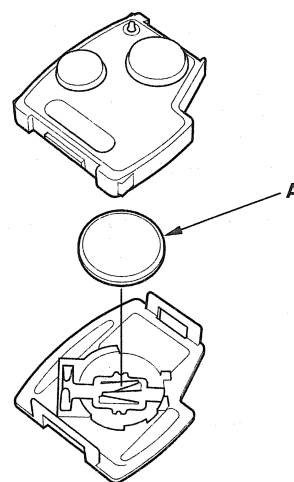
2. Open the transmitter and check for water damage.

- If you find any water damage, replace the transmitter. ■
- If there is no water damage, go to step 3.



3. Replace the transmitter battery (A) with a new one, and try to lock and unlock the doors with the transmitter by pressing the lock or unlock button five or six times.

- If the doors lock and unlock, the transmitter is OK. ■
- If the doors don't lock and unlock, go to step 4.



4. Reprogram and register the transmitter, then try to lock and unlock the doors.

- If the doors lock and unlock, the transmitter is OK. ■
- If the doors don't lock and unlock, try and program to another vehicle. If still not operating replace the transmitter. ■

Keyless/Power Door Locks/Security System

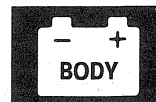
Transmitter Programming

Storing transmitter codes:

The codes of up to three transmitters can be read into the keyless receiver unit memory. (If a fourth code is stored, the code which was input first will be erased.)

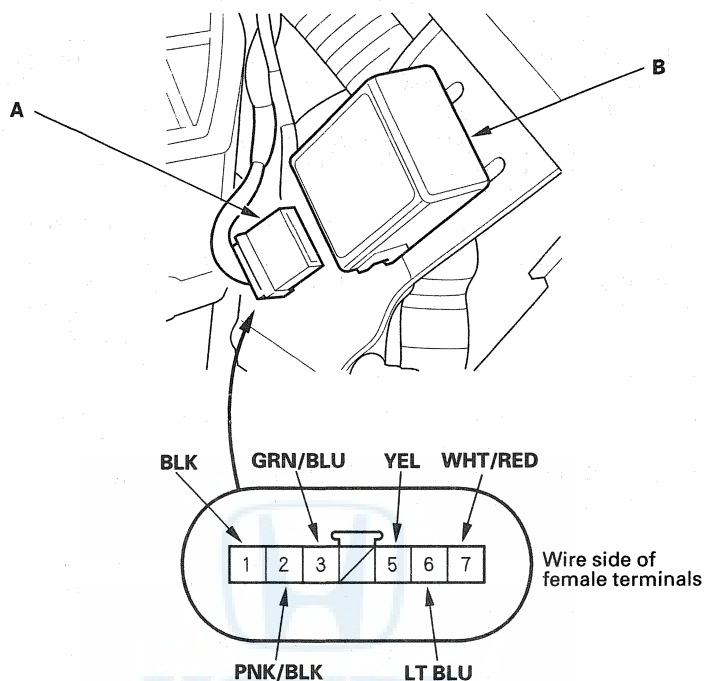
NOTE: It is important to maintain the time limits between the steps. Make sure the doors, hood and tailgate are closed.

1. Turn the ignition switch ON (II).
2. Within 1 to 4 sec., press the transmitter lock or unlock button.
3. Within 1 to 4 sec., turn the ignition switch OFF.
4. Within 1 to 4 sec., turn the ignition switch ON (II).
5. Within 1 to 4 sec., press the transmitter lock or unlock button.
6. Within 1 to 4 sec., turn the ignition switch OFF.
7. Within 4 sec., turn the ignition switch ON (II).
8. Within 1 to 4 sec., press the transmitter lock or unlock button.
9. Within 1 to 4 sec., turn the ignition switch OFF.
10. Within 4 sec., turn the ignition switch ON (II).
11. Within 1 to 4 sec., press the transmitter lock or unlock button.
12. The door lock actuators will activate to confirm that the system has entered the transmitter programming mode. Within 1 to 4 seconds, push the transmitter lock or unlock button again to program that transmitter. The door lock actuator will activate to confirm that the transmitter code is stored.
13. Within 10 seconds, press the transmitter lock or unlock buttons on the two additional transmitters. The door lock actuators will activate each time after you press the lock or unlock button to confirm that the transmitter code is stored.
14. Turn the ignition switch OFF, and pull out the key.
15. Confirm proper operation with the new code(s).



Keyless Receiver Unit Input Test

1. Remove the glove box and glove box cover (see page 20-95).
2. Disconnect the 7P connector (A) from the keyless receiver unit (B).



3. Inspect the connector and socket terminals to be sure they are all making good contact.
 - If the terminals are bent, loose or corroded, repair them as necessary, and recheck the system.
 - If the terminals are OK, go to step 4.

(cont'd)

Keyless/Power Door Locks/Security System

Keyless Receiver Unit Input Test (cont'd)

4. Reconnect the connector to the control unit, and make these input tests at the connector.

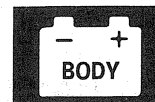
- If any test indicates a problem, find and correct the cause, then recheck the system.
- If all the input tests prove OK, go to step 5.

Cavity	Wire	Test condition	Test: Desired result	Possible cause if result is not obtained
1	BLK	Under all conditions	Measure the voltage to ground: There should be less than 1 V.	<ul style="list-style-type: none">• Poor ground (G503)• An open in the wire
5	YEL	Ignition switch ON (II)	Measure the voltage to ground: There should be battery voltage.	<ul style="list-style-type: none">• Blown No. 9 (10 A) fuse in the driver's under-dash fuse/relay box• An open in the wire
7	WHT/RED	Under all conditions	Measure the voltage to ground: There should be battery voltage.	<ul style="list-style-type: none">• Blown No. 13 (7.5 A) fuse in the passenger's under-dash fuse/relay box• An open in the wire

5. Disconnect the 7P connector from the keyless receiver unit, and make these input tests at the connector.

- If any test indicates a problem, find and correct the cause, then recheck the system.
- If all the input tests prove OK, replace the keyless receiver unit.

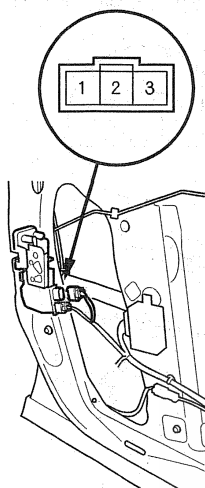
Cavity	Wire	Test condition	Test: Desired result	Possible cause if result is not obtained
2	PNK/BLK	Under all conditions	Check for continuity between the No. 2 terminal and passenger's multiplex control unit B2 terminal: There should be continuity. There should be no continuity to ground.	<ul style="list-style-type: none">• An open in the wire• A short to ground in the wire
3	GRN/BLU	Under all conditions	Check for continuity between the No. 3 terminal and passenger's multiplex control unit B1 terminal: There should be continuity. There should be no continuity to ground.	<ul style="list-style-type: none">• An open in the wire• A short to ground in the wire
6	LT BLU	Under all conditions	Check for continuity between the No. 6 terminal and passenger's multiplex control unit B3 terminal: There should be continuity. There should be no continuity to ground.	<ul style="list-style-type: none">• An open in the wire• A short to ground in the wire



Door Lock Knob Switch Test

Driver's Door

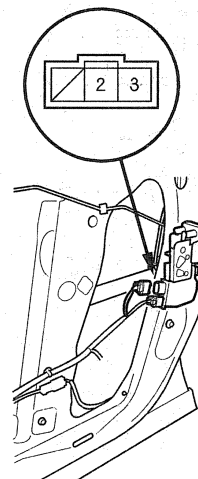
1. Remove the driver's door panel (see page 20-6).
2. Disconnect the 3P connector from the actuator.



3. Check for continuity between the terminals.
 - There should be continuity between the No. 1 and No. 3 terminals when the door lock knob switch is in the LOCK position and no continuity when it is in the UNLOCK position.
 - There should be continuity between the No. 2 and No. 3 terminals when the door lock knob switch is in the UNLOCK position and no continuity when it is in the LOCK position.
4. If the continuity is not as specified, replace the door lock actuator.

Front Passenger's Door (Except LX and LX-VP models)

1. Remove the front passenger's door panel (see page 20-6).
2. Disconnect the 3P connector from the actuator.



3. Check for continuity between the terminals.
 - There should be continuity between the No. 2 and No. 3 terminals when the door lock knob switch is in the UNLOCK position and no continuity when it is in the LOCK position.
4. If the continuity is not as specified, replace the door lock actuator.

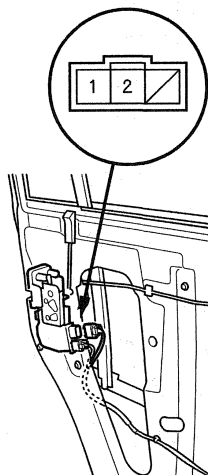
(cont'd)

Keyless/Power Door Locks/Security System

Door Lock Knob Switch Test (cont'd)

Left Rear Door (Except LX and LX-VP models)

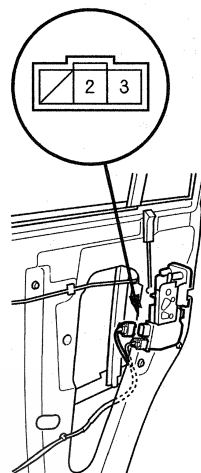
1. Remove the left rear door panel (see page 20-16).
2. Disconnect the 3P connector from the actuator.



3. Check for continuity between the terminals.
There should be continuity between the No. 1 and No. 2 terminals when the door lock knob switch is in the UNLOCK position and no continuity when it is in the LOCK position.
4. If the continuity is not as specified, replace the door lock actuator.

Right Rear Door (Except LX and LX-VP models)

1. Remove the right rear door panel (see page 20-16).
2. Disconnect the 3P connector from the actuator.



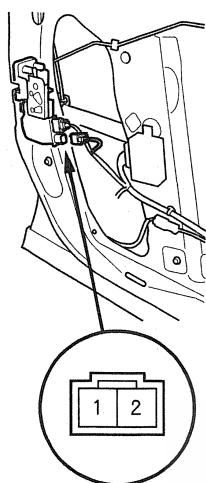
3. Check for continuity between the terminals.
There should be continuity between the No. 2 and No. 3 terminals when the door lock knob switch is in the UNLOCK position and no continuity when it is in the LOCK position.
4. If the continuity is not as specified, replace the door lock actuator.



Door Lock Actuator Test

Driver's Door

1. Remove the driver's door panel (see page 20-6).
2. Disconnect the 2P connector from the actuator.



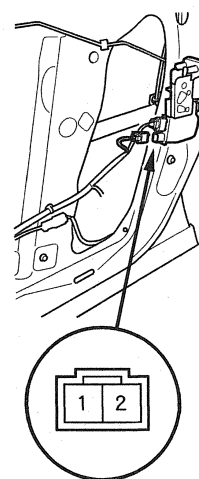
3. Check actuator operation by connecting power and ground according to the table. To prevent damage to the actuator, apply battery voltage only momentarily.

Terminal Position	1	2
LOCK	+	-
UNLOCK	-	+

4. If the actuator does not operate as specified, replace it.

Passenger's Door

1. Remove the passenger's door panel (see page 20-6).
2. Disconnect the 2P connector from the actuator.



3. Check actuator operation by connecting power and ground according to the table. To prevent damage to the actuator, apply battery voltage only momentarily.

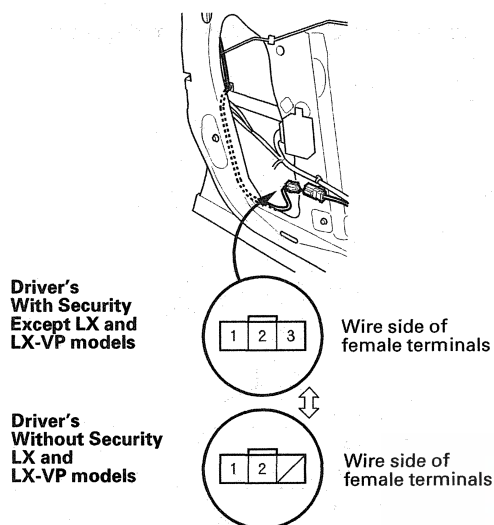
Terminal Position	1	2
LOCK	+	-
UNLOCK	-	+

4. If the actuator does not operate as specified, replace it.

Keyless/Power Door Locks/Security System

Door Key Cylinder Switch Test

1. Remove the door panel (see page 20-6).
2. Disconnect the 3P connector from the key cylinder switch.

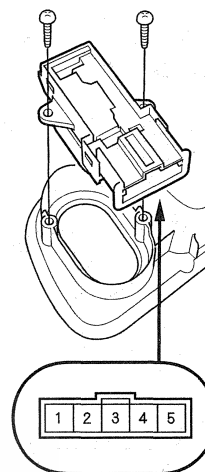


3. Check for continuity between the terminals.
 - There should be continuity between the No. 2 and No. 3 terminals when the door key cylinder switch is in the LOCK position (Except driver's door without security).
 - There should be no continuity between the No. 2 and No. 3 terminals when the door key cylinder switch is in the neutral position (Except driver's door without security).
 - There should be continuity between the No. 1 and No. 2 terminals when the door key cylinder switch is in the UNLOCK position.
 - There should be no continuity between the No. 1 and No. 2 terminals when the door key cylinder switch is in the neutral position.
4. If the continuity is not as specified, replace the switch.

NOTE: Make sure the slot in the switch is properly aligned with the tab on the key cylinder.

Door Lock Switch Test

1. Remove the door panel (see page 20-6).
2. Remove the two screws, then remove the door lock switch.

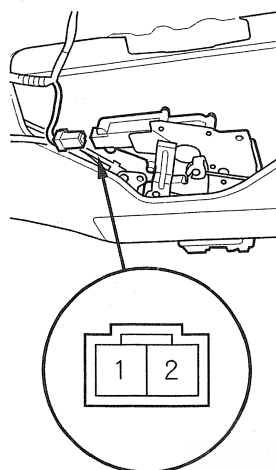


3. Check for continuity between the terminals.
 - There should be continuity between the No. 1 and No. 2 terminals when the door lock switch is in the LOCK position.
 - There should be no continuity between the No. 1 and No. 2 terminals when the door lock switch is in the neutral position.
 - There should be continuity between the No. 2 and No. 3 terminals when the door lock switch is in the UNLOCK position.
 - There should be no continuity between the No. 2 and No. 3 terminals when the door lock switch is in the neutral position.
 - Except LX: There should be continuity between the No. 5 (+) and No. 4 (−) terminals under all condition.
4. If the continuity is not as specified, replace the switch.



Tailgate Lock Actuator Test

1. Remove the tailgate trim panel (see page 20-82).
2. Disconnect the 2P connector from the actuator.



3. Check actuator operation by connecting power and ground according to the table. To prevent damage to the actuator, apply battery voltage only momentarily.

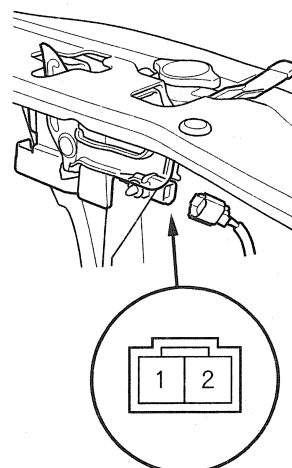
Terminal	1	2
Position		
LOCK	+	-
UNLOCK	-	+

4. If the actuator does not operate as specified, replace it.

Hood Switch Test

Except LX and LX-VP models

1. Open the hood.
2. Disconnect the 2P connector from the hood switch.



3. Check for continuity between the terminals.

- There should be continuity between the No. 1 and No. 2 terminals when the hood is opened (lever released)
- There should be no continuity between the No. 1 and No. 2 terminals when the hood is closed (lever pushed down)

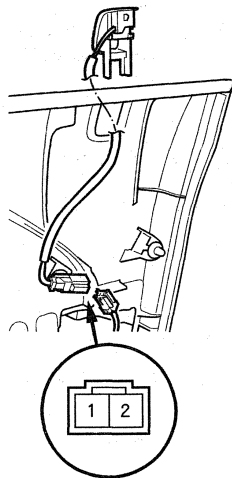
4. If the continuity is not as specified, replace the hood latch (see page 20-169).

Keyless/Power Door Locks/Security System

Security Indicator Test/Replacement

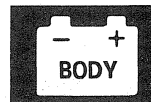
Except LX and LX-VP models

1. Remove the driver's door panel (see page 20-6).
2. Disconnect the 2P connector from the security indicator.

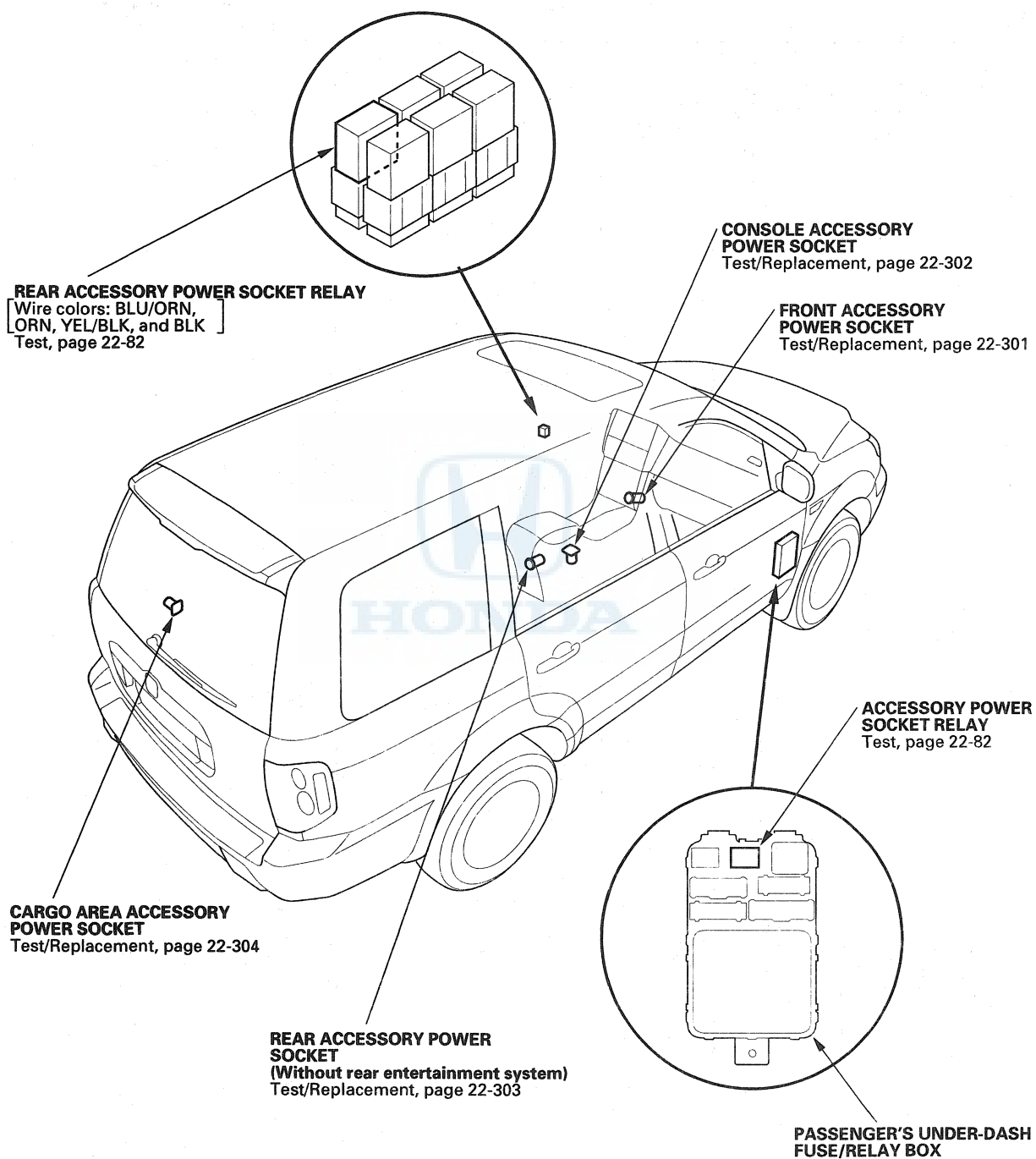


3. Test the indicator by connecting battery power to the No. 2 terminal and grounding the No. 1 terminal. The LED should come on.
4. If the LED does not come on, replace the security indicator.

Accessory Power Sockets

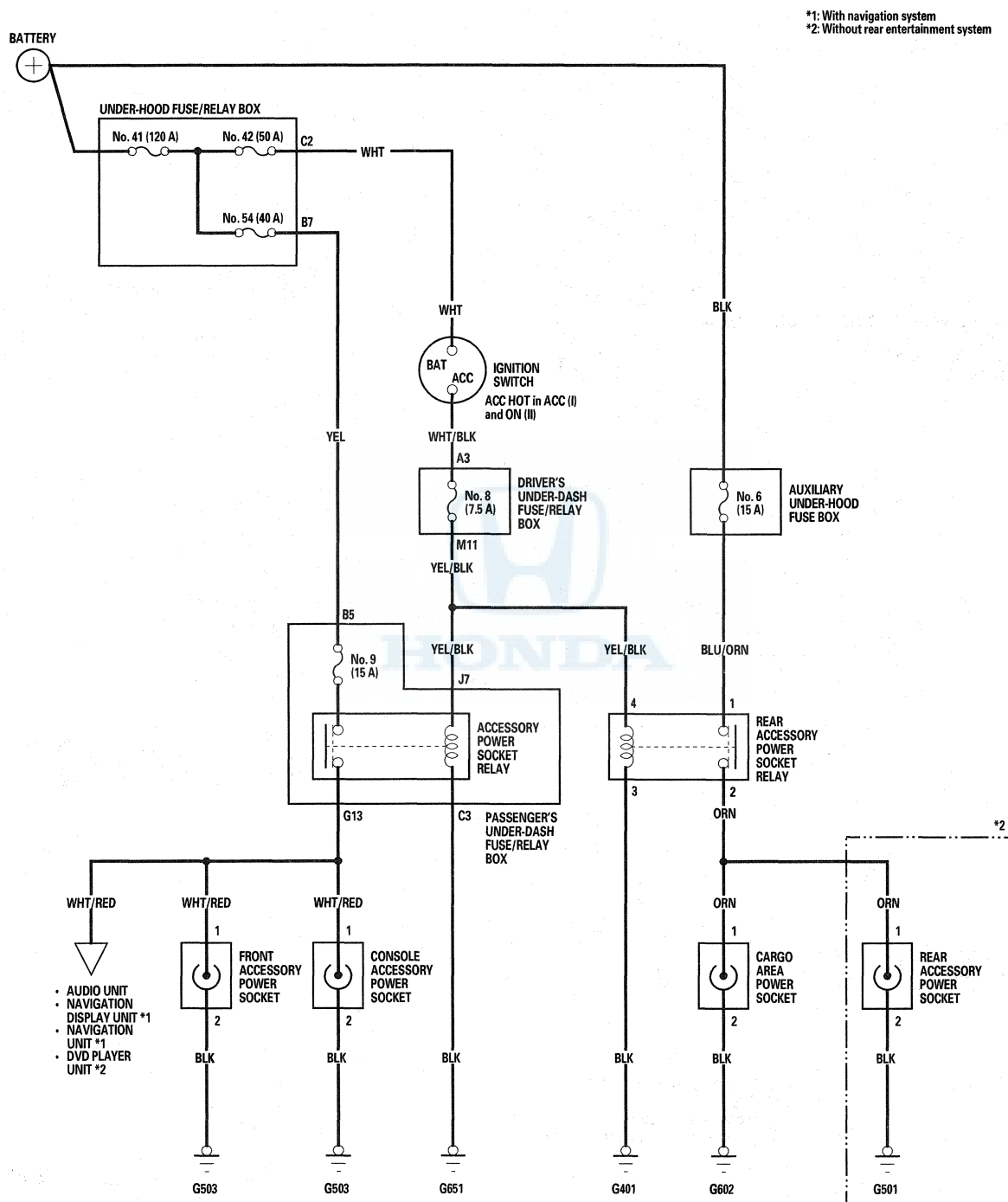


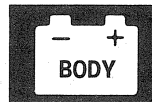
Component Location Index



Accessory Power Sockets

Circuit Diagram

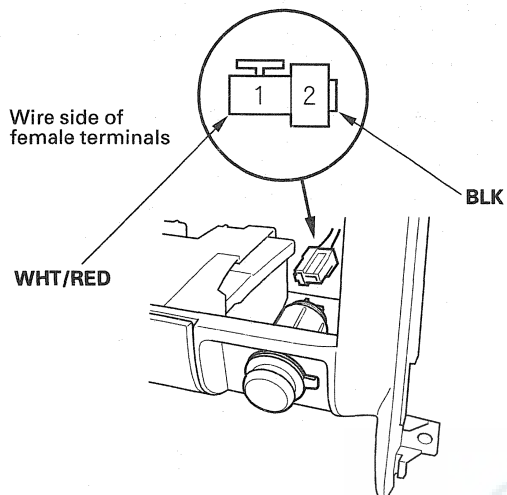




Front Accessory Power Socket Test/Replacement

1. Remove the center lower cover (see page 20-88).

2. Disconnect the 2P connector from the front accessory power socket.



3. Inspect the connector terminals to be sure they are all making good contact.

- If the terminals are bent, loose, or corroded, repair them as necessary, and recheck the socket.
- If the terminals look OK, go to step 4.

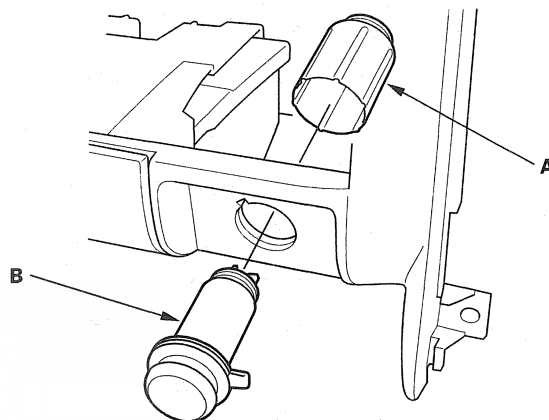
4. Turn the ignition switch to ACC (I), and measure the voltage between the No. 1 terminal and body ground. There should be battery voltage.

- If there is battery voltage, go to step 5.
- If there is no battery voltage, check for:
 - Blown No. 8 (7.5 A) fuse in the driver's under-dash fuse/relay box.
 - Blown No. 9 (15 A) fuse in the passenger's under-dash fuse/relay box.
 - Faulty accessory power socket relay.
 - Poor ground (G 651).
 - An open in the wire.

5. Check for continuity between the No. 2 terminal and body ground. There should be continuity.

- If there is continuity, go to step 6.
- If there is no continuity, check for:
 - Poor ground (G 503).
 - An open in the wire.

6. Remove the housing (A) and socket (B).

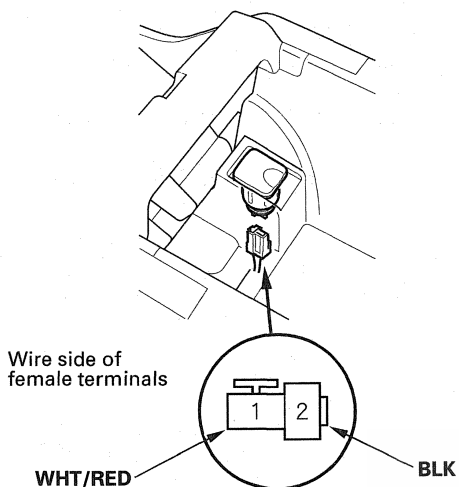


7. Install the power socket in the reverse order of removal.

Accessory Power Sockets

Console Accessory Power Socket Test/Replacement

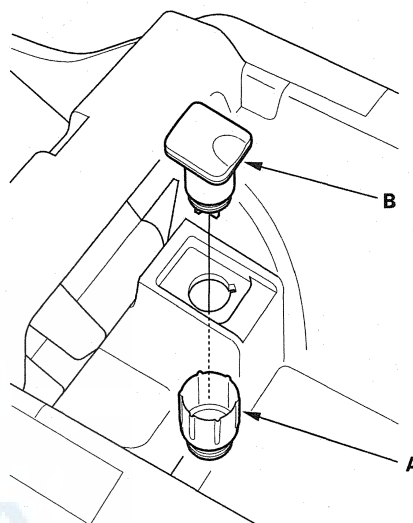
1. Remove the center console (see page 20-88).
2. Disconnect the 2P connector from the console accessory power socket.



3. Inspect the connector terminals to be sure they are all making good contact.
 - If the terminals are bent, loose, or corroded, repair them as necessary, and recheck the socket.
 - If the terminals look OK, go to step 4.
4. Turn the ignition switch to ACC (I), and measure the voltage between the No. 1 terminal and body ground. There should be battery voltage.
 - If there is battery voltage, go to step 5.
 - If there is no battery voltage, check for:
 - Blown No. 8 (7.5 A) fuse in the driver's under-dash fuse/relay box.
 - Blown No. 9 (15 A) fuse in the passenger's under-dash fuse/relay box.
 - Faulty accessory power socket relay.
 - Poor ground (G 651).
 - An open in the wire.

5. Check for continuity between the No. 2 terminal and body ground. There should be continuity.
 - If there is continuity, go to step 6.
 - If there is no continuity, check for:
 - Poor ground (G 503).
 - An open in the wire.

6. Remove the housing (A) and socket (B).



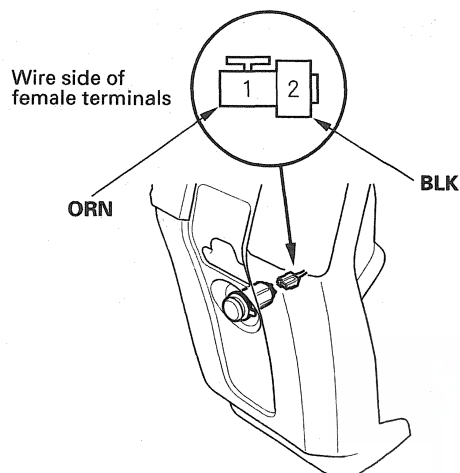
7. Install the power socket in the reverse order of removal.



Rear Accessory Power Socket Test/Replacement

Without rear entertainment system

1. Remove the console rear trim (see step 5 on page 20-89).
2. Disconnect the 2P connector from the rear accessory power socket.

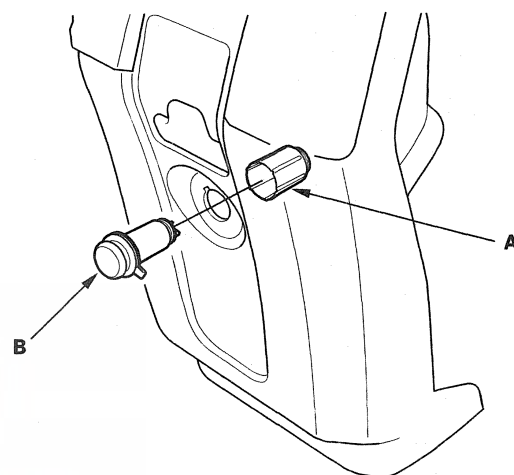


3. Inspect the connector terminals to be sure they are all making good contact.
 - If the terminals are bent, loose, or corroded, repair them as necessary, and recheck the socket.
 - If the terminals look OK, go to step 4.
4. Turn the ignition switch to ACC (I), and measure the voltage between the No. 1 terminal and body ground. There should be battery voltage.
 - If there is battery voltage, go to step 5.
 - If there is no battery voltage, check for:
 - Blown No. 8 (7.5 A) fuse in the driver's under-dash fuse/relay box.
 - Blown No. 6 (15 A) fuse in the auxiliary under-hood fuse/relay box.
 - Faulty rear accessory power socket relay.
 - Poor ground (G 401).
 - An open in the wire.

5. Check for continuity between the No. 2 terminal and body ground. There should be continuity.

- If there is continuity, go to step 6.
- If there is no continuity, check for:
 - Poor ground (G 501).
 - An open in the wire.

6. Remove the housing (A) and socket (B).

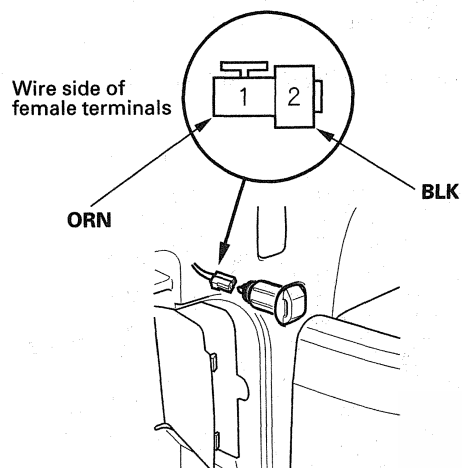


7. Install the power socket in the reverse order of removal.

Accessory Power Sockets

Cargo Area Accessory Power Socket Test/Replacement

1. Remove the left rear side trim panel (see page 20-80).
2. Disconnect the 2P connector from the cargo area accessory power socket.

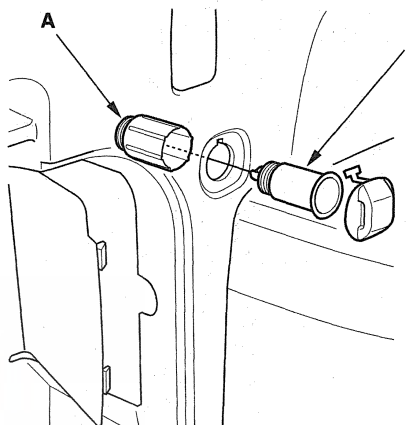


3. Inspect the connector terminals to be sure they are all making good contact.
 - If the terminals are bent, loose, or corroded, repair them as necessary, and recheck the socket.
 - If the terminals look OK, go to step 4.
4. Turn the ignition switch to ACC (I), and measure the voltage between the No. 1 terminal and body ground. There should be battery voltage.
 - If there is battery voltage, go to step 5.
 - If there is no battery voltage, check for:
 - Blown No. 6 (15 A) fuse in the auxiliary underhood fuse/relay box.
 - Blown No. 8 (7.5 A) fuse in the driver's underdash fuse/relay box.
 - Faulty rear accessory power socket relay.
 - Poor ground (G 401).
 - An open in the wire.

5. Check for continuity between the No. 2 terminal and body ground. There should be continuity.

- If there is continuity, go to step 6.
- If there is no continuity, check for:
 - Poor ground (G 602).
 - An open in the wire.

6. Remove the housing (A) and socket (B).

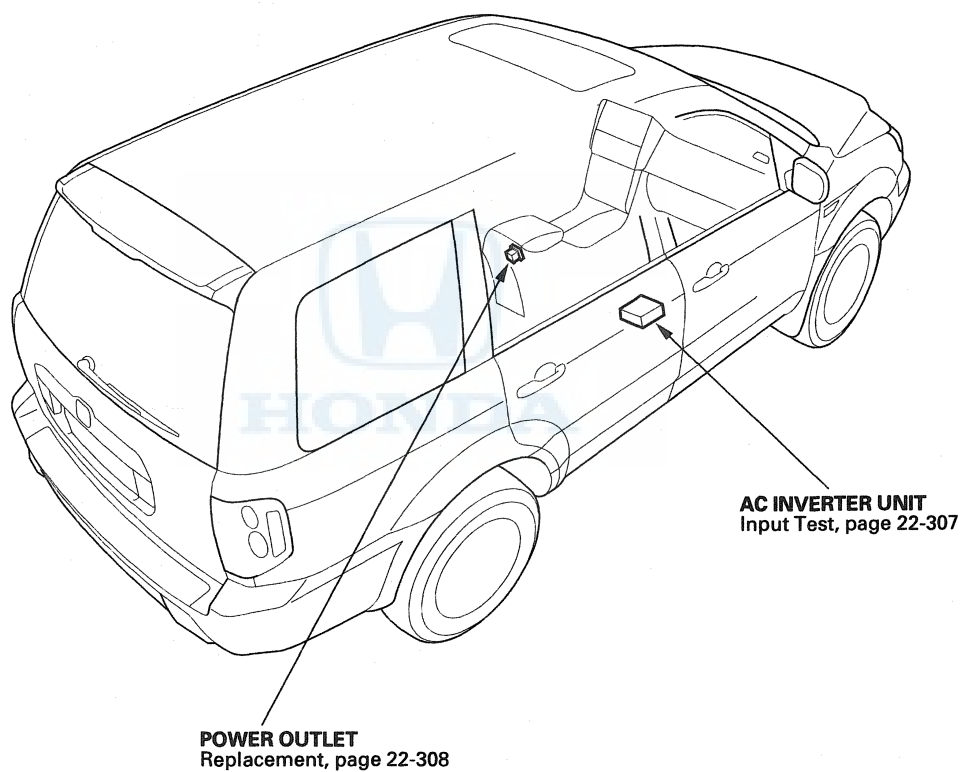


7. Install the power socket in the reverse order of removal.

AC Power Outlet

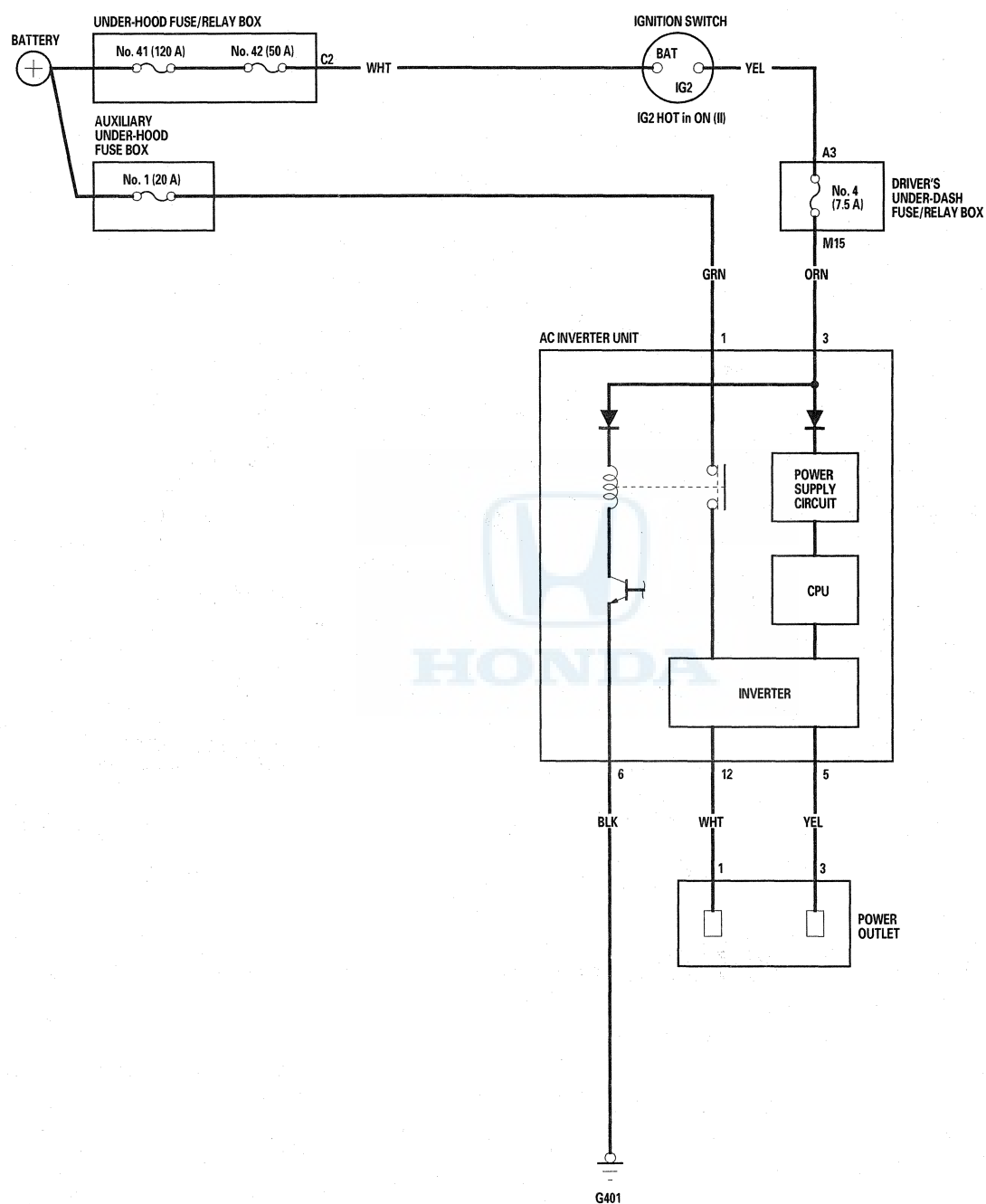


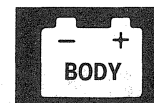
Component Location Index



AC Power Outlet

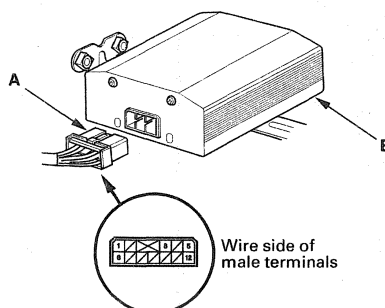
Circuit Diagram





AC Inverter Unit Input Test

1. Make sure you have the anti-theft codes for the audio system and the navigation system (if equipped), then write down the audio presets.
2. Disconnect the negative battery cable.
3. Remove the front passenger's seat (see page 20-104).
4. Disconnect the 12P connector (A) from the AC inverter unit (B).



5. Inspect the connector and socket terminals to be sure they are all making good contact.
 - If the terminals are bent, loose or corroded, repair them as necessary, and recheck the system.
 - If the terminals look OK, go to step 5.
6. With the control unit still disconnected, make these input tests at the connector.
 - If any test indicates a problem, find and correct the cause, then recheck the system.
 - If all the input tests prove OK, the control unit must be faulty; replace the control unit.

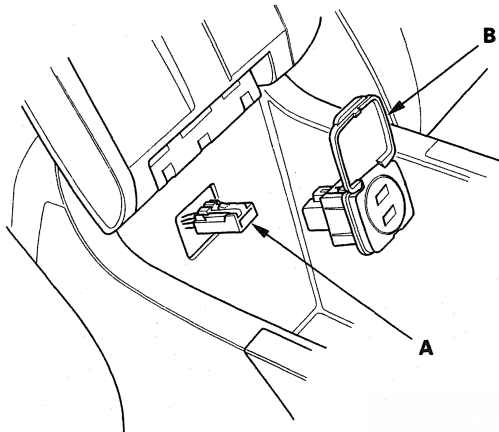
Cavity	Wire	Test condition	Test: Desired result	Possible cause if result is not obtained
6	BLK	Under all conditions	Measure the voltage to ground: There should be less than 1 V.	<ul style="list-style-type: none"> • Poor ground (G401) • An open in the wire
1	GRN	Under all conditions	Measure the voltage to ground: There should be battery voltage.	<ul style="list-style-type: none"> • Blown No. 1 (20 A) fuse in the auxiliary under-hood fuse box • An open in the wire
3	ORN	Ignition switch ON (II)	Measure the voltage to ground: There should be battery voltage.	<ul style="list-style-type: none"> • Blown No. 4 (7.5 A) fuse in the driver's under-dash fuse/relay box • Faulty driver's under-dash fuse/relay box • An open in the wire
5	YEL	Under all conditions	Check for continuity between the No. 5 terminal and power outlet 3P connector No. 3 terminal: There should be continuity.	An open in the wire
12	WHT	Under all conditions	Check for continuity between the No. 12 terminal and power outlet 3P connector No. 1 terminal: There should be continuity.	An open in the wire

*: Reconnect the connector to the AC inverter unit.

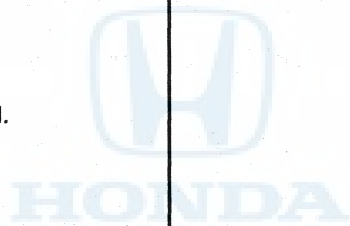
AC Power Outlet

Power Outlet Replacement

1. Remove the console rear trim (see step 5 on page 20-89).
2. Disconnect the 3P connector (A) from the power outlet (B).



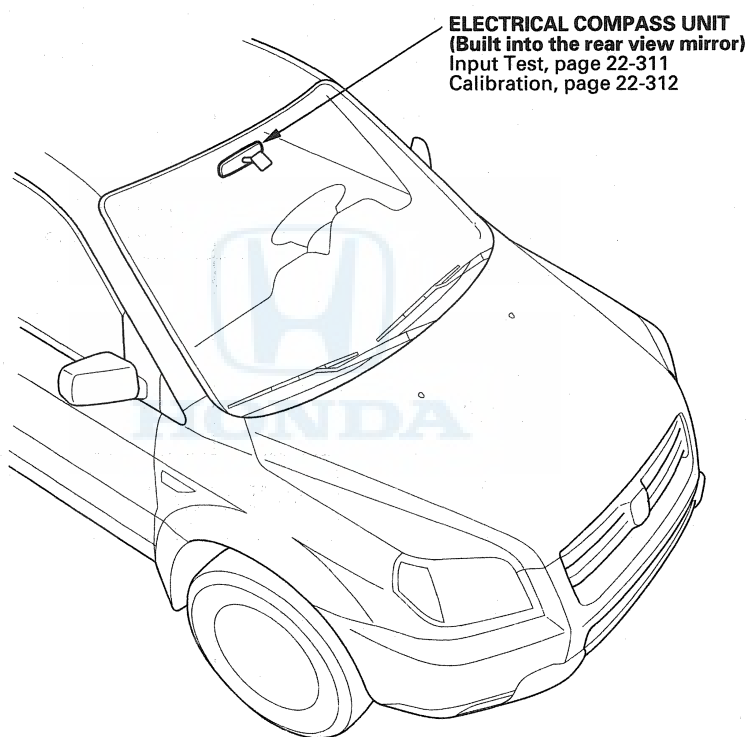
3. Remove the power outlet.
4. Install it in the reverse order of removal.



Electrical Compass

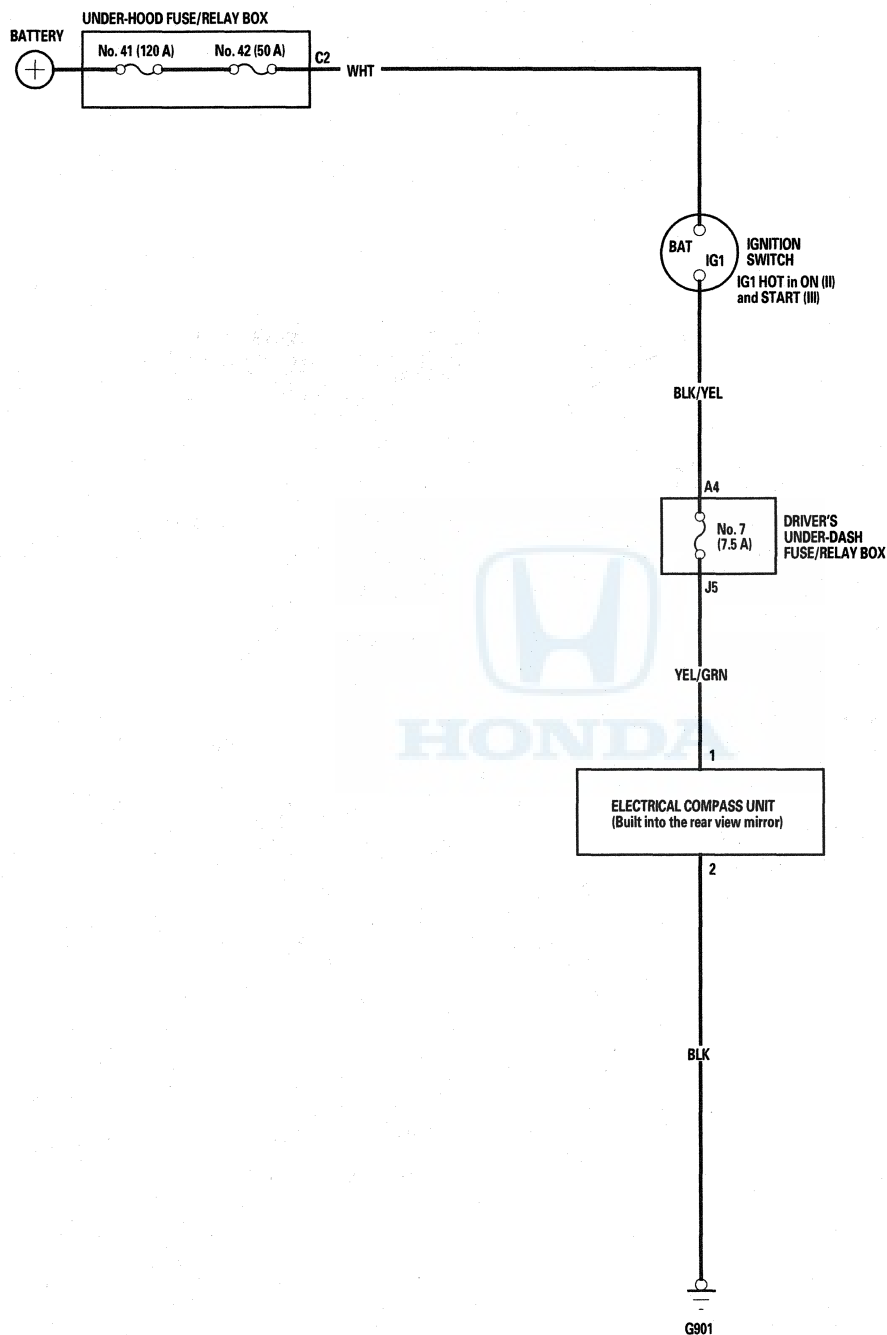


Component Location Index



Electrical Compass

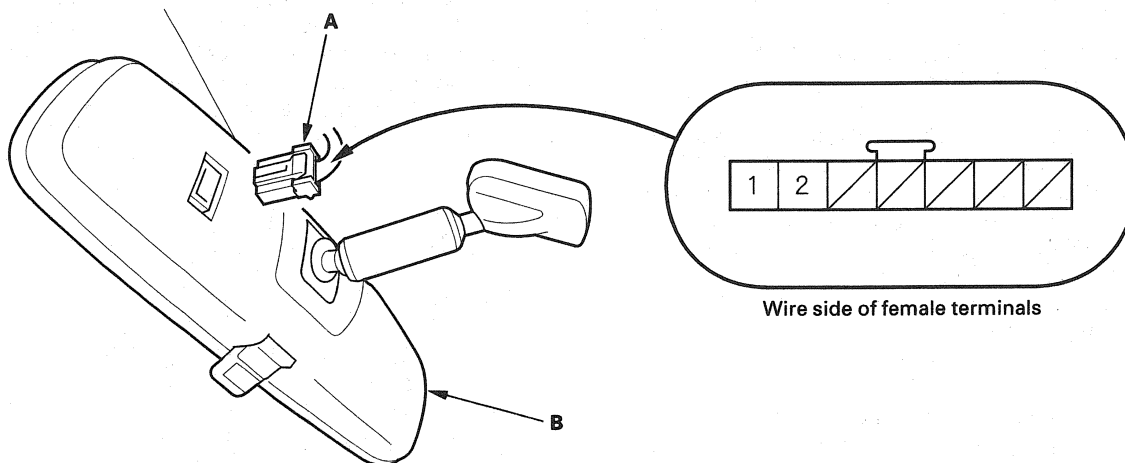
Circuit Diagram





Electrical Compass Unit Input Test

1. Disconnect the 7P connector (A) from the electrical compass (B).



2. Inspect the connector and socket terminals to be sure they are all making good contact.
 - If the terminals are bent, loose or corroded, repair them as necessary, and recheck the system.
 - If the terminals look OK, go to step 3.
3. Reconnect the connector and, make these input tests at the connector.
 - If any test indicates a problem, find and correct the cause, then recheck the system.
 - If all the input tests prove OK, the electrical compass unit must be faulty; replace it.

Cavity	Wire	Test Condition	Test: Desired result	Possible cause if result is not obtained
2	BLK	Under all conditions	Measure the voltage to ground: There should be less than 1 V.	<ul style="list-style-type: none">• Poor ground (G901)• An open in the wire
1	YEL/GRN	Ignition switch ON (II)	Measure the voltage to ground: There should be battery voltage.	<ul style="list-style-type: none">• Blown No. 7 (7.5 A) fuse in the driver's under-dash fuse/relay box• An open in the wire

Electrical Compass

Electrical Compass Calibration

1. Briefly press the button to toggle the display "ON/OFF".

NOTE: The compass display will default "ON" at each new ignition cycle.

2. With the BLUE CENTER LED displayed, press and hold the button for six seconds, or until a RED CENTER LED is displayed in the compass window, then release the button. While the RED CENTER LED is "ON" release the button. The compass is now in calibration mode. To calibrate, drive the vehicle in circles at less than 5 mph (8 km/h) until a BLUE CENTER LED is displayed. Typically 2—5 circles are required.

3. Find your current location and determine the correct zone number, for your geographic area, from the table "DISPLAY REFERENCE FOR ZONE". Press and hold the button for three seconds (until ALL DIRECTION BLUE LEDs BLINK), then release the button. The BLINKING LED(s) displayed is/are the current zone value. (see the table "DISPLAY REFERENCE FOR ZONE")

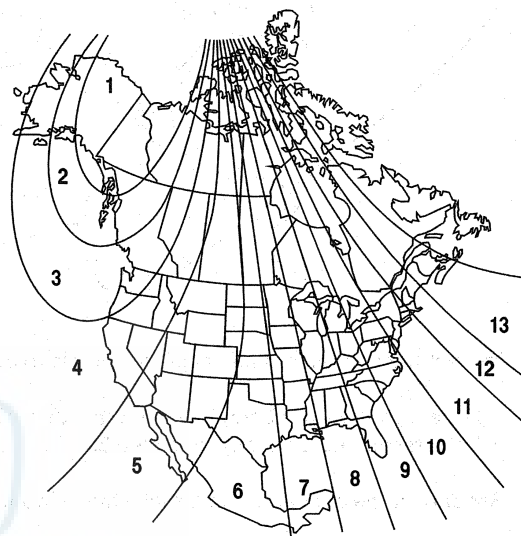
DISPLAY REFERENCE FOR ZONE

1 ○ ○ ○ E	6 W ○ ○ S	11 ○ ○ N E S
2 ○ ○ ○ S	7 W ○ ○ E S	12 W ○ ○ N ○
3 ○ ○ ○ E S	8 ○ ○ ○ N ○	13 W ○ ○ N ○ E
4 W ○ ○ ○	9 ○ ○ ○ N ○ E	14 W ○ ○ N ○ S
5 W ○ ○ E ○	10 ○ ○ ○ N ○ S	15 W ○ ○ N ○ S E

4. If a new zone value is desired, briefly press the button to increment the displayed value (Range 1—15) until you find your desired zone setting. No button activity for four seconds ends the zone entry mode. The compass display will return to normal operation and the new zone number will be set.

NOTE: See the table "DISPLAY REFERENCE FOR ZONE".

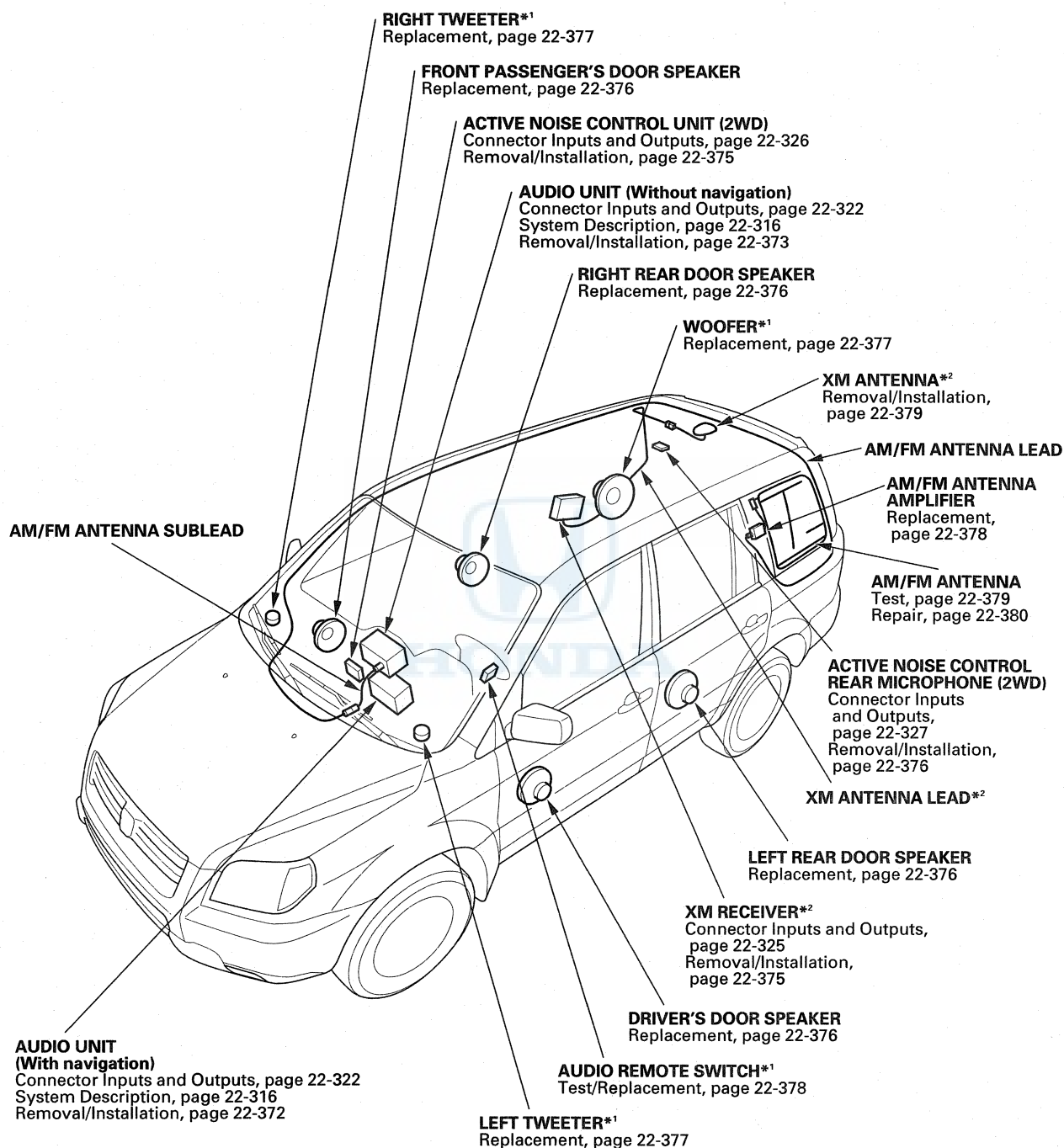
5. Zone selection is required to compensate for the difference between magnetic North and geographic North. This deviation is referred to as declination and can be compensated for by selecting the zone that corresponds with your area. See this illustration. Each zone represents about 5 degrees of declination.





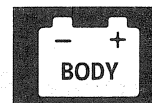
Audio System

Component Location Index



*1: Except LX model

*2: With XM



Symptom Troubleshooting Index

Symptom	Diagnostic procedure	Also check for
Poor AM or FM radio reception or interference	Symptom Troubleshooting (see page 22-334)	AM/FM antenna lead/sublead short or open in the wire
Power switch will not turn ON (No information display and no sound)	Symptom Troubleshooting (see page 22-337)	
Radio stays powered with the ignition switch OFF	Symptom Troubleshooting (see page 22-338)	
No sound is heard from speaker(s) (display is normal)	Symptom Troubleshooting (see page 22-338)	
Audio system sound is weak or distorted (display is normal)	Symptom Troubleshooting (see page 22-340)	
Audio unit button illumination does not work	Symptom Troubleshooting (see page 22-341)	
Radio preset memory is lost	Symptom Troubleshooting (see page 22-342)	<ul style="list-style-type: none"> • Battery condition • Battery cable condition
Poor or no sound with XM radio (Audio unit does display XM channels)	Symptom Troubleshooting (see page 22-342)	
XM radio display is blank and no station information is displayed	Symptom Troubleshooting (see page 22-344)	
Error code: XM NO SIGNAL or XM ANTENNA is displayed	Symptom Troubleshooting (see page 22-347)	
XM radio preset memory is lost	Symptom Troubleshooting (see page 22-348)	
Audio disc does not eject	Symptom Troubleshooting (see page 22-349)	
Audio disc changer does not load all six discs	Symptom Troubleshooting (see page 22-349)	Tire pressure (over-inflated), disc smudged, dirty, or scratched
Audio disc changer does not move between discs	Symptom Troubleshooting (see page 22-350)	
Volume does not change	Symptom Troubleshooting (see page 22-350)	
Radio tuner does not change stations	Symptom Troubleshooting (see page 22-351)	
Audio disc does not load	Symptom Troubleshooting (see page 22-351)	
Audio disc does not play	Symptom Troubleshooting (see page 22-352)	
Audio disc skips	Symptom Troubleshooting (see page 22-352)	Tire pressure (over-inflated), disc smudged, dirty, or scratched
Audio remote switch does not work properly	Symptom Troubleshooting (see page 22-353)	
Booming sound while driving with audio unit on or off	Symptom Troubleshooting (see page 22-355)	

Audio System

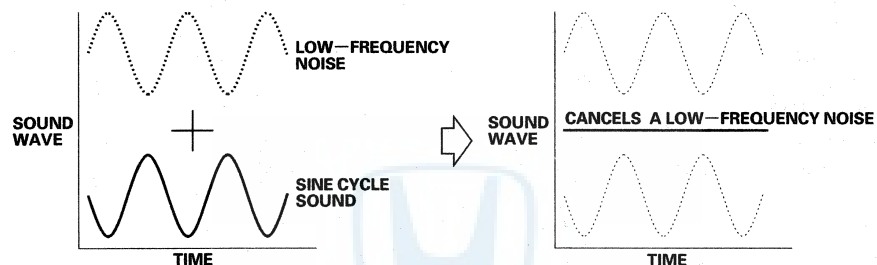
System Description

Overview

The audio unit acts as the “processor” for all audio and video signals (RES). Selection of the audio functions can be done from the front panel, the audio remote (on the steering wheel), or by using the navigation voice control system. The audio display provides the current front and rear audio status. For vehicles with the navigation option, additional audio information is available by touching the audio button. (See the owner’s manual for more details)

Each audio component passes its audio or video signal to the audio. In addition, it communicates with the audio unit via the GA-Net bus. Any open connection in this circuit will cause the audio, and the navigation functions to appear inoperative.

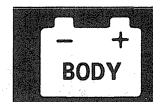
The system includes an active noise control system to cancel some of the vehicle noise (2WD). It uses a sine-wave-sound output to cancel noise developed during the cylinder cancel operation. This occurs in the 1,500—2,400 rpm range. Two microphones detect the low frequency sound, and the system outputs a canceling sound through the audio speakers.



The XM can output to either the front or the rear RES. However, if the XM is playing in the front, the RES (DVD player) can be used to play a CD in the rear.

A security signal is daisy-chained between the audio, RES and navigation components for integration into the vehicle’s alarm system.

The RES consists of a DVD player, a rear controller/screen, and an auxiliary jack assembly.

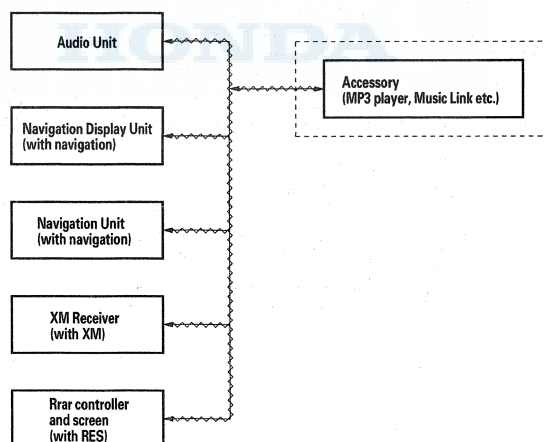


The optional navigation system provides voice control for the audio, XM, and CD player. The GA-Net (audio unit) communicates the voice control commands. When using the TALK/BACK button, the audio is muted on all speakers (but not the RES headphones), and you hear navigation sound on the front channels. When using the navigation or route guidance (RG), the front speakers provide the navigation sound. The GA-Net bus passes the muting commands. For more information, see the navigation section. The outline of the interruption function is shown in this table.

Contents	Audio output				
	Left front CH	Right front CH	Right rear CH	Left rear CH	Subwoofer CH
TALK/BACK Buttons	Navigation voice output	Navigation voice output	Muted	Muted	Muted
Route guidance	Navigation voice output	Navigation voice output	Audio	Audio	Audio

GA-Net Bus Configuration

The GA-Net bus passes audio, RES and navigation commands throughout the navigation, RES and audio components. These commands include navigation touch screen and hard button signals, audio/XM selections by voice, and XM station and music title names. Because the entire bus is “daisy chained” between components (see diagram), any open or short in the GA-Net bus harness can cause any one or all of these functions to become inoperative. The addition of any audio accessory must maintain the continuity of the GA-Net bus by installing the Y cable included with the accessory kit.

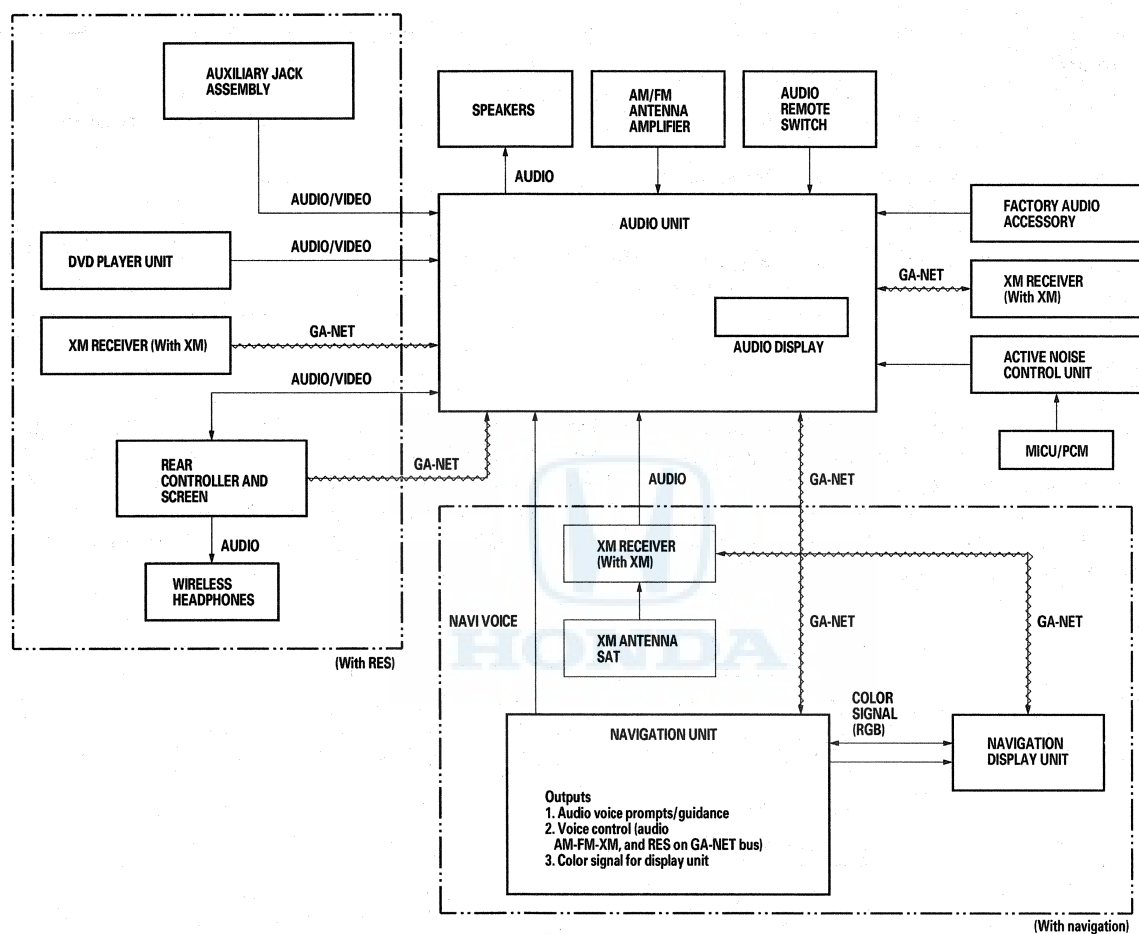


(cont'd)

Audio System

System Description (cont'd)

System Diagram





NOTE: All items may not apply to this vehicle. See the Owner's Manual for more information.

Audio Glossary

Item	Definition
Active Noise Control	The active noise control system cancels some of the vehicle noise. This occurs in the 1,500—2,400 rpm range. Microphones detect the low frequency sound, and the system outputs a canceling sound from the audio speaker.
AM (Amplitude Modulation)	The type of transmission used in the standard radio broadcast band from 530 to 1,705 kHz.
Amplifier	A device that increases the level of a signal by increasing the current or voltage.
Antenna	A device used to send or receive electromagnetic waves through the air.
ATA (PC Card)	A type of card that has been tested for use in playing WMA, and MP3 music files in the PC card slot. Sizes of up to 1 GB have been tested.
Auxiliary jack	Allows the customer to use a portable audio device to input music recordings.
Audio Remote switch	The switches on the steering wheel that control the audio system.
Balance	A control that changes the relative volume of the left and right channels.
Band	A range of frequencies between two definite limits. Bands are assigned by the Federal Communications Commission for specific uses.
Bass	An adjustment for the low frequency sounds of around 160 Hz and below.
Byte	A unit of storage for computer files and memory. A CD holds approximately 700 million bytes.
Cassette	Audio or video magnetic tape container having two reels. Customers can insert it for recording or play back.
Compact Flash	A standard for small-size (3 x 4 cm), memory cards used in mobile computers, PDAs, digital cameras. Compact flash memory cards are available in size of 32 MB up to 4 GB or more and can be played in the audio PC slot. Sizes above 1 GB has not been tested.
CD (Compact Disc)	A 4.5-inch plastic disc containing digital audio recording that is played optically on a laser equipped player. Never use discs with a paper label. In a hot car, labels can curl up and jam the unit.
CD (audio disc) Changer	CD player that can store and play more than one CD. Two types are available. Some units accept CDs fed into the changer one at a time, and others accept a magazine (with CD's stacked in a container).
CD player	A component designed to play compact disc CD recording using a laser optical pickup. The signal from a CD player usually requires amplification.
Distortion	Inexact reproduction of an audio signal caused by playing music at levels the audio system cannot handle.
Dolby (noise reduction)	A processing system developed by Dolby Laboratories that reduces the background noise on recording media. The result is a clearer playback from the audio system.
DVD (Digital Versatile Disc)	A 4.5-inch CD-like format used for storing movies with digital audio and video features. The DVD-A format is a DVD format designed for DVD audio systems. Some vehicles can play DVD and DVD-A formats.
Equalizer	A device that changes the relative volume of individual frequency bands to suit personal tastes of the listener.
Fader	The control that adjusts the relative volume levels of front and rear speakers in a four-speaker system.
Format	To prepare a PC card to receive files, this function is performed on a PC. Always choose either FAT or FAT32 as the NTFS format is not accepted by the system. Pick the default sectors for the format method selected.
FM (Frequency Modulation)	The modulation used for radio and television sound transmission in most of the world. Less prone to interference than AM. The FM broad cast band covers roughly 87 to 108 MHz.

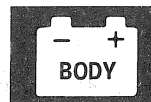
(cont'd)

Audio System

System Description (cont'd)

Audio Glossary

Item	Definition
GA-Net	The GA-Net allows the audio unit to communicate with all the audio and navigation components in a vehicle. If there is an open in the GA-Net, components or the entire audio and navigation system may appear inoperative.
GB (Gigabyte)	A unit of memory or disk storage equal to billion bytes (1000 million bytes).
HDD	Abbreviation for hard disc drive. They are sensitive to heat and it is not recommended that they be used in the PC card slot for playing audio files.
Hertz (HZ)	The unit of frequency equal to one cycle per second (cps). One kilohertz (kHz) equals 1,000 cps; one megahertz (MHz) equals 1 million cps.
Integrated Amplifier	A component that combines a pre amp and a power amp into a single unit. A receiver combines an integrated amp and a tuner into a single unit.
Jewel Case	The hard plastic case that contains a compact disc or DVD. Always use a jewel case to prevent scratches on the underside of a CD or DVD.
LCD (Liquid Crystal Display)	A type of digital display that changes reflectance or transmittance when an electrical field is applied to it.
Memory	Circuitry or devices that hold information in electrical or magnetic form, such as the AM/FM radio presets.
MB (Megabyte)	One million bytes. Written as 1 MB. Megabytes are used a measure of digital storage space. For example, a CD can hold 650 MB.
Mic	An abbreviation for microphone. For vehicles with navigation, the microphone accepts navigation voice commands to control audio and navigation functions.
MP3 music files	MP3 is an audio coding format. MP3 is a popular audio compression format on the Internet and computers. CDs, and PC card with these files can be played on some vehicle's audio system.
Mute	When the navigation gives guidance, the front speakers are muted (no music). When you use the voice control system, all of the speakers are muted.
Noise	Unwanted random sounds like buzzing, hiss, pops, static, whine, etc.
PC Card	The slot used for playing MP3 and WMA music files. The PC card is usually a combination of a small flash card in a PCMCIA adaptor that slides into the slot. The ATA, SD, and compact flash types of cards have been tested up to 1 GB.
PCMCIA	A computer standard for the slot that the PC card slides into. Another term for the PC card slot.
Processor	The part of an audio device that performs task/calculations. In the audio unit the processor handles muting to allow the navi to speak voice commands, and the decoding/playback of the sound files etc.
Radio	A head unit that combines a tuner, a preamplifier, and often a power-amplifier.
SCF (Cold Start Fix) screens	These screens are displayed if the system requires a GPS initialization. The vehicle should be moved outside into an open area away from buildings/power lines.
SD (Secure Digital) card	This compact type of memory card allows for fast data transfer and has built-in security functions. SD cards have a small write-protection switch on the side.
Shield	A metallic foil or braided wire layer surrounding conductors which are designed to prevent electrostatic or electromagnetic interference (noise) from external sources such as buzzing, or popping sounds heard on the speakers.
Speaker (Loudspeaker)	A device that converts electrical energy into acoustical energy (sound).
Stereo	A recording of at least two channels where you can hear sound or music from the left or right side.
Speed-sensitive Volume Compensation (SVC)	The SVC increases the audio volume to compensate for increased interior noise when the vehicle drives at freeway speeds.
Subwoofer	A loudspeaker made to reproduce the lowest audio frequencies, approx 25 Hz to 125 Hz.



Audio Glossary

Item	Definition
Track	A sound recording on a CD, tape, or PC card.
Treble	An adjustment to control the "volume" of the high frequency sounds.
Tuner	A component (or part of a component) that receives radio signals and selects one broadcast from many.
Tweeter	A speaker designed to reproduce the higher frequencies (treble) only.
Voice Coil	A coil of wire wrapped around a tube and then attached to the speaker cone or diaphragm. When an audio signal is applied, the coil becomes an electromagnet and interacts with the permanent magnet causing the cone or diaphragm to vibrate. We interpret this vibration as sound.
Volume Control	Allows you to control the loudness of the music.
WMA music file	Windows Media Audio File. This is an accepted format for music files to be played on either a CD or a PC card.
Woofer	A speaker that is designed to reproduce bass frequencies only.
XM Radio	Satellite based radio transmission, which also uses a ground based repeater network to ensure seamless reception. The channels originate from XM's broadcast center, in Washington, DC, and uplink to two satellites. These satellites transmit the signal across the entire continental United States.
XM Receiver	The external component that receives and processes the XM signals from the XM satellites, and terrestrial (land) stations. The audio unit communicates to the XM receiver over the GA-Net bus.

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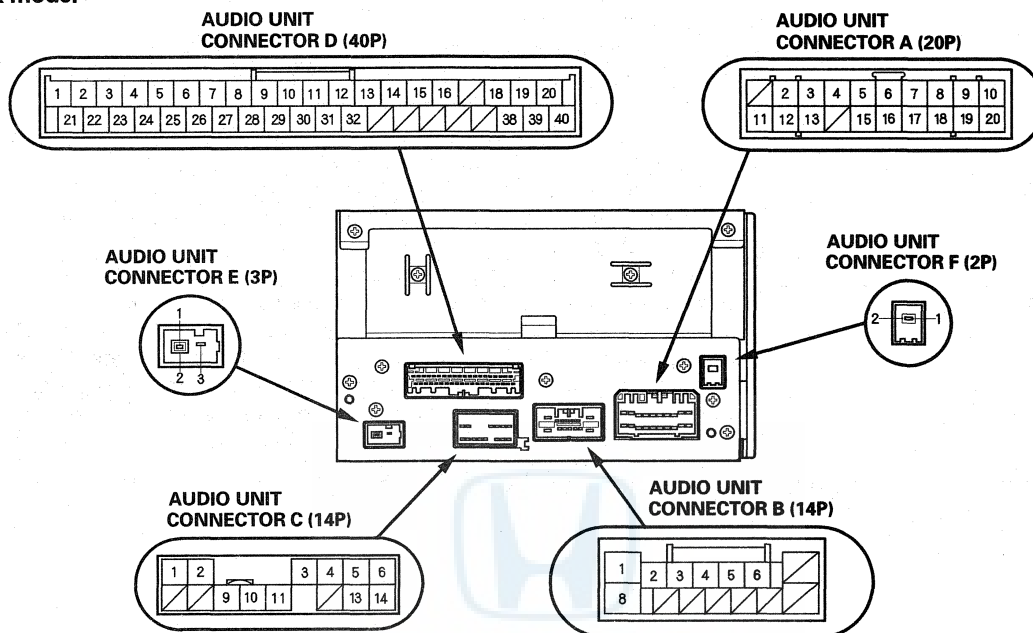
Audio System

System Description (cont'd)

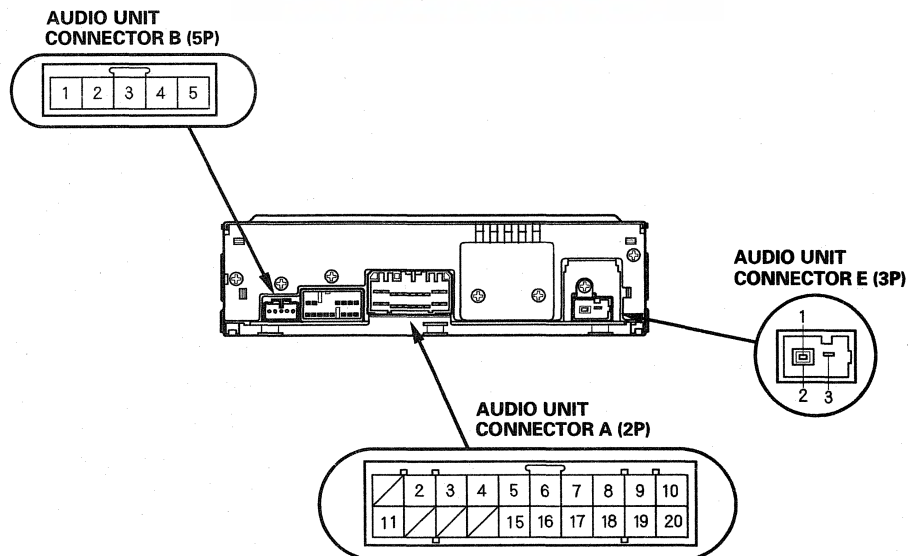
Audio Unit Connector for Inputs and Outputs

When replacing an audio unit connector, match the wires to the cavities listed in the following table.

Except LX model



LX model





AUDIO UNIT CONNECTOR A

Cavity	Wire	Connect to
A2	WHT/RED	ACC (main stereo power supply) (ACC)
A3	GRN/RED	Audio remote switch (REMOTE CTRL)
A4	BLU ^{*1}	Passenger's multiplex control unit (SCTY AUDIO)
	GRN/WHT ^{*2}	Navigation display unit (SCTY AUDIO)
	BRN/WHT ^{*3}	DVD player unit (SCTY AUDIO)
A5	RED/YEL	Right rear speaker (RR R SPKR+)
A6	BLU/YEL	Left rear speaker (RR L SPKR+)
A7	RED/GRN	Passenger's door speaker, Right tweeter (FR AS SPKR+)
A8	BLU/GRN	Driver's door speaker, Left tweeter (FR DR SPKR+)
A9	RED/BLK	Lights-on signal (ILL+)
A10	WHT	Constant power (+B)
A11	BRN	Audio remote switch (REMOTE GND)
A12 ^{*2}	PUR	Navigation system (RG GND)
A13 ^{*2}	LT GRN	Navigation system (RG L+)
A15	BRN/WHT	Right rear speaker (RR R SPKR-)
A16	GRY/WHT	Left rear speaker (RR L SPKR-)
A17	BRN/BLK	Passenger's door speaker, Right tweeter (FR AS SPKR-)
A18	GRY/BLK	Driver's door speaker, Left tweeter (FR DR SPKR-)
A19	RED	Dash lights brightness controller (ILL-)
A20	BLK	Ground (G504)

* 1: Without navigation, rear entertainment system

* 2: With navigation

* 3: With rear entertainment system

AUDIO UNIT CONNECTOR B

Except LX model

Cavity	Wire	Connect to
B1	WHT/GRN	Woofer (RR WOOFER+)
B2	BLK	Active noise control unit (ANC FR+)
B3	GRN	Active noise control unit (ANC FR-)
B4	GRY/YEL	Active noise control unit (ANC RR+)
B5	WHT	Active noise control unit (ANC RR-)
B6	RED/BLK	Active noise control unit (ANC CHK2)
B8	BLK/WHT	Woofer (RR WOOFER-)

AUDIO UNIT CONNECTOR B

LX model

Cavity	Wire	Connect to
B1	BLK	Active noise control unit (ANC FR+)
B2	GRN	Active noise control unit (ANC FR-)
B3	GRY/YEL	Active noise control unit (ANC RR+)
B4	WHT	Active noise control unit (ANC RR-)
B5	RED/BLK	Active noise control unit (ANC CHK2)

(cont'd)

Audio System

System Description (cont'd)

AUDIO CONNECTOR C (With XM)

Cavity	Wire	Connect to
C1	RED/BLU	XM receiver (+B GA-NET)
C2	LT GRN/RED	XM receiver (SAT SYS ACC)
C3	LT BLU*	XM receiver (AUDIO BUS SHIELD)
C4	GRY*	XM receiver (SAT SHIELD)
C5	WHT	XM receiver (SAT R+)
C6	RED	XM receiver (SAT L+)
C9	RED/BLU	XM receiver (ECU BUS+)
C10	RED/WHT	XM receiver (ECU BUS-)
C11	GRY/BLU	XM receiver (GA-NET GND)
C13	BLK	XM receiver (SAT R-)
C14	GRN	XM receiver (SAT L-)

AUDIO CONNECTOR D (With rear entertainment system)

Cavity	Wire	Connect to
D1	BRN	DVD player unit (DVD COMM1)
D2	GRY/ORN*	DVD player unit (R/L SHIELD)
D3	ORN/BLU	DVD player unit (R/L GND)
D4	ORN	DVD player unit (L CH)
D5	BLU/GRN	DVD player unit (R CH)
D6	GRY/PNK*	DVD player unit (DVD SHIELD)
D7	PNK	DVD player unit (DVD GND)
D8	BLU	DVD player unit (DVD)
D9	BRN*	Rear controller and screen (RR BUS SHIELD)
D10	RED/BLU	Rear controller and screen (RR BUS-)
D11	RED/WHT	Rear controller and screen (RR BUS+)
D12	RED	Auxiliary jack assembly (HP R/L OUT GND)
D13	BRN/WHT*	Auxiliary jack assembly (HP R/L OUT SHIELD)
D14	WHT	Auxiliary jack assembly (HP R OUT)
D15	BLK	Auxiliary jack assembly (HP L OUT)
D16	YEL/RED	Rear controller and screen (RR SYSTEM ACC)
D18	PNK	Rear controller and screen (RR NTSC GND)

*: The shielded wires have a heat-shrunk tube insulating the outside of the wire. The color of the insulating tube, typically black or dark gray, may not match the color of the wire listed on the schematic.

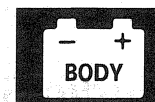
D19	BRN/BLK*	Rear controller and screen (RR NTSC SHIELD)
D20	BLU	Rear controller and screen (RR NTSC)
D21	WHT	Rear controller and screen (HP R/L GND)
D22	BRN*	Rear controller and screen (HP R/L SHIELD)
D23	BRN	Rear controller and screen (HP L)
D24	GRN/BLU	Rear controller and screen (HP R)
D25	WHT	Auxiliary jack assembly (VIDEO1 GND)
D26	GRY/YEL*	Auxiliary jack assembly (VIDEO1 SHIELD)
D27	BLK	Auxiliary jack assembly (VIDEO1)
D28	WHT/RED	Auxiliary jack assembly (CONN CHECK)
D29	BRN	Auxiliary jack assembly (R/L GND)
D30	GRY/ORN*	Auxiliary jack assembly (R/L SHIELD)
D31	GRN/BLU	Auxiliary jack assembly (R CH)
D32	WHT	Auxiliary jack assembly (L CH)
D38	BRN/WHT*	DVD player unit (DVD COMM SHIELD)
D39	GRN/BLU	DVD player unit (DVD COMM GND)
D40	WHT	DVD player unit (DVD COMM2)

AUDIO CONNECTOR E

Cavity	Wire	Connect to
E1	—	AM/FM Antenna amplifier (SIG)
E2	—	AM/FM Antenna amplifier (SH (AM/FM))
E3	—	AM/FM Antenna amplifier (SWD +B)

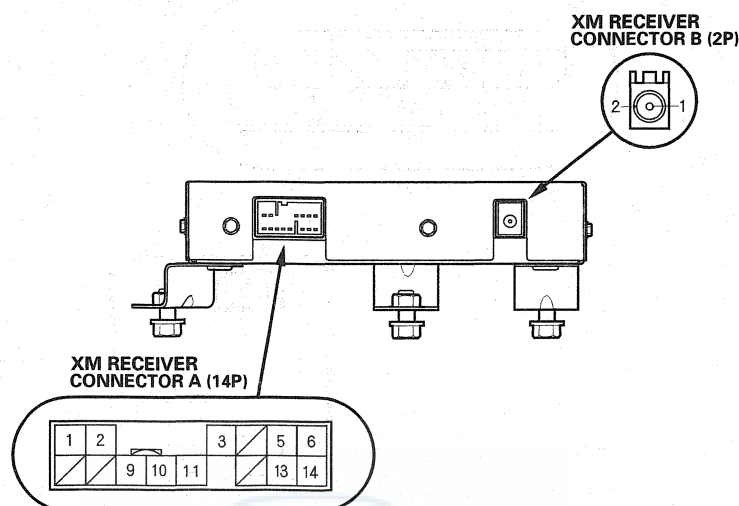
AUDIO CONNECTOR F (With rear entertainment system)

Cavity	Wire	Connect to
F1	—	DVD player unit (DIGITAL SIG)
F2	—	DVD player unit (DIGITAL SHIELD)



XM Receiver Connector for Inputs and Outputs

When replacing a XM receiver connector, match the wires to the cavities listed in the following table.



XM RECEIVER CONNECTOR A

Cavity	Wire	Connect to
A1	RED/BLU	Audio unit (+B GA-NET)
A2	LT GRN/RED	Audio unit (SAT SYS ACC)
A3	LT BLU*	Audio unit (GA-NET BUS SHIELD)
A5	WHT	Audio unit (SAT R+)
A6	RED	Audio unit (SAT L+)
A9	RED/BLU	Audio unit (GA-NET BUS+)
A10	RED/WHT	Audio unit (GA-NET BUS-)
A11	GRY/BLU	Audio unit (GA-NET GND)
A13	BLK	Audio unit (SAT R-)
A14	GRN	Audio unit (SAT L-)

XM RECEIVER CONNECTOR B

Cavity	Wire	Connect to
B1	—	Satellite signal antenna (SIG)
B2	—	Satellite signal antenna (SH (SAT))

*: The shielded wires have a heat-shrunk tube insulating the outside of the wire. The color of the insulating tube, typically black or dark gray, may not match the color of the wire listed on the schematic.

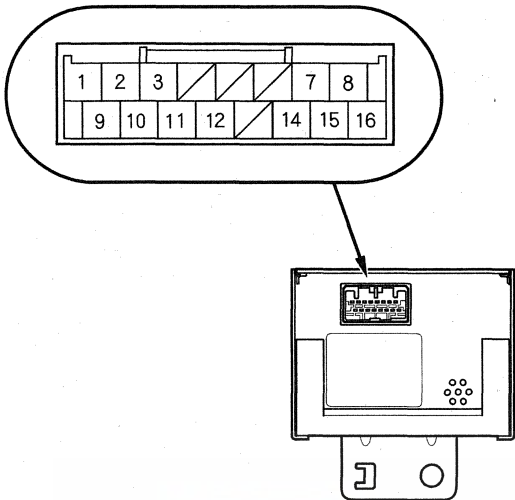
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Audio System

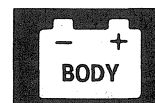
System Description (cont'd)

Active Noise Control unit Connector for Inputs and Outputs (2WD)

When replacing an active noise control unit connector, match the wires to the cavities listed in the following table.

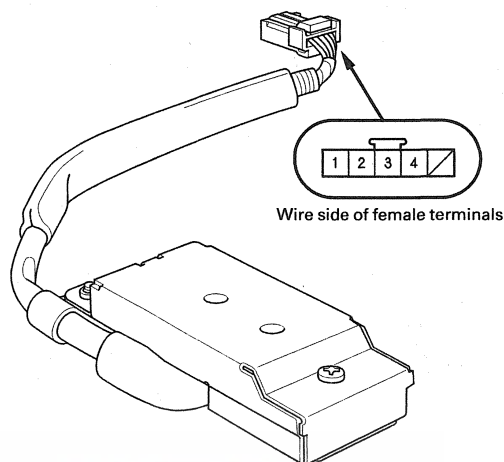


Cavity	Wire	Connect to
1	GRY/YEL	Audio unit (ANC RR+)
2	BLK	Audio unit (ANC FR+)
3	ORN	Active noise control rear microphone (RR MIC+)
7	BLK	Ground (G401)
8	YEL/BLK	ACC (main stereo power supply)
9	WHT	Audio unit (ANC RR-)
10	GRN	Audio unit (ANC FR-)
11	GRN	Active noise control rear microphone (RR MIC-)
12	RED/BLK	Audio unit (ANC CHK2)
14	PNK	PCM (CCSAM)
15	BLU	PCM (NEP)
16	BLK/WHT	Passenger's multiplex control unit (INTR LT)



Active Noise Control Rear Microphone Connector for Inputs and Outputs (2WD)

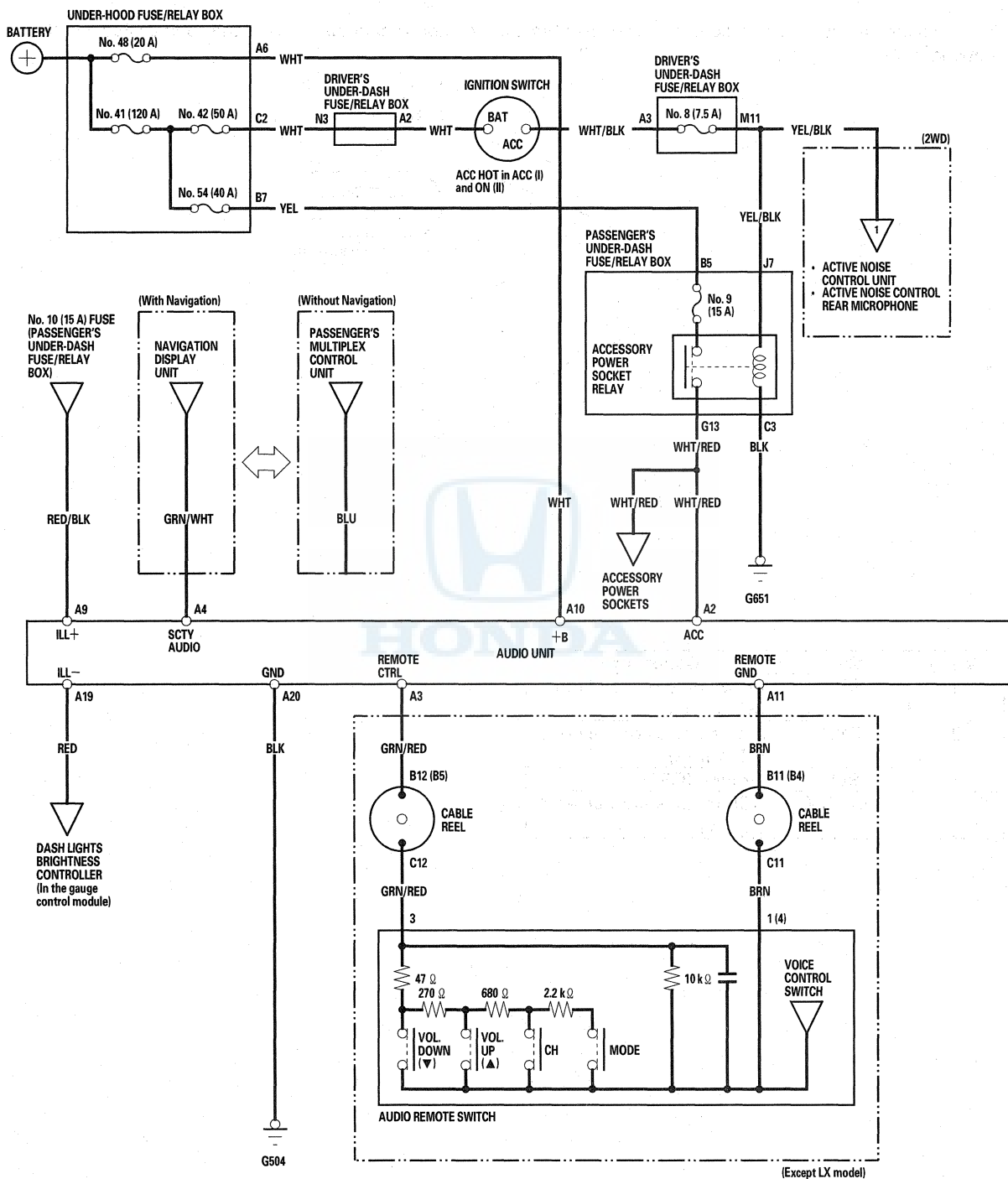
When replacing an active noise control rear microphone connector, match the wires to the cavities listed in the following table.

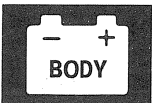


Cavity	Wire	Connect to
1	ORN	Active noise control unit (RR MIC+)
2	GRN	Active noise control unit (RR MIC-)
3	BLK	Ground (G503)
4	YEL/BLK	ACC (main stereo power supply)

Audio System

Circuit Diagram

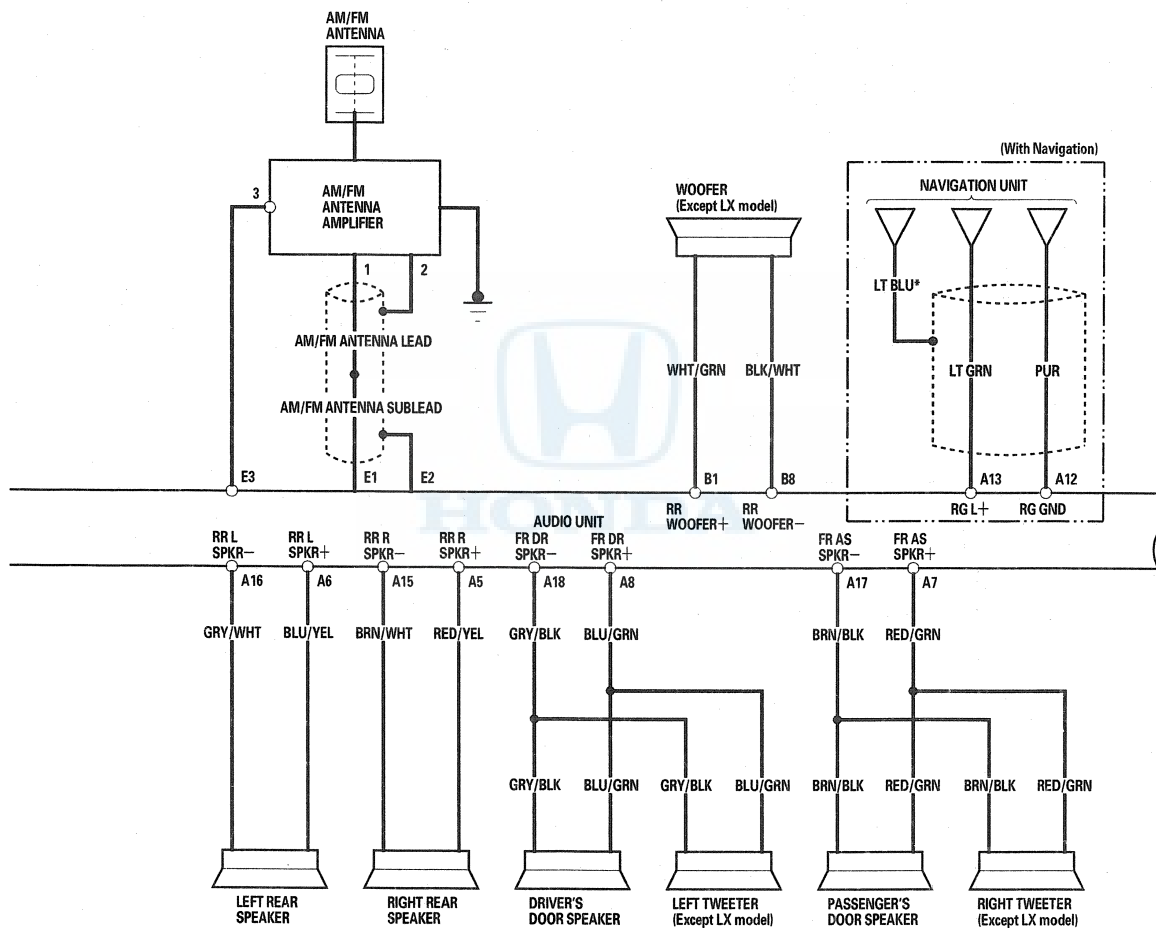




*: The shielded wires have a heat-shrunk tube insulating the outside of the wire. The color of the insulating tube, typically black or dark gray, may not match the color of the wire listed on the schematic.

() : Without navigation

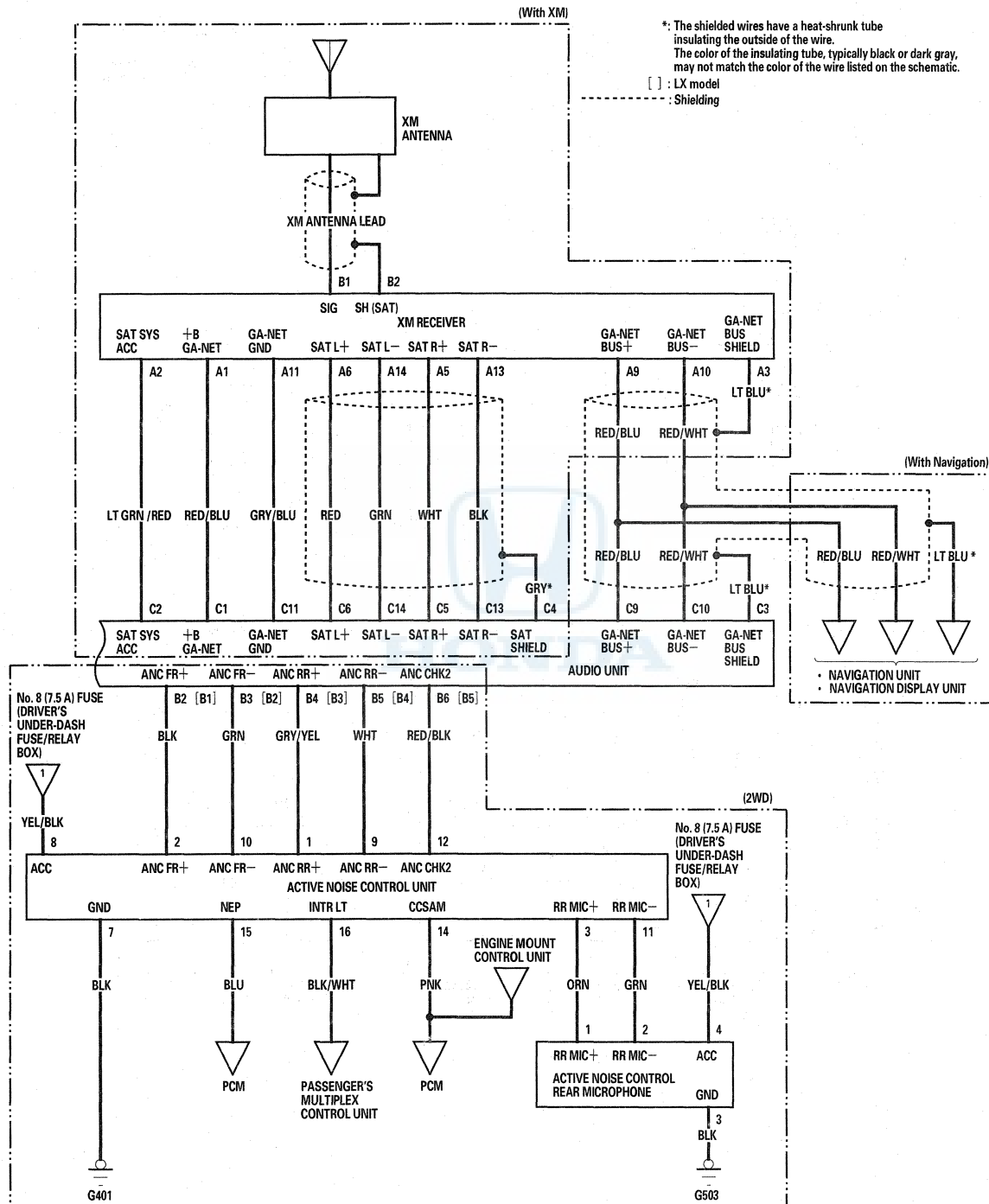
----- : Shielding



(cont'd)

Audio System

Circuit Diagram (cont'd)



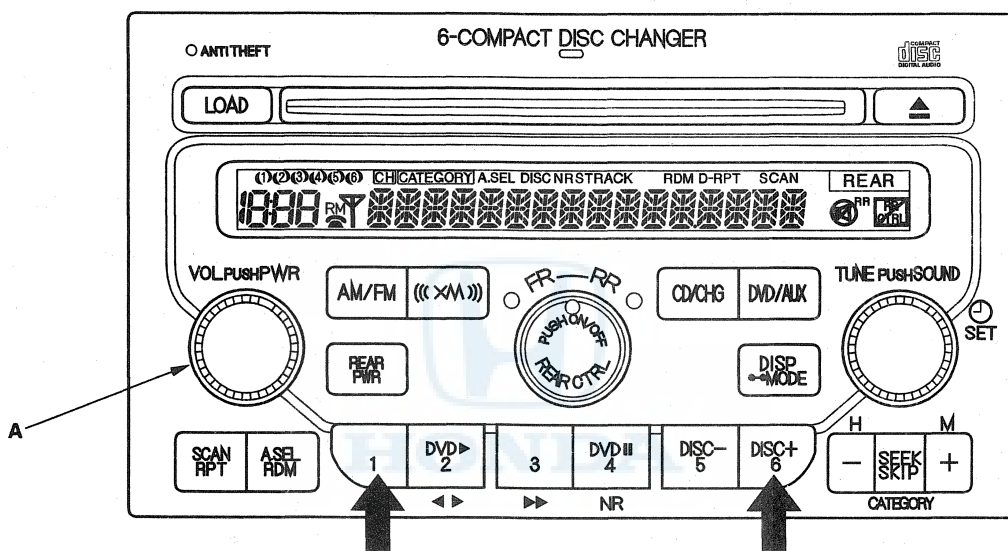


Self-diagnostic Function

The audio system has a self-diagnostic function. To run the self-diagnostic function, do the following:

How to check for audio display condition

1. Turn the ignition switch to the ACC (I) or ON (II) position.
2. Enter the anti-theft code.
3. Turn off the audio unit.
4. Push and hold the "1" and "DISC 6" buttons. While holding the buttons, push the "VOL push PWR" knob (A) to ON. Release the buttons and the self-diagnostic function begins.



(cont'd)

Audio System

Self-diagnostic Function (cont'd)

5. "DIAGNOSTIC" appears on the audio unit to indicate you have entered the self-diagnostic mode.
6. By pressing a preset button while "DIAG" is displayed, the input will trigger the diagnostic mode that is assigned to that preset switch.

"3" button

Entire LCD lighting mode: Turns on the entire LCD to show the presence or absence of an LCD failure.

"4" button

Entire LCD light-out mode: Turns off the entire LCD to show the presence or absence of an LCD failure.

"1" button (2WD)

Active noise control system function check mode:

How to check the active noise control system in this check mode

- With the engine stopped and while in "DIAGNOSTIC" mode, turn the ANC ON to OFF by pressing the No. 1 button, a low-Frequency hum (50 Hz) should sound for about a minute.
 - If the hum does not sound, check for an open in the wire between the active noise control unit and the audio unit.
 - If the hum does not sound for a minute, check for an open in the wire between the active noise control unit and the microphone.
- Start the engine while the hum is sounding, the hum should stop. If the hum does not stop, check for an open in the wire (NEP line) between the active noise control the unit and PCM.
- Test drive the vehicle at 55 mph (88 km/h) and enter the "DIAGNOSTIC" mode, turn the active noise control system OFF and back to ON (II), the active noise control system should activate.

NOTE: The active noise control system is cancelled when any of the doors are opened.

"DISP/MODE" button

DVD player unit region code display mode: Display region code for DVD player unit.

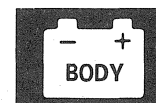
7. The self-diagnostic function ends when you turn the audio unit off, or turn the ignition switch off.

Serial Number Display Mode

To obtain the audio unit serial number on a vehicle, do the following:

NOTE: This procedure can only be performed when the battery power is disconnected from the audio unit and the audio unit displays "CODE."

1. Turn the ignition switch to the ACC (I) or ON (II) position.
2. With the audio unit turned off, push and hold the "1" and "DISC 6" buttons. While holding the buttons, push the VOL push PWR knob to ON.
3. The display will show an 8 digit serial number.
4. Use all 8 numbers as the serial number when using the iN (Interactive Network) to retrieve the 5 digit anti-theft code.
5. The serial number display mode ends when you turn the audio unit off, or turn the ignition switch off.



Error Codes

The audio system displays error codes when a problem is detected with the audio disc changer, the audio disc, the XM radio, or the anti-theft code.

CD Error Codes

Error Code Displayed	Possible Cause	Solution
DISC ERROR	There is a problem with the disc player. A common problem is disc labels coming off the disc while in the player.	Try to eject the disc and try another one. If there is still a problem, replace the audio unit.
HEAT ERROR	Disc player is hot. This can happen if the vehicle is parked out in the hot sun all day.	Park the vehicle in a cooler place for a while and try the disc player again. If the error code is still present, try another disc. If the error code is still present, replace the audio unit.
Mech Error	<ul style="list-style-type: none">• CD label jammed in the mechanism.• CD eject mechanism or motor is inoperative.• CD spindle motor won't spin up the CD.	Press the EJECT button and hold it for 5 seconds. If the CD does not eject, try again. If the CD still won't eject, replace the audio unit.

XM Error Codes

Error Code Displayed	Possible Cause	Solution
OFF AIR	XM channel not in service.	Try another XM channel.
NO SIGNAL	Loss of signal.	Both terrestrial and satellite antennas have lost signal. Park the vehicle outside with a clear view of the southern horizon.
UPDATING	XM radio is receiving an information update from the network.	This message will disappear once the update finishes.
ANTENNA	XM antenna error.	Repair open or short in the XM antenna or lead. Substitute the XM antenna with a known-good one, and recheck. If the error is gone, replace the original XM antenna. If the error is still present, substitute a known-good XM receiver. If the error code goes away, replace the XM receiver. If the error code is still present, replace the antenna lead.
LOADING	XM radio is acquiring audio or program information.	Wait until the radio receives the information.
---	No signal from XM.	Check known-good vehicle with XM radio. If the known-good vehicle has the same symptoms, contact XM satellite radio at (800) 852-9696.

Audio Unit Error Codes

Error Code Displayed	Possible Cause	Solution
CODE ERROR 1	Anti-theft code mismatch (1 st try).	Enter the correct anti-theft code.
CODE ERROR E	Anti-theft code mismatch (10 th try).	Remove fuse No. 48 (20 A) in the under-hood fuse/relay box, then reinsert it. You will have 10 more tries to enter the correct anti-theft code.

Audio System

Symptom Troubleshooting

Poor AM or FM radio reception or interference

NOTE:

- Check the vehicle battery condition first.
- Check the radio reception in an open area. Poor reception/interference can be caused by the following:
 - The radio station is far away.
 - Atmospheric conditions are unfavorable.
 - Tall buildings, mountains, or high-voltage power lines are nearby.
 - Aftermarket window tint.

1. Turn the ignition switch ON (II).

2. Do the seek stop test (see page 22-370).

Is the test vehicle within 10 % of the known-good vehicle?

YES—Multipath interference or weak station. Operation is normal. ■

NO—Go to step 3.

3. Check if the radio reception/interference is the same in several locations.

Is the reception/interference the same?

YES—Go to step 4.

NO—Multipath interference or weak station. Operation is normal. ■

4. Check the reception/interference while the engine is running.

Is there noise (static or whine) only with the engine running?

YES—Check the antenna and radio grounds. If OK, check the charging system and the ignition system. ■

NO—Go to step 5.

5. Turn the ignition switch OFF.

6. Do the AM/FM antenna test (see page 22-379).

Is there continuity in all sections of the antenna?

YES—Go to step 7.

NO—Repair the window antenna wire. Go to AM/FM Antenna Repair (see page 22-380). ■

7. Remove the audio unit (see page 22-372). Check that AM/FM antenna sublead is properly connected.

NOTE: Eject all the discs before removing the audio unit to prevent damaging the CD player's load mechanism.

Is it connected properly?

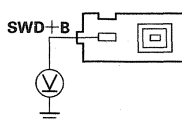
YES—Go to step 8.

NO—Reconnect the connector, and recheck the function. ■



8. Disconnect the AM/FM antenna amplifier 3P connector (see page 22-378).
9. Turn the ignition switch ON (II).
10. Turn on the audio unit and select AM or FM.
11. Measure the voltage between the AM/FM antenna amplifier 3P connector No. 3 terminal and body ground.

AM/FM ANTENNA AMPLIFIER 3P CONNECTOR



Terminal side of female terminals

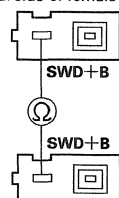
Is there battery voltage?

YES—Go to step 16.

NO—Go to step 12.

12. Turn the ignition switch OFF.
13. Disconnect the audio unit connector E (3P).
14. Check for continuity between the audio unit connector E (3P) terminal No. 3 and the AM/FM antenna amplifier 3P connector terminal No. 3.

AUDIO UNIT CONNECTOR E (3P)
Terminal side of female terminals



AM/FM ANTENNA AMPLIFIER 3P CONNECTOR
Terminal side of female terminals

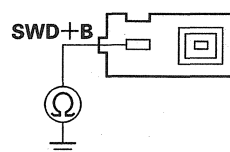
Is there continuity?

YES—Go to step 15.

NO—Repair open in the wire between the audio unit and the AM/FM antenna amplifier and check the AM/FM antenna lead and sublead connections. ■

15. Check for continuity between body ground and audio unit connector E (3P) terminal No. 3.

AUDIO UNIT CONNECTOR E (3P)



Terminal side of female terminals

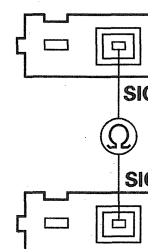
Is there continuity?

YES—Repair short to body ground in the wire. ■

NO—Replace the audio unit (see page 22-372). ■

16. Turn the ignition switch OFF.
17. Disconnect the audio unit connector E (3P).
18. Check for continuity between the audio unit connector E (3P) terminal No. 1 and the AM/FM antenna amplifier 3P connector terminal No. 1.

AUDIO UNIT CONNECTOR E (3P)
Terminal side of female terminals



AM/FM ANTENNA AMPLIFIER 3P CONNECTOR
Terminal side of female terminals

Is there continuity?

YES—Go to step 19.

NO—Replace the AM/FM antenna lead and/or sublead. ■

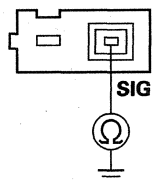
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Audio System

Symptom Troubleshooting (cont'd)

19. Check for continuity between the audio unit connector E (3P) terminal No. 1 and body ground.

AUDIO UNIT CONNECTOR E (3P)



Terminal side of female terminals

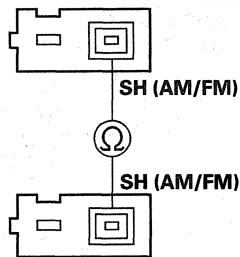
Is there continuity?

YES—Replace the AM/FM antenna lead and/or sublead. ■

NO—Go to step 20.

20. Check for continuity between the audio unit connector E (3P) connector terminal No. 2 and the AM/FM antenna amplifier 3P connector terminal No. 2.

AUDIO UNIT CONNECTOR E (3P)
Terminal side of female terminals



AM/FM ANTENNA AMPLIFIER 3P CONNECTOR
Terminal side of female terminals

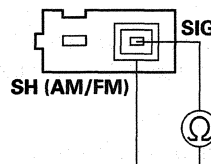
Is there continuity?

YES—Go to step 21.

NO—Replace the AM/FM antenna lead and/or sublead. ■

21. Check for continuity between the audio unit connector E (3P) terminal No. 1 and No. 2.

AUDIO UNIT CONNECTOR E (3P)



Terminal side of female terminals

Is there continuity?

YES—Replace the AM/FM antenna lead and/or sublead. ■

NO—Replace the AM/FM antenna amplifier (see page 22-378), and recheck. If the reception is still poor, replace the audio unit (see page 22-372). ■



Power switch will not turn ON (No information display and no sound)

NOTE: Check the vehicle battery condition first.

1. Turn the ignition switch ON (II).
2. Push the power switch ON to see if audio unit turns ON.

Does the audio unit operate properly, and does the audio sound normal?

YES—Intermittent failure, the system is OK at this time. ■

NO—Go to step 3.

3. Turn the ignition switch OFF.
4. Check the No. 48 (20 A) fuse in the under-hood fuse/relay box and No. 9 (15 A) fuse in the passenger's under-dash fuse/relay box.

Are the fuses OK?

YES—Go to step 5.

NO—Replace the fuse, and recheck. ■

5. Remove the audio unit (see page 22-372). Check that the audio unit is properly connected.

NOTE: Eject all the discs before removing the audio unit to prevent damaging the CD player's load mechanism.

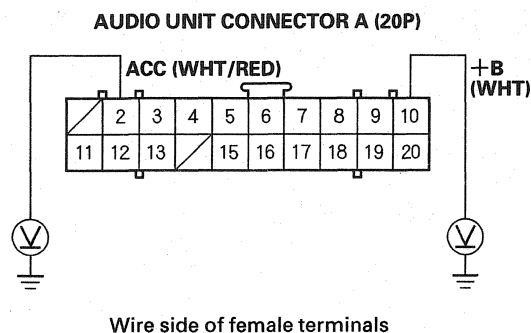
Is it connected properly?

YES—Go to step 6.

NO—Reconnect the connector, and recheck the function. ■

6. Turn the ignition switch ON (II).

7. Measure the voltage between the No. 2 and No. 10 terminals of the audio unit connector A (20P) and body ground.

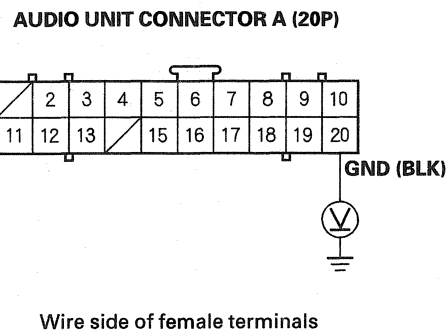


Is there battery voltage?

YES—Go to step 8.

NO—Repair open in the wire(s) between the No. 48 (20 A) fuse in the under-hood fuse/relay box, No. 9 (15 A) fuse in the passenger's under-dash fuse/relay box and the audio unit. ■

8. Measure the voltage between audio unit connector A (20P) No. 20 terminal and body ground while pressing and releasing the audio unit power switch several times.



Is there less than 0.1 V?

YES—Replace the audio unit (see page 22-372). ■

NO—Repair open in the wire between the audio unit connector A (20P) No. 20 terminal and body ground (G504). ■

Audio System

Symptom Troubleshooting (cont'd)

Radio stays powered with the ignition switch OFF

NOTE: Always check for aftermarket accessories plugged into the vehicle's accessory power sockets.

1. Turn the ignition switch ON (II).
2. Push the power switch OFF or turn the ignition switch OFF to see if the audio unit turns OFF.

Is the audio unit OFF?

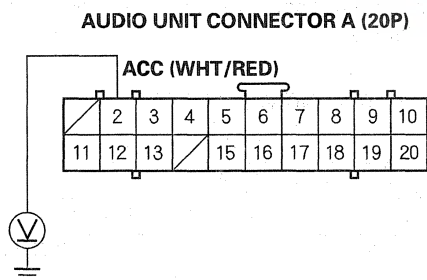
YES—Operation is normal. ■

NO—Go to step 3.

3. Turn the ignition switch OFF.
4. Remove the audio unit (see page 22-372). Disconnect the audio unit connector A (20P).

NOTE: Eject all the discs before removing the audio unit to prevent damaging the CD player's load mechanism.

5. Measure the voltage between the No. 2 terminal of the audio unit connector A (20P) and body ground.



Wire side of female terminals

Is there voltage?

YES—Check for short to power on WHT/RED wire. ■

NO—Replace the audio unit (see page 22-372). ■

No sound is heard from speaker(s) (display is normal)

NOTE:

- Check the vehicle battery condition first.
- Set the fader and balance positions to the center.
- Before doing symptom troubleshooting, do the power switch will not turn ON troubleshooting (see page 22-337).

1. Turn the ignition switch ON (II).
2. Turn on the audio unit and check that the volume button is not set to the min level.

Is it at the MIN level?

YES—Raise the volume level, and recheck the function. ■

NO—

- With navigation: Go to step 3.
- Without navigation: Go to step 4.

3. Check the NAVIGATION MUTE COMMAND.

Is the NAVIGATION MUTE COMMAND set?

YES—Cancel the NAVIGATION MUTE MODE by depressing the voice command back button, and recheck the function. ■

NO—Go to step 4.

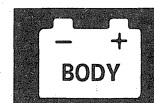
4. Check to see if there is a specific speaker that has no sound.

Is there a specific one?

YES—Go to step 5.

NO—Go to step 10.

5. Turn the ignition switch OFF.



6. Check the speaker with no sound for any damage.

Is there any damage?

YES—Substitute the speaker and recheck. ■

NO—Go to step 7.

7. Remove the speaker(s) with no sound (see page 22-376), and disconnect its connector.

8. Measure the resistance between the No. 1 and No. 2 terminals of the speaker connector.

Is there about 4 Ω ?

YES—Go to step 9.

NO—Faulty speaker(s). ■

9. Check the speaker 2P connector for a loose or poor connection.

Reconnect the speaker 2P connector and recheck the symptom; does it still fail?

YES—Go to step 10.

NO—Operation is normal. ■

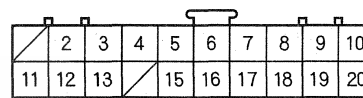
10. Remove the audio unit (see page 22-372), and disconnect the audio unit connector A (20P).

NOTE: Eject all the discs before removing the audio unit to prevent damaging the CD player's load mechanism.

11. Measure the resistance between following terminals of audio unit connector A (20P).

Speaker	Terminal	Wire color
Driver's door speaker, Left tweeter	A8 (+)	BLU/GRN
	A18 (—)	GRY/BLK
Front passenger's door speaker, Right tweeter	A7 (+)	RED/GRN
	A17 (—)	BRN/BLK
Left rear speaker	A6 (+)	BLU/YEL
	A16 (—)	GRY/WHT
Right rear speaker	A5 (+)	RED/YEL
	A15 (—)	BRN/WHT

AUDIO UNIT CONNECTOR A (20P)



Wire side of female terminals

Is there more than 4 Ω ?

YES—Repair open in the wire between the audio unit and speaker. ■

NO—Go to step 12.

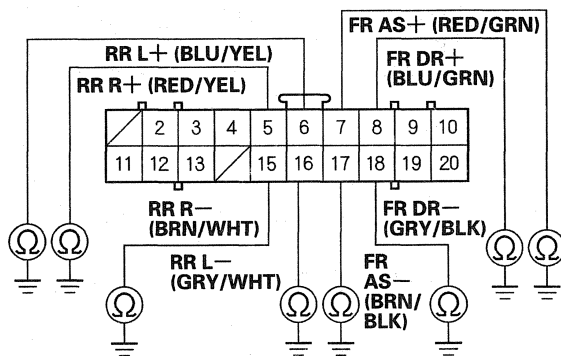
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Audio System

Symptom Troubleshooting (cont'd)

12. Check for continuity between body ground and audio unit connector A (20P) terminals No. 5, 6, 7, 8, 15, 16, 17 and 18 individually.

AUDIO UNIT CONNECTOR A (20P)



Wire side of female terminals

Is there continuity?

YES—Go to step 13.

NO—Substitute a known-good audio unit and recheck. If the symptom/ indication goes away, replace the original audio unit. ■

13. Disconnect the speaker that has continuity to ground and recheck.

Is there continuity to ground?

YES—Repair short to body ground in the wire between the audio unit and the speaker. ■

NO—Replace the speaker. ■

Audio system sound is weak or distorted (display is normal)

NOTE: Check the vehicle battery condition first.

1. Turn the ignition switch ON (II).
2. Turn on the audio unit and check for sound in each mode (AM, FM, XM, and disc).

Is there sound from the speakers, and is the sound quality normal in each mode?

YES—Intermittent failure. The system is OK at this time. Check for loose connection at the audio unit, amplifier, and each speaker. ■

NO—Speakers all work, sound quality is poor. ■

- If sound is poor only with XM radio, or the XM radio does not function, go to poor or no sound with XM radio (see page 22-342).
- If the sound is poor only with AM or FM, go to poor radio reception or interference (see page 22-334).
- If sound is poor in all modes, go to sound quality diagnosis (see page 22-366).



Audio unit button illumination does not work

NOTE: Check the vehicle battery condition first.

1. Turn the ignition switch to ON (II).
2. Turn the headlight switch to the parking light position.
3. Check the illumination of the audio unit buttons.

Are the buttons illuminated?

YES—Intermittent problem: the audio unit is OK at this time. Check for loose or poor connections at audio unit connector A (20P). ■

NO—Go to step 4.

4. Check the illumination of several other buttons not related to the audio system.

Are the buttons illuminated?

YES—Go to step 5.

NO—Troubleshoot the interior lights. Start by checking the No. 10 (15 A) fuse in the passenger's under-dash fuse/relay box. If the fuse is OK, check for an open in the wire between the passenger's under-dash fuse/relay box and the audio unit. ■

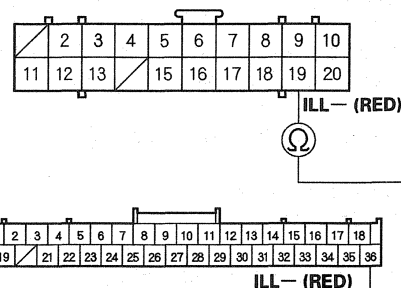
5. Turn the ignition switch OFF.
6. Remove the audio unit (see page 22-372), and disconnect audio unit connector A (20P).

NOTE: Eject all the discs before removing the audio unit to prevent damaging the CD player's load mechanism.

7. Disconnect gauge control module connector B (36P).

8. Check for continuity between audio unit connector A (20P) No. 19 terminal and gauge control module connector B (36P) No. 36 terminal.

AUDIO UNIT CONNECTOR A (20P)
Wire side of female terminals



GAUGE CONTROL MODULE CONNECTOR B (36P)
Wire side of female terminals

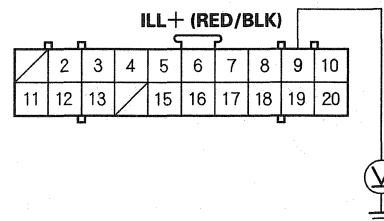
Is there continuity?

YES—Go to step 9.

NO—Repair open in the wire between the gauge control module and the audio unit. ■

9. Turn the ignition switch to ON (II).
10. With the headlight switch still on, measure the voltage between audio unit connector A (20P) No. 9 terminal and body ground.

AUDIO UNIT CONNECTOR A (20P)



Wire side of female terminals

Is there battery voltage?

YES—Check the connections at the audio unit connector A (20P). If all connections are OK, replace the audio unit. ■

NO—Repair open in the wire between the passenger's under-dash fuse/relay box and the audio unit. ■

Audio System

Symptom Troubleshooting (cont'd)

Radio preset memory is lost

NOTE: If only XM stations are lost, go to XM radio preset memory is lost (see page 22-348).

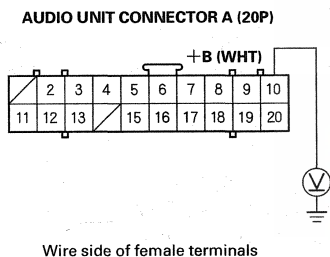
1. Turn the ignition switch ON (II).
2. Turn on the audio unit and set each of the radio station preset buttons.

Does each button set properly?

YES—Go to step 6.

NO—Go to step 3.

3. Turn the ignition switch OFF.
4. Remove the audio unit (see page 22-372).
5. Measure the voltage between No. 10 terminals of the audio unit connector A (20P) and body ground.



Is there battery voltage?

YES—Go to step 6.

NO—Repair open in the wire(s) between No. 48 (20A) fuse in the under-hood fuse/relay box and the audio unit. ■

6. Turn the ignition switch OFF for 1 minute, then turn it back ON (II).
7. Test the preset buttons for proper recall operation.

Do the preset buttons recall the set radio stations?

YES—System is normal at this time. Check the connections at the audio unit. ■

NO—Replace the audio unit (see page 22-372). ■

Poor or no sound with XM radio (Audio unit does display XM channels)

NOTE:

- Check the vehicle battery condition first.
- Check the radio reception in an open area. Poor reception/interference can be caused by tall buildings, mountains, or high-voltage power lines that are nearby.
- If you can only tune to channels 000, 001, 174 and 247, make sure the audio unit is set to channel mode (see owner's manual), if it is set to channel mode call XM Satellite Radio customer support and check the account activation status.

1. Turn the ignition switch ON (II).
2. Turn on the audio unit and select XM radio.
3. Check for an error message on the display.

Are there any messages displayed?

YES—Go to error code list (see page 22-333). ■

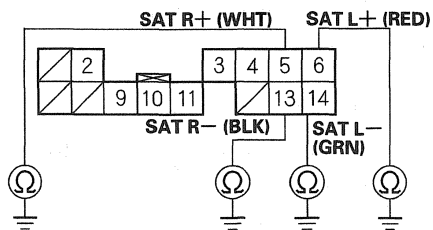
NO—Go to step 4.

4. Turn the ignition switch OFF.
5. Remove the audio unit (see page 22-372), and disconnect audio unit connector C (14P).
6. Disconnect XM receiver connector A (14P).



7. Check for continuity between body ground and audio unit connector C (14P) terminals No. 5, No. 6, No. 13 and No. 14 individually.

AUDIO UNIT CONNECTOR C (14P)



Wire side of female terminals

Is there continuity?

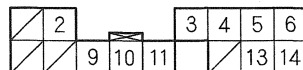
YES—Short to body ground in the wire(s) between audio unit and XM receiver. Replace the affected shielded harness. ■

NO—Go to step 8.

8. Check for continuity between the audio unit connector C (14P) according to the table.

From terminal	To terminals
C4	C5, C6, C13, C14
C5	C6, C13, C14
C6	C13, C14
C13	C14

AUDIO UNIT CONNECTOR C (14P)



Wire side of female terminals

Is there continuity between any of the terminals?

YES—Short in the wire(s) between audio unit and XM receiver. Replace the affected shielded harness. ■

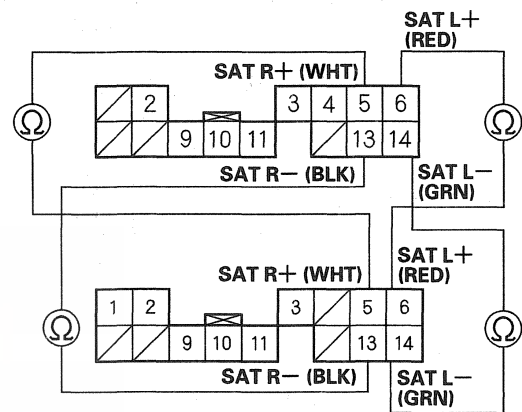
NO—Go to step 9.

9. Check for continuity between audio unit connector C (14P) and XM receiver connector A (14P) according to the table.

Audio unit connector	XM receiver connector
C5	A5
C6	A6
C13	A13
C14	A14

AUDIO UNIT CONNECTOR C (14P)

Wire side of female terminals



XM RECEIVER CONNECTOR A (14P)

Wire side of female terminals

Is there continuity?

YES—Substitute a known-good XM receiver and recheck. If the symptom/indication goes away, replace the XM receiver. If the symptom/indication is still present, replace the audio unit. ■

NO—Oper in the wire between audio unit connector and XM receiver. Replace the affected shielded harness. ■

Audio System

Symptom Troubleshooting (cont'd)

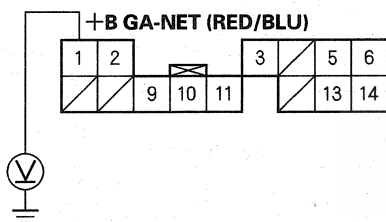
XM radio display is blank and no station information is displayed

NOTE:

- Check the vehicle battery condition first.
- Do not do this procedure if the navigation display buttons are inoperative. Refer to the navigation system troubleshooting.

1. Remove the XM receiver (see page 22-375).
2. Measure the voltage between XM receiver connector A (14P) No. 1 terminal and body ground.

XM RECEIVER CONNECTOR A (14P)



Wire side of female terminals

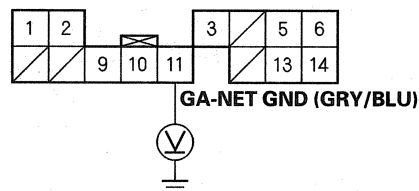
Is there battery voltage?

YES—Go to step 3.

NO—Repair open in the wire between audio unit and XM receiver connector A (14P) No. 1 terminal. ■

3. Turn the ignition switch ON (II).
4. Measure the voltage between XM receiver connector A (14P) No. 11 terminal and body ground.

XM RECEIVER CONNECTOR A (14P)



Wire side of female terminals

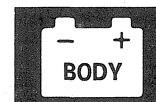
Is there less than 0.1 V?

YES—Go to step 5.

NO—Repair open in the wire between XM receiver connector A (14P) No. 11 terminal and audio unit. ■

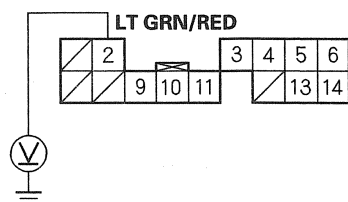
5. Turn the ignition switch OFF.
6. Remove the audio unit (see page 22-372).

NOTE: Eject all the discs before removing the audio unit to prevent damaging the CD player's load mechanism.



7. Measure the voltage between audio unit connector C (14P) No. 2 terminal and body ground.

AUDIO UNIT CONNECTOR C (14P)



Wire side of female terminals

Is there about 10 V present?

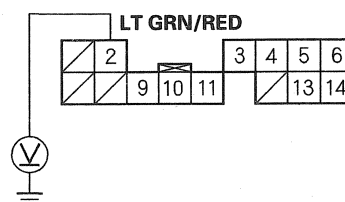
YES—Go to step 8.

NO—Go to step 10.

8. Turn the ignition switch ON (II).

9. Measure the voltage between audio unit connector C (14P) No. 2 terminal and body ground.

AUDIO UNIT CONNECTOR C (14P)



Wire side of female terminals

Is there less than 0.5 V?

YES—Go to step 10.

NO—Substitute a known-good audio unit and recheck. If less than 0.5 V or present, replace the original audio unit. ■

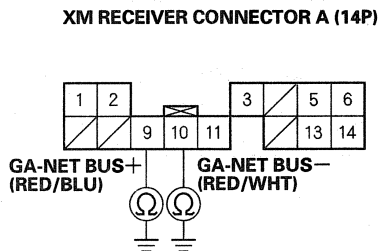
10. Turn the ignition switch OFF.
11. Disconnect audio unit connector C (14P) and XM receiver connector A (14P).
12. With navigation, disconnect navigation unit connector A (20P) and navigation display unit 20P connector.

(cont'd)

Audio System

Symptom Troubleshooting (cont'd)

13. Check for continuity between body ground and the XM receiver connector A (14P) terminals No. 9 and No. 10 individually.



Wire side of female terminals

Is there continuity?

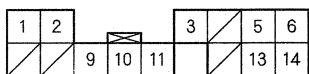
YES—Short to body ground in the wire(s) between XM receiver, audio unit, navigation unit (with navigation) and navigation display unit (with navigation). Replace the affected shielded harness. ■

NO—Go to step 14.

14. Check for continuity between the XM receiver connector A (14P) according to the table.

From terminal	To terminals
A3	A9, A10
A9	A10

XM RECEIVER CONNECTOR A (14P)



Wire side of female terminals

Is there continuity between any of the terminals?

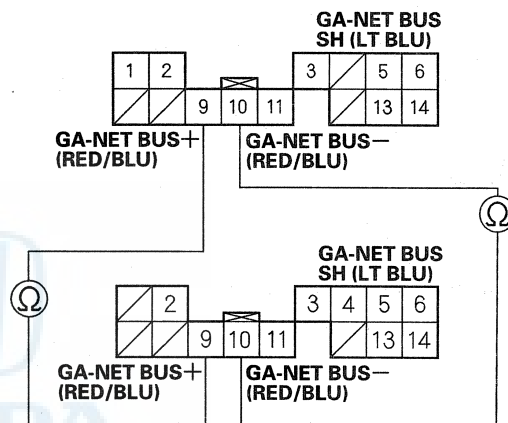
YES—Short in the wire(s) between XM receiver, audio unit, navigation unit (with navigation) and navigation display unit (with navigation). Replace the affected shielded harness. ■

NO—Go to step 15.

15. Check for continuity between the XM receiver connector A (14P) and the audio unit connector C (14P) according to the table.

XM receiver connector	Audio unit connector
A9	C9
A10	C10

XM RECEIVER CONNECTOR A (14P)
Wire side of female terminals



AUDIO UNIT CONNECTOR C (14P)
Wire side of female terminals

Is there continuity?

YES—Substitute a known-good XM receiver, then reconnect all connector and recheck. If the symptom/indication goes away, replace the original XM receiver. If the symptom/indication is still present, replace the audio unit. ■

NO—Open in the wire(s) between XM receiver and audio unit. Replace the affected shielded harness. ■



Error code: XM NO SIGNAL or XM ANTENNA is displayed

NOTE:

- Check the vehicle battery condition first.
- Do not do this procedure if the navigation display buttons are inoperative. Refer to the navigation system troubleshooting.
- Check XM radio reception in an open area. Poor reception/interference can be caused by tall buildings, mountains, or high voltage power lines.

1. With the ignition switch turned to ON (II), park vehicle outside with a clear view of the southern horizon.

Does XM radio receive a signal?

YES—Reception interference operation is normal. ■

NO—Go to step 2.

2. Check XM antenna connector B (2P) at XM receiver.

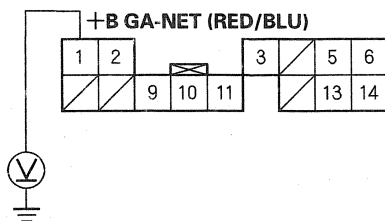
Is XM antenna connector B connected?

YES—Go to step 3.

NO—Reconnect XM connector B, recheck XM radio operation. If the signal restored, operation is normal. If signal not restored go to step 3.

3. Measure the voltage between XM receiver connector A (14P) No. 1 terminal and body ground.

XM RECEIVER CONNECTOR A (14P)



Wire side of female terminals

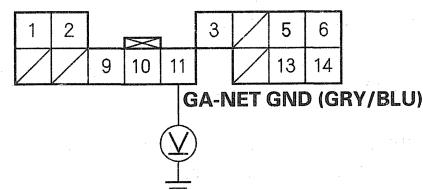
Is there battery voltage?

YES—Go to step 4.

NO—Repair open in the wire between audio unit and XM receiver connector A (14P) No. 1 terminal. ■

4. Measure the voltage between XM receiver connector A (14P) No. 11 terminal and body ground.

XM RECEIVER CONNECTOR A (14P)



Wire side of female terminals

Is there less than 0.1 V?

YES—Go to step 5.

NO—Repair open in the wire between XM receiver connector A (14P) No. 11 terminal and audio unit. ■

5. Substitute known-good XM antenna.

Does the XM radio receive a signal?

YES—Replace XM antenna. ■

NO—Substitute known-good XM antenna lead. If XM radio receives a signal, replace original XM antenna lead. If the XM radio does not receive a signal, substitute a known-good XM receiver. ■

Audio System

Symptom Troubleshooting (cont'd)

XM radio preset memory is lost

NOTE: If you can only tune to channel 000, 001, 174, and 247, make sure the audio unit is set to channel mode (see owner's manual), if it is set to channel mode, call XM Satellite Radio customer support and check the account activation status.

1. Turn the ignition switch ON (II).
2. Turn on the audio unit and set each of the XM radio channel preset buttons.

Do each of the XM radio channel preset buttons set properly?

YES—Go to step 3.

NO—Replace the XM receiver. ■

3. Turn the ignition switch OFF for 1 minute, then turn it back to ON (II).
4. Test all of the XM radio channel preset buttons for proper recall operation.

Do the preset buttons recall the set radio stations?

YES—System is normal at this time. Check connections at the XM receiver. ■

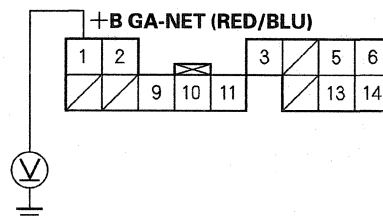
NO—Go to step 5.

5. Turn the ignition switch OFF.

nc

6. Measure the voltage between XM receiver connector A (14P) No. 1 terminal and body ground.

XM RECEIVER CONNECTOR A (14P)



Wire side of female terminals

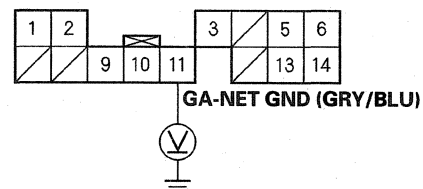
Is there battery voltage?

YES—Go to step 7.

NO—Repair open in the wire between the audio unit and XM receiver connector A (14P) No. 1 terminal. ■

7. Turn the ignition switch ON (II).
8. Measure the voltage between XM receiver connector A (14P) No. 11 terminal and body ground.

XM RECEIVER CONNECTOR A (14P)



Wire side of female terminals

Is there less than 0.1 V?

YES—Replace the XM receiver (see page 22-375). ■

NO—Repair open in the wire between XM receiver connector and body ground. ■



Audio disc does not eject

NOTE:

- Check the vehicle battery condition first.
- Disc labels should not be used in the audio unit. They may damage the player mechanism.

1. Turn the ignition switch ON (II).
2. Turn on the audio unit.

Does the system turn on?

YES—Go to step 3.

NO—Go to power switch will not turn ON (see page 22-337). ■

3. Check to see if the disc ejects correctly with no binding by pushing the EJECT button.

Does the disc eject normally?

YES—Operation is normal. ■

NO—Replace audio unit (see page 22-372). ■

Audio disc changer does not load all six discs

NOTE:

- Check the vehicle battery condition first.
- Disc labels should not be used in the audio unit. They may damage the player mechanism.

1. Turn the ignition switch ON (II).
2. Turn on the audio unit and try loading six discs into the audio unit (in-dash disc changer).

Does the audio unit accept all six discs?

YES—Intermittent failure, the audio unit is OK at this time. ■

NO—Go to step 3.

3. Try loading the audio unit (in-dash disc changer) with six known-good discs.

Does the audio unit accept all six discs?

YES—At least one of the original discs is faulty. ■

NO—Replace audio unit (in-dash disc changer) (see page 22-372). ■

Audio System

Symptom Troubleshooting (cont'd)

Audio disc changer does not move between discs

NOTE:

- Check the vehicle battery condition first.
- Disc labels should not be used in the audio unit. They may damage the player mechanism.

1. Turn the ignition switch ON (II).
2. Turn on the audio unit and insert six discs into the audio unit (in-dash disc changer) and see if the changer moves between discs.

Does the changer operate normally?

YES—Intermittent failure, the disc changer is OK at this time. ■

NO—Go to step 3.

3. Insert six known-good discs into the audio unit (in-dash disc changer).

Does the changer operate normally?

YES—At least one of the original discs is faulty. ■

NO—Replace audio unit (in-dash disc changer) (see page 22-372). ■

Volume does not change

NOTE: Set the fader and balance positions to the center.

1. Turn the ignition switch ON (II).
2. Turn on the audio unit and check for sound in each mode (AM, FM, XM, and disc).

Is the sound normal?

YES—Go to step 3.

NO—Go to audio system sound is weak or distorted (see page 22-340), or no sound is heard from speakers (see page 22-338). ■

3. Operate the volume knob to see if the volume changes.

Does the volume change?

YES—Operation is normal. ■

NO—Replace the audio unit (see page 22-372). ■



Radio tuner does not change stations

NOTE: Check the vehicle battery condition first.

1. Turn the ignition switch ON (II).
2. Turn on the audio unit and check the audio information on the display panel.

Does the audio information display properly?

YES—Go to step 3.

NO—Go to power switch will not turn ON (see page 22-337). ■

3. Operate the tuning knob to see if the radio station changes.

Does the radio station change?

YES—Intermittent failure: the turning knob is OK at this time. ■

NO—Replace the audio unit (see page 22-372). ■

Audio disc does not load

NOTE:

- Check the vehicle battery condition first.
- Disc labels should not be used in the audio unit. They may damage the player mechanism.
- Make sure the CD disc is compatible with the system (see the owner's manual for more information).

1. Turn the ignition switch ON (II).

2. Turn on the audio unit and insert a known-good disc to see if the symptom can be duplicated.

Does the disc load?

YES—Operation is normal. If the disc loads normally, but will not play, go to audio disc does not play (see page 22-352). ■

NO—Go to step 3.

3. Insert another disc.

Does the disc load?

YES—The original disc is faulty. ■

NO—Replace audio unit (see page 22-372). ■

Audio System

Symptom Troubleshooting (cont'd)

Special Tools Required

Diagnostics CD 07AAZ-SDBA100

Audio disc does not play

NOTE: Check the vehicle battery condition first.

1. Turn the ignition switch ON (II).
2. Turn on the audio unit and try loading a disc.

Does the disc load?

YES—Go to step 3.

NO—Go to audio disc does not load (see page 22-351). ■

3. Insert another disc to see if the symptom can be duplicated.

Does the disc play?

YES—Operation is normal. ■

NO—Go to step 4.

4. Insert audio diagnostic CD (T/N 07AAZ-SDBA100) in the audio unit.

Does the disc play?

YES—The original disc is faulty or has an unreadable format. ■

NO—Replace the audio unit (see page 22-372). ■

Special Tools Required

- Diagnostics CD 07AAZ-SDBA100
- Skip test CD 07AAZ-SDBA200 or 07AAZ-SDBA300

Audio disc skips

NOTE: Check the vehicle battery condition first.

1. Confirm the vehicles tires are properly inflated.
2. Check the customers CD for scratches, fingerprints, and marks.

NOTE: The following test should be performed with audio unit bass and treble set to customer's listening performance. When comparing to known-good vehicles, comparison should be performed on same model and trim level.

3. Test drive to identify when the customers CD skips. The audio diagnostic CD (T/N: 07AAZ-SDBA100) can be used if the customers CD is not available. Use tracks 10—12.

Does the disc skip?

YES—Go to step 4.

NO—Operation is normal. ■

4. Compare the customers CD that skips to a known-good vehicle under the same conditions.

Does the CD skip in the known-good vehicle under the same conditions?

YES—Operation is normal. ■

NO—Go to step 5.

NOTE: The following test should be performed with the vehicle parked and the engine running.



5. Insert the diagnostic skip test CD (07AAZ-SDBA300). Play tracks 2—11 and note the track number(s) where the CD starts to skip. Do the same test on a known-good vehicle.

Does the CD skip on same track number(s) as known-good vehicle?

YES—Operation is normal. ■

NO—Go to step 6.

6. Insert the diagnostic skip test CD (07AAZ-SDBA200). Play tracks 7—11 and tracks 13—15 and note the track number(s) where the CD starts to skip. Perform the same test on a known-good vehicle.

Does the CD skip on same track number(s) as known-good vehicle?

YES—Operation is normal. ■

NO—Replace the audio unit (see page 22-372). ■

Audio remote switch does not work properly

NOTE: Check the vehicle battery condition first.

1. Test the audio remote switch (see page 22-378).

Is the audio remote switch OK?

YES—Go to step 2.

NO—Replace the audio remote switch (see page 22-378). ■

2. Turn the ignition switch ON (II).

3. Turn on the audio unit and check the audio unit operation (volume up, volume down, CH, MODE).

Is the audio unit operation OK?

YES—Go to step 4.

NO—Replace the audio unit (see page 22-372), and recheck. ■

4. Turn the ignition switch OFF.

5. Remove the audio unit (see page 22-372).

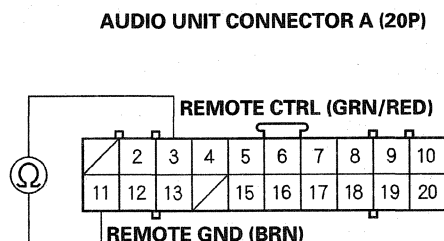
NOTE: Eject all the discs before removing the audio unit to prevent damage to the CD player's load mechanism.

(cont'd)

Audio System

Symptom Troubleshooting (cont'd)

6. Measure the resistance between the audio unit connector A (20P) No. 3 and No. 11 terminals as specified in the table.



AUDIO REMOTE SWITCH TABLE

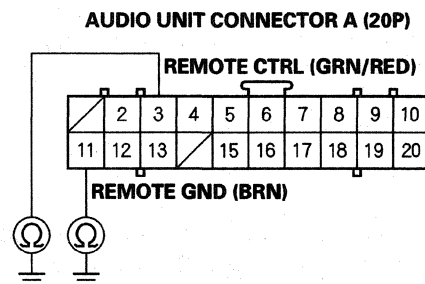
Button held down	VOL DOWN	VOL UP	CH	MODE	(NONE)
Resistance	about 50 Ω	about 300 Ω	about 900 Ω	about 2.4 k Ω	about 10 k Ω

Is the resistance OK?

YES—Go to step 7.

NO—Repair open or high resistance in the circuit between the audio unit and the audio remote switch. If the wires are OK, replace the cable reel (see page 23-212). ■

7. Check for continuity between the No. 3 and No. 11 terminals of the audio unit connector A (20P) and body ground.



Is there continuity?

YES—Repair short to body ground in the circuit between the audio unit and the audio remote switch. If the wires are OK, replace the cable reel (see page 23-212). ■

NO—Replace the audio unit (see page 22-372). ■



Booming sound while driving with audio unit on or off

NOTE: Check the vehicle battery condition first.

1. Check for the No. 8 (7.5 A) fuse in the driver's under-dash fuse/relay box.

Is the fuse OK?

YES—Go to step 2.

NO—Replace the fuse, and recheck. ■

2. Turn the ignition switch ON (II).
3. Turn on the audio unit, and check the function of the speakers.

Do all the speakers operate normally?

YES—Go to step 4.

NO—Go to no sound is heard from speakers (see page 22-338). ■

4. Turn the audio power switch OFF.
5. Do the self-diagnostic procedure (see page 22-331).
6. Press the "No. 1" button.

Is the low-frequency hum sound heard?

YES—Go to step 7.

NO—Go to step 21.

7. Check that the low-frequency hum sound continues sounding for about 1 minute.

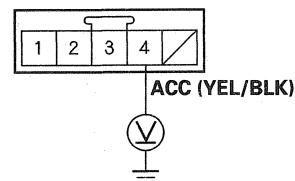
Does the low-frequency hum sound continue sounding for about 1 minute?

YES—Go to step 48.

NO—Go to step 8.

8. Measure the voltage between the active noise control front or rear microphone 5P connector terminal No. 4 and body ground.

ACTIVE NOISE CONTROL REAR MICROPHONE 5P CONNECTOR



Terminal side of male terminals

Is there battery voltage?

YES—Go to step 9.

NO—Repair open in the wire between the No. 8 (7.5 A) in the driver's under-dash fuse/relay box and the active noise control rear microphone 5P connector. ■

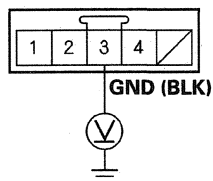
(cont'd)

Audio System

Symptom Troubleshooting (cont'd)

9. Measure the voltage between the active noise control rear microphone 5P connector terminal No. 3 and body ground.

ACTIVE NOISE CONTROL REAR MICROPHONE 5P CONNECTOR



Terminal side of male terminals

Is there less than 0.1 V?

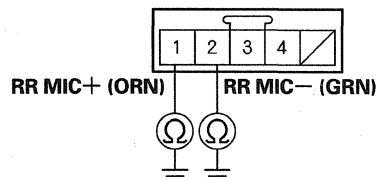
YES—Go to step 10.

NO—Repair open or poor connection in the wire between active noise control rear microphone 5P connector No. 3 terminal and body ground (G503). ■

10. Turn the ignition switch OFF.
11. Disconnect the active noise control rear microphone 5P connector.

12. Check for continuity between body ground and the active noise control rear microphone 5P connector No. 1 and No. 2 terminals individually.

ACTIVE NOISE CONTROL REAR MICROPHONE 5P CONNECTOR

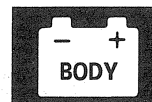


Terminal side of male terminals

Is there continuity?

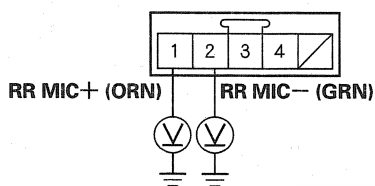
YES—Repair short to body ground in the wire between body ground and the active noise control rear microphone 5P connector terminals No. 1 and No. 2. ■

NO—Go to step 13.



13. Reconnect the active noise control rear microphone connectors.
14. Turn the ignition switch ON (II).
15. Measure the voltage between the body ground and the active noise control rear microphone 5P connector terminals No. 1 and No. 2 individually while lightly tapping the rear microphone.

**ACTIVE NOISE CONTROL
REAR MICROPHONE 5P CONNECTOR**



Terminal side of male terminals

Does the voltage fluctuate?

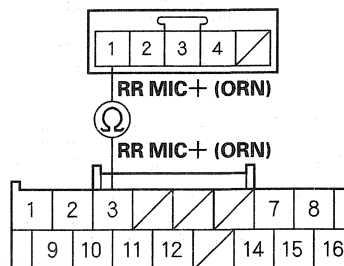
YES—Go to step 16.

NO—Replace the active noise control rear microphone. ■

16. Turn the ignition switch OFF.
17. Disconnect the active noise control unit 16P connector.

18. Disconnect the active noise control rear microphone 5P connector.
19. Check for continuity between the active noise control unit 16P connector No. 3 terminal and the active noise control rear microphone 5P connector terminal No. 1.

**ACTIVE NOISE CONTROL
REAR MICROPHONE 5P CONNECTOR**
Terminal side of male terminals



ACTIVE NOISE CONTROL UNIT 16P CONNECTOR
Wire side of female terminals

Is there continuity?

YES—Go to step 20.

NO—Repair open in the wire between the active noise control unit 16P connector No. 3 terminal and the active noise control front microphone 5P connector terminal No. 1. ■

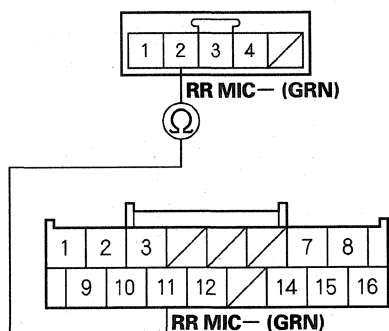
(cont'd)

Audio System

Symptom Troubleshooting (cont'd)

20. Check for continuity between the active noise control unit 16P connector No. 11 terminal and the active noise control rear microphone 5P connector terminal No. 2.

**ACTIVE NOISE CONTROL
REAR MICROPHONE 5P CONNECTOR**
Terminal side of male terminals



ACTIVE NOISE CONTROL UNIT 16P CONNECTOR
Wire side of female terminals

Is there continuity?

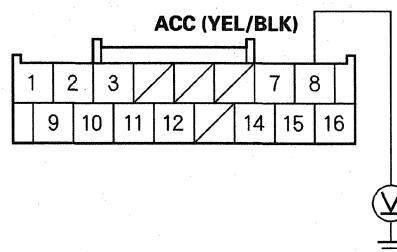
YES—Replace the active noise control unit (see page 22-375). ■

NO—Repair open in the wire between the active noise control unit 16P connector No. 11 terminal and the active noise control rear microphone 5P connector terminal No. 2. ■

21. Turn the ignition switch ON (II).

22. Measure the voltage between the active noise control unit 16P connector No. 8 terminal and body ground.

ACTIVE NOISE CONTROL UNIT 16P CONNECTOR

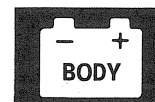


Wire side of female terminals

Is there battery voltage?

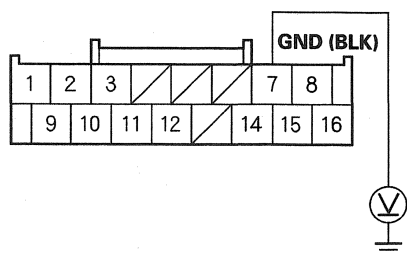
YES—Go to step 23.

NO—Repair open in the wire between the No. 8 (7.5 A) fuse in the driver's under-dash fuse/relay box and the active noise control unit 16P connector terminal No. 8. ■



23. Measure the voltage between the active noise control unit 16P connector No. 7 terminal and body ground.

ACTIVE NOISE CONTROL UNIT 16P CONNECTOR



Wire side of female terminals

Is there less than 0.1 V?

YES—Go to step 24.

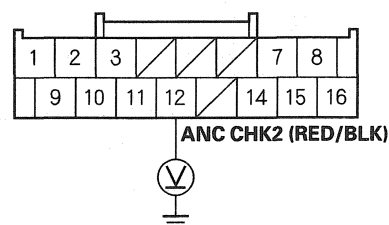
NO—Repair open in the wire between the active noise control unit 16P connector No. 7 terminal and the body ground (G401). ■

24. Do the self-diagnostic procedure (see page 22-331).

25. Press the “No. 1” button.

26. Measure the voltage between the active noise control unit 16P connector No. 12 terminal and body ground.

ACTIVE NOISE CONTROL UNIT 16P CONNECTOR



Wire side of female terminals

Is there about 5 V?

YES—Go to step 37.

NO—

- Except LX models: Go to step 27.
- LX model: Go to step 32.

27. Turn the ignition switch OFF.

28. Remove the audio unit (see page 22-372), and disconnect audio unit connector B (14P).

NOTE: Eject all the discs before removing the audio unit to prevent damaging the CD player's load mechanism.

29. Disconnect the active noise control unit 16P connector.

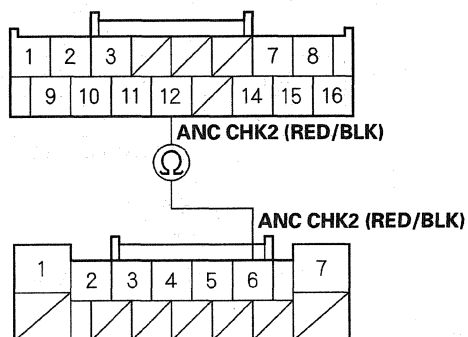
(cont'd)

Audio System

Symptom Troubleshooting (cont'd)

30. Check for continuity between the active noise control unit 16P connector No. 12 terminal and audio unit connector B (14P) terminal No. 6.

ACTIVE NOISE CONTROL UNIT 16P CONNECTOR
Wire side of female terminals



AUDIO UNIT CONNECTOR B (14P)
Wire side of female terminals

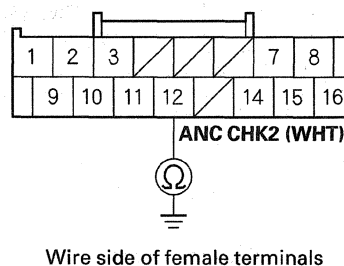
Is there continuity?

YES—Go to step 31.

NO—Repair open in the wire between the active noise control unit 16P connector No. 12 terminal and audio unit connector B (14P) terminal No. 6. ■

31. Check for continuity between body ground and the active noise control unit 16P connector terminal No. 12.

ACTIVE NOISE CONTROL UNIT 16P CONNECTOR

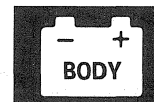


Wire side of female terminals

Is there continuity?

YES—Repair short to body ground in the wire between the active noise control unit 16P connector No. 12 terminal and audio unit connector B (14P) terminal No. 6. ■

NO—Replace the audio unit (see page 22-372). ■



32. Turn the ignition switch OFF.

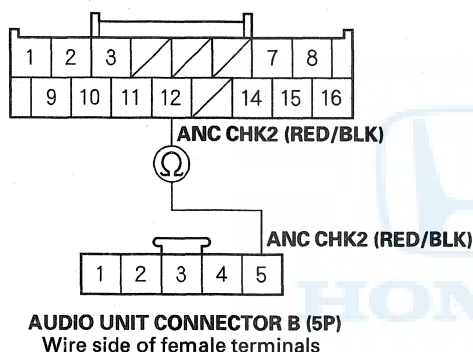
33. Remove the audio unit (see page 22-372), and disconnect audio unit connector B (5P).

NOTE: Eject all the discs before removing the audio unit to prevent damaging the CD player's load mechanism.

34. Disconnect the active noise control unit 16P connector and audio unit connector B (5P).

35. Check for continuity between the active noise control unit 16P connector No. 12 terminal and audio unit connector B (5P) terminal No. 5.

ACTIVE NOISE CONTROL UNIT 16P CONNECTOR
Wire side of female terminals



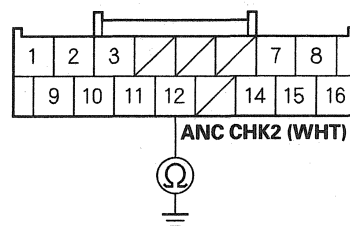
Is there continuity?

YES—Go to step 36.

NO—Repair open in the wire between the active noise control unit 16P connector No. 12 terminal and audio unit connector B (5P) terminal No. 5. ■

36. Check for continuity between body ground and the active noise control unit 16P connector terminal No. 12.

ACTIVE NOISE CONTROL UNIT 16P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair short to body ground in the wire between the active noise control unit 16P connector No. 12 terminal and audio unit connector B (5P) terminal No. 5. ■

NO—Replace the audio unit (see page 22-372). ■

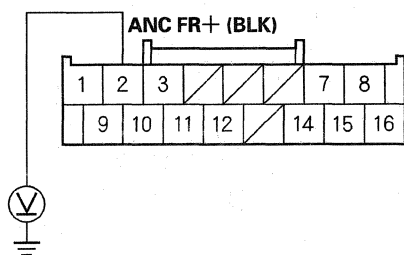
(cont'd)

Audio System

Symptom Troubleshooting (cont'd)

37. Press and release the "No. 1" button, then measure the voltage between the active noise control unit 16P connector No. 2 terminal and body ground.

ACTIVE NOISE CONTROL UNIT 16P CONNECTOR



Wire side of female terminals

Is there about 2.5 V?

YES—Replace the audio unit (see page 22-372). ■

NO—

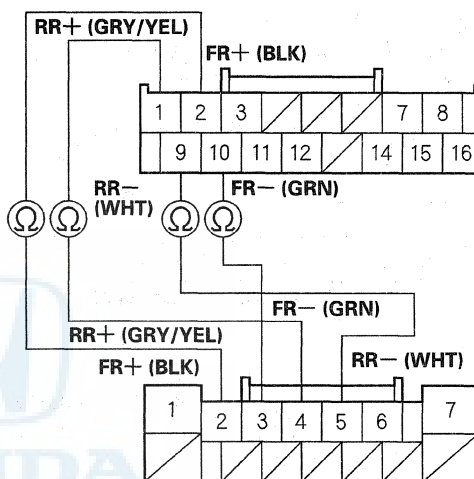
- Except LX models: Go to step 38.
- LX model: Go to step 43.

38. Turn the ignition switch OFF.
39. Remove the audio unit (see page 22-372), and disconnect audio unit connector B (14P).
- NOTE:** Eject all the discs before removing the audio unit to prevent damaging the CD player's load mechanism.
40. Disconnect the active noise control unit 16P connector and audio unit connector B (14P).

41. Check for continuity between the active noise control unit 16P connector and audio unit connector B (14P) as shown.

16P:	14P:
No. 1	No. 4
No. 2	No. 2
No. 9	No. 5
No. 10	No. 3

ACTIVE NOISE CONTROL UNIT 16P CONNECTOR
Wire side of female terminals



AUDIO UNIT CONNECTOR B (14P)
Wire side of female terminals

Is there continuity?

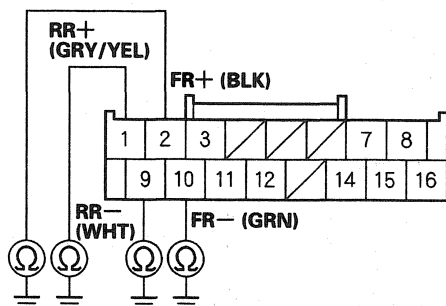
YES—Go to step 42.

NO—Repair open in the wire(s) between the active noise control unit 16P connector and audio unit connector B (14P). ■



42. Check for continuity between body ground and the active noise control unit 16P connector No. 1, 2, 9 and 10 individually.

ACTIVE NOISE CONTROL UNIT 16P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair short to body ground in the wire(s) between the active noise control unit 16P connector and audio unit connector B (14P). ■

NO—Replace the active noise control unit (see page 22-375). ■

43. Turn the ignition switch OFF.

44. Remove the audio unit (see page 22-372), and disconnect audio unit connector B (5P).

NOTE: Eject all the discs before removing the audio unit to prevent damaging the CD player's load mechanism.

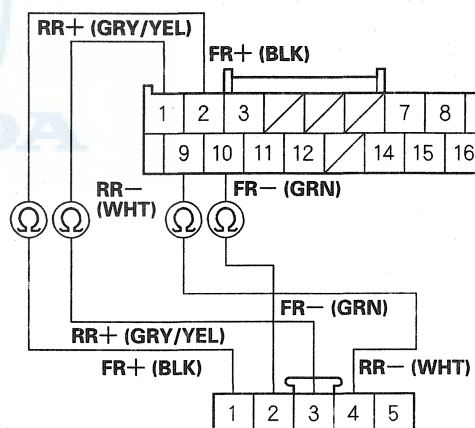
45. Disconnect the active noise control unit 16P connector.

46. Check for continuity between the active noise control unit 16P connector and audio unit connector B (5P) as shown.

16P:	5P:
No. 1	No. 3
No. 2	No. 1
No. 9	No. 4
No. 10	No. 2

ACTIVE NOISE CONTROL UNIT 16P CONNECTOR

Wire side of female terminals



AUDIO UNIT CONNECTOR B (5P)
Wire side of female terminals

Is there continuity?

YES—Go to step 47.

NO—Repair open in the wire(s) between the active noise control unit 16P connector and audio unit connector B (5P). ■

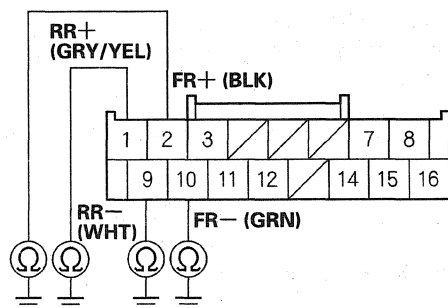
(cont'd)

Audio System

Symptom Troubleshooting (cont'd)

47. Check for continuity between body ground and the active noise control unit 16P connector No. 1, 2, 9 and 10 individually.

ACTIVE NOISE CONTROL UNIT 16P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair short to body ground in the wire between the active noise control unit 16P connector and audio unit connector B (5P). ■

NO—Replace the active noise control unit (see page 22-375). ■

48. Start the engine and let it idle.

49. Press the "No. 1" button.

Is the low-frequency hum sound heard?

YES—Go to step 50.

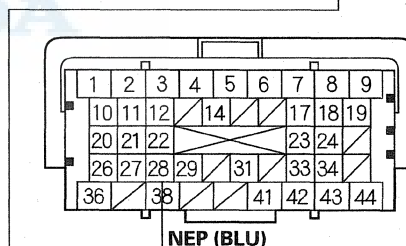
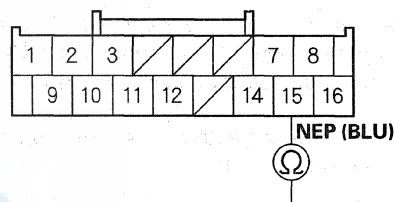
NO—The system is OK. ■

50. Turn the ignition switch OFF.

51. Disconnect the active noise control unit 16P connector and PCM connector A (31P).

52. Check for continuity between the active noise control unit 16P connector No. 15 terminal and PCM connector A (44P) terminal No. 28.

ACTIVE NOISE CONTROL UNIT 16P CONNECTOR
Wire side of female terminals



PCM CONNECTOR A (44P)
Wire side of female terminals

Is there continuity?

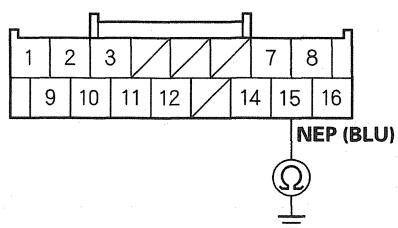
YES—Go to step 53.

NO—Repair open in the wire between the active noise control unit 16P connector No. 15 terminal and PCM connector A (44P) terminal No. 28. ■



53. Check for continuity between the active noise control unit 16P connector No. 15 terminal and body ground.

ACTIVE NOISE CONTROL UNIT 16P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair short to body ground in the wire between body ground and the active noise control unit 16P connector No. 15 terminal and PCM connector A (44P) terminal No. 28. ■

NO—Faulty the PCM. ■

Audio System

Sound Quality Diagnosis

Special Tools Required

Diagnostics CD 07AAZ-SDBA100

Use the following tests to check the sound quality.

NOTE: Before beginning the following tests, write down the audio unit's bass, treble, fader and balance settings, then set them to their center positions for testing.

Left/Right Channel ID

Do this test to confirm proper channel routing.

1. Insert the audio diagnostic CD (T/N 07AAZ-SDBA100) into the CD player.
2. Play track No. 1 (left, both, right channel ID) at a normal, or slightly higher than normal, volume level.
3. The voice should be audible only from the channel or channels when indicated.
 - If the channel ID is correct for each side, go to phase test.
 - If the channel ID is not correct, check for
 - Shorted speaker wire
 - Faulty audio unit

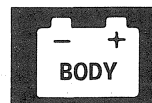
Special Tools Required

Diagnostics CD 07AAZ-SDBA100

Phase Test

Do this test to confirm proper speaker phasing.

1. Insert the audio diagnostic CD (T/N 07AAZ-SDBA100) into the CD player.
2. Play track No. 2 (phase) at a normal, or slightly higher than normal, volume level.
3. The voice should sound centered, and focused when it is in-phase.
4. The voice should sound diffused, and have "less bass" when it is out of phase.
 - If the voice changes from in-phase to out of phase as indicated by the prompt, the phasing is correct. Go to electrical noise test (see page 22-367).
 - If the voice always sounds out of phase, phasing is not correct. Check for:
 - Crossed speaker wires
 - Faulty audio unit



Special Tools Required

Diagnostics CD 07AAZ-SDBA100

Electrical Noise Test

Do this test to check for electrical noise being induced into the audio system.

NOTE: Electrical noise may be caused by outside sources that cannot be handled by the audio system. Make sure you remove any cell phones, and/or turn off any aftermarket device before beginning this test.

1. Insert the audio diagnostic CD (T/N 07AAZ-SDBA100) into the CD player.
2. Play track No. 4 (digital zero) at a normal, or slightly higher than normal, volume level.
3. Operate any electrical device that causes noise from the audio system, including starting the engine.
4. Play track No. 5 (near digital zero) at a normal, or slightly higher than normal, volume level.
5. Operate any electrical device that causes noise from the audio system, including starting the engine.
6. Play track No. 6 (SNR) at a normal, or slightly higher than normal, volume level.

7. Operate any electrical device that causes noise from the audio system, including starting the engine.

- If no abnormal noise is heard, go to the individual speaker test.
- If the noise is present only during the SNR track, replace the audio unit.
- If the noise is heard during the digital zero or near digital zero track, check for:
 - Poor ground for the audio unit, engine or battery cable
 - Pinched or shorted speaker wire
 - Faulty audio unit
 - Other faulty components causing excessive electrical noise (ignition coils, alternator, door lock actuators, etc.). Disconnect any suspect components, and then replay the tracks that were originally noisy. If the noise is gone, check the component's circuit and the component.

Audio System

Sound Quality Diagnosis (cont'd)

Special Tools Required

Diagnostics CD 07AAZ-SDBA100

Individual Speaker Test

Do this test to identify a faulty speaker.

1. Insert the audio diagnostic CD (T/N 07AAZ-SDBA100) into the CD player.
2. Play track No. 30 (steady 300 Hz tone) at a normal, or slightly higher than normal, volume level.
3. Listen to each speaker for poor sound compared to the other speakers. Use the audio unit's fader and balance settings to help isolate the channel with the problem.
 - If the sound quality produced by a specific speaker is poor, substitute it with a known-good speaker. If the poor sound quality continues, go to the sound balance test (see page 22-368).
 - If the sound quality is OK, go to the sound balance test (see page 22-368).

Special Tools Required

Diagnostics CD 07AAZ-SDBA100

Sound Balance Test

Perform this test to identify a faulty channel or speaker.

1. Insert the audio diagnostic CD (T/N 07AAZ-SDBA100) into the CD player.
2. Confirm the bass and treble are set to the center positions.
3. Play track No. 3 (pink noise) at a normal, or slightly higher than normal, volume level.
4. A "static" type sound should be heard through all speakers.
5. Insert the audio diagnostic CD (T/N 07AAZ-SDBA100) into the CD player of a known-good vehicle.
6. Set the bass and treble to the center position.
7. Play track No. 3 (pink noise) at the same level as was played in step 3.
8. Compare the sounds made by the two vehicles.
 - If the sounds made by the two vehicles are very similar, go to the Frequency Sweep Test (see page 22-369).
 - If the sound does not have as much bass, check the subwoofer (2WD) and circuit.
 - If the sound does not have enough "hiss", check the tweeters and their circuits.



Special Tools Required
Diagnostics CD 07AAZ-SDBA100

Frequency sweep

Do this test to find rattles or reverberation that may cause a perception of poor sound quality.

1. Insert the audio diagnostic CD (T/N 07AAZ-SDBA100) into the CD player.
2. Play track No. 13 (sweep from 500 Hz to 35 Hz) at a normal, or slightly higher than normal, volume level.
3. Listen to each speaker for poor sound quality or reverberations caused by specific frequencies. Use the voice-over to estimate the frequency that causes the vibration. Use the audio unit's fader and balance settings to help isolate the channel with the problem.
 - If vibrations or poor sound quality are heard, go to step 4.
 - If no vibrations or poor sound quality are heard, go to sound judging (see page 22-369).
4. Choose the appropriate track from No. 14 to 25 (small range frequency sweep) or 26 to 53 (single frequencies) to recreate the frequency that caused the poor sound quality or vibration located in step 3: this aids in diagnosing of the cause.

NOTE: When you get to the track that recreates the problem, select the repeat function on the audio unit, this will help you isolate the cause.

5. Replace or insulate the source of the vibration or, if the speaker is the source of the poor sound quality, replace it.

Special Tools Required
Diagnostics CD 07AAZ-SDBA100

Sound judging

Do this test to compare the overall sound quality, imaging, and dynamics between the customer's vehicle and a known-good vehicle. Only use a vehicle of the same model and trim level for this test.

1. In the customer's vehicle, set the bass, treble, fader, and balance settings to the customer's normal settings that were written down before beginning the testing.
2. Insert the audio diagnostic CD (T/N 07AAZ-SDBA100) into the CD player.
3. Play tracks No. 7 to 12 (sound quality, midland, dynamics, and imaging demonstration tracks) at a normal, or slightly higher than normal, volume level. Write down the volume setting being used.
4. Listen to areas of the track that stand out as being either very clear or poorer than other areas of the track.
5. Insert the audio diagnostic CD (T/N 07AAZ-SDBA100) into the CD player of a known-good vehicle.
6. Play the tracks at the same volume level and the same bass, treble, balance, and fader settings as used in step 3 in the customer's vehicle.
7. Listen to the same area of the track that stood out as being either very clear or poorer than other areas of the track.

(cont'd)

Audio System

Sound Quality Diagnosis (cont'd)

8. Compare the customer's vehicle's sound quality results the known-good vehicle's results.

- If the sound quality in the customer's vehicle is comparable to the sound quality in the known-good vehicle, then the customer's vehicle is operating as designed.
- If the sound quality is not comparable, check these items in order.
 - Loose or improperly installed speakers or other hardware that may become excited by the vibrations generated by the speakers
 - Damaged speaker(s)
 - Faulty audio unit

Seek Stop Test

Do this test to check the performance of the audio unit's AM and FM reception. Refer to the symptom troubleshooting: audio sound weak or distorted (see page 22-340), or no sound is heard from speakers (display is normal) (see page 22-338) before continuing with this test.

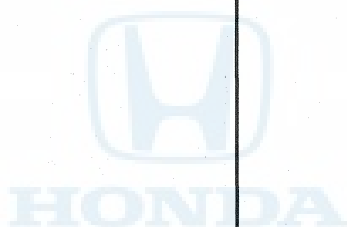
NOTE:

- Window tint, aftermarket theft-recovery devices and other aftermarket accessories may reduce radio reception.
- Changes in cloud cover and other atmosphere conditions will affect the ability of the audio unit to receive radio signals.

1. Park the customer's vehicle in an open area away from buildings or other obstructions.
2. Park a known-good vehicle (same year, model, and trim level) next to the customer's vehicle, facing the same direction.
3. Start the engine in the customer's vehicle, and turn on the radio.
4. Set the FM receiver to 87.7 MHz.
5. Press the "Seek +" button, and record the first station that the audio unit locks onto.
6. Press the "Seek +" button repeatedly, and write down each station that the audio unit locks onto until the station recorded in step 5 is reached again.
7. Set the AM receiver to 530 kHz.
8. Press the "Seek +" button, and record the first station that the audio unit locks onto.
9. Press the "Seek +" button repeatedly, and write down each station that the audio unit locks onto until the station recorded in step 8 is reached again.



10. Turn the ignition switch OFF.
11. Start the engine in the known-good vehicle, and then perform steps 4 thru 10 on the known-good vehicle.
12. Compare the number of stations received in steps 6 and 9 in the customer's vehicle with the number of stations received in the known-good vehicle.
 - If the number of stations received is the same, or within 10 %, the audio unit's tuner performance is OK. The problem may be atmospheric conditions, multi path interference, or other obstructions to the radio signal.
 - If the customer's vehicle receives fewer stations by at least 10 %, go to step 2 of poor AM or FM radio reception of interference (see page 22-334).



Audio System

Audio Unit Removal/Installation

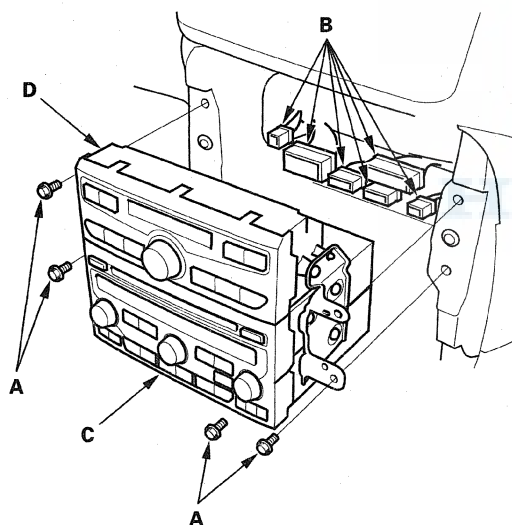
With Navigation System

SRS components are located in this area. Review the SRS component locations (see page 23-17), and the precautions and procedures (see page 23-19) before doing repairs or service.

NOTE:

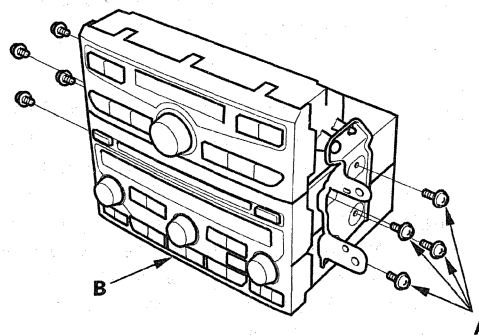
- Eject all the discs before removing the audio unit to prevent damaging the CD player's load mechanism.
- Put on gloves to protect your hands.
- Take care not to scratch the dashboard and its related parts.

1. Make sure you have the anti-theft codes for the audio system and the navigation system, then write down the audio presets.
2. Remove the center lower cover (see page 20-90).
3. Remove the bolts (A).



4. Disconnect the all connectors (B) from the audio unit (C) and the climate control unit (D).

5. Remove the screws (A) and the audio unit (B).



6. Install the audio unit and the climate control unit in the reverse order of removal, and note these items:

- Make sure the audio unit and climate control unit connectors are plugged in properly, and the antenna lead is connected properly.
- Reset the power window control unit (see page 22-255).
- Enter the anti-theft codes for the audio system and the navigation system, then enter the audio presets and set the clock.



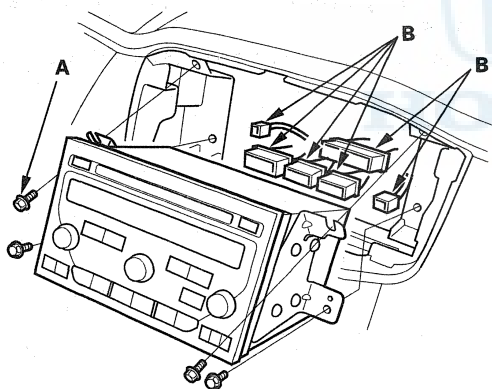
Without Navigation System (Except LX model)

SRS components are located in this area. Review the SRS component locations (see page 23-17), and the precautions and procedures (see page 23-19) before doing repairs or service.

NOTE:

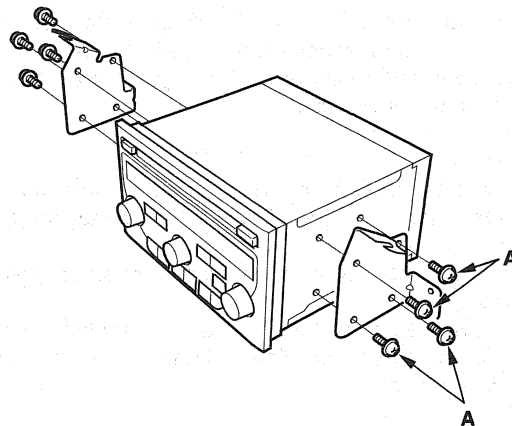
- Eject all the discs before removing the audio unit to prevent damaging the CD player's load mechanism.
- Put on gloves to protect your hands.
- Take care not to scratch the dashboard and its related parts.
- If you are replacing the audio unit, write down the audio presets (if possible), and enter them into the new audio unit.

1. Make sure you have the anti-theft codes for the audio system, then write down the audio presets.
2. Remove the center panel (see page 20-93).
3. Remove the bolts (A).



4. Disconnect the audio unit connectors (B) from the audio unit.

5. Remove the screws (A) from the audio unit.



6. Install the audio unit in the reverse order of removal, and note these items:

- Make sure the audio unit connectors are plugged in properly, and the antenna lead is connected properly.
- Reset the power window control unit (see page 22-255).
- Enter the anti-theft codes for the audio system, then enter the audio presets and set the clock.

Audio System

Audio Unit Removal/Installation (cont'd)

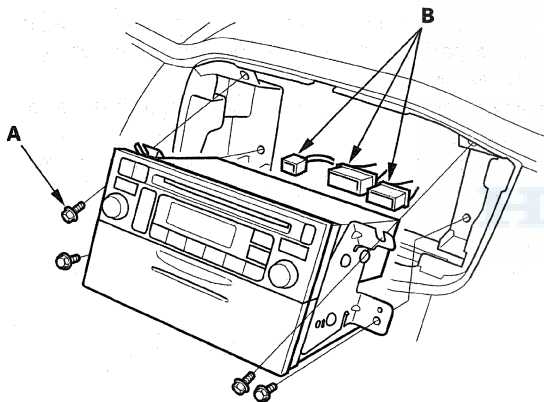
Without Navigation System (LX model)

SRS components are located in this area. Review the SRS component locations (see page 23-17), and the precautions and procedures (see page 23-19) before doing repairs or service.

NOTE:

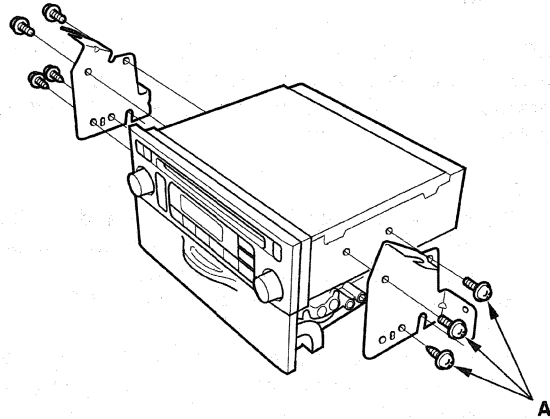
- Eject all the discs before removing the audio unit to prevent damaging the CD player's load mechanism.
- Put on gloves to protect your hands.
- Take care not to scratch the dashboard and its related parts.
- If you are replacing the audio unit, write down the audio presets (if possible), and enter them into the new audio unit.

1. Remove the center panel (see page 20-93).
2. Remove the bolts (A).



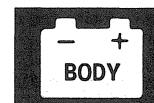
3. Disconnect the audio unit connectors (B) from the audio unit.

4. Remove the screws (A) from the audio unit.



5. Install the audio unit in the reverse order of removal, and note these items:

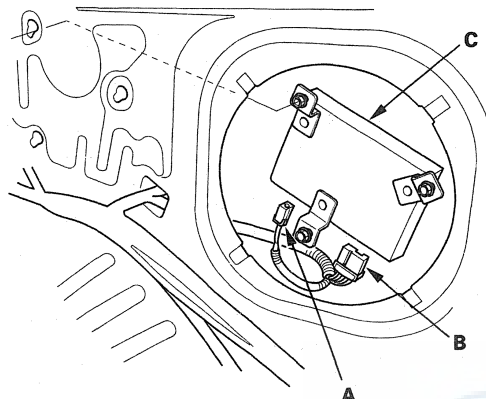
- Make sure the audio unit connectors are plugged in properly, and the antenna lead is connected properly.
- Reset the power window control unit (see page 22-255).
- Enter the audio presets and set the clock.



XM Receiver Removal/Installation

With XM

1. Remove the right rear side trim panel (see page 20-80).
2. Disconnect the antenna 2P connector (A) and 14P connector (B) from the XM receiver (C).



3. Loosen the three nuts, and remove the XM receiver.
4. Install the XM receiver in the reverse order of removal.

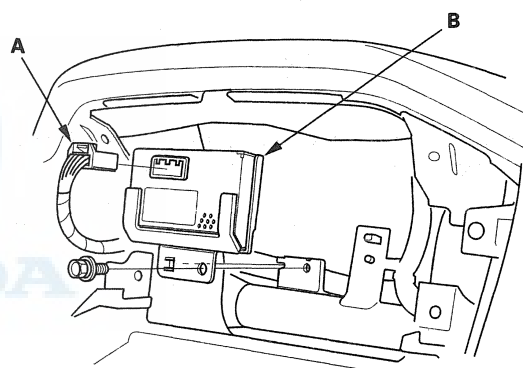
Active Noise Control Unit Removal/Installation

2WD

NOTE:

- Put on gloves to protect your hands.
- Take care not to scratch the headliner and display cover.
- Lay a workshop towel under the parts when working on them to protect the face panel from scratches or other damage.

1. Remove the navigation display unit (with navigation) (see page 22-509) or audio unit (without navigation) (see page 22-373).
2. Disconnect the connector (A), then remove the bolts and the active noise control unit (B).



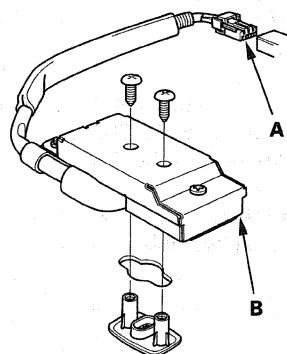
3. Install the active noise control unit in the reverse order of removal.

Audio System

Active Noise Control Microphone Removal/Installation

2WD

1. Remove the headliner (see page 20-83).
2. Disconnect the connector (A), then remove the screws and the active noise control microphone (B).

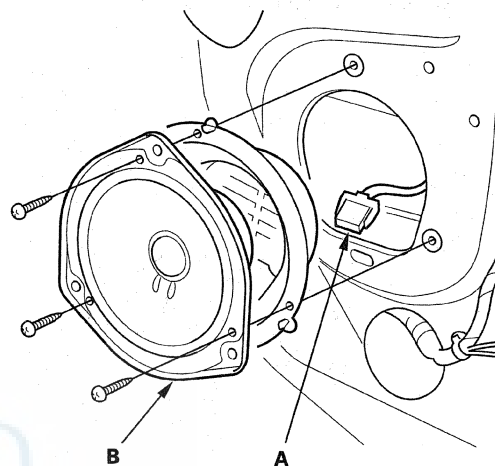


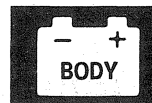
3. Install the active noise control microphone in the reverse order of removal.

Speaker Replacement

Door

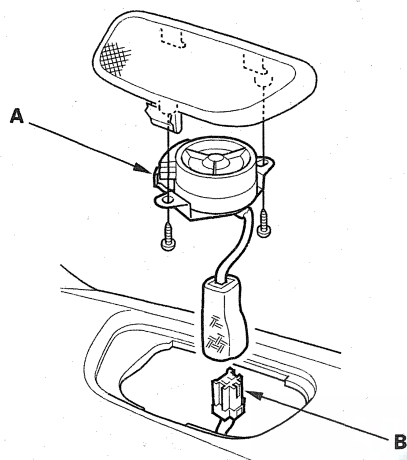
1. Remove the front door panel (see page 20-6).
2. Remove the three screws, then disconnect the 2P connector (A) from the speaker (B).





Tweeter (Except LX model)

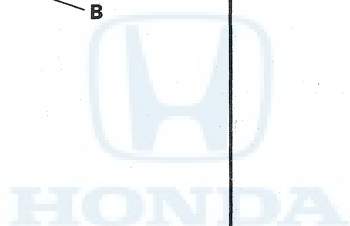
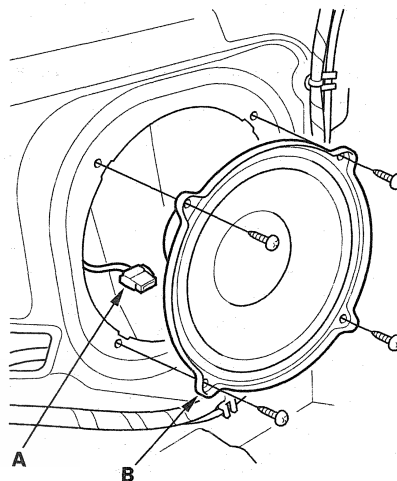
1. Carefully pry the tweeter (A) out of the dashboard, then disconnect the 2P connector (B) from the tweeter.



2. Remove the screws and tweeter.

Woofer (Except LX model)

1. Remove the right rear trim (see page 20-80).
2. Remove the four mounting screws, then disconnect the 2P connector (A) from the woofer (B).



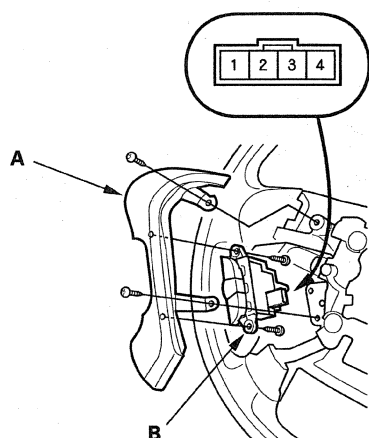
Audio System

Audio Remote Switch Test/ Replacement

Except LX model

SRS components are located in this area. Review the SRS component locations (see page 23-17), and the precautions and procedures (see page 23-19) before doing repairs or service.

1. Remove the driver's airbag assembly (see page 23-201).
2. Remove the two screws and the cover (A) from the steering wheel.



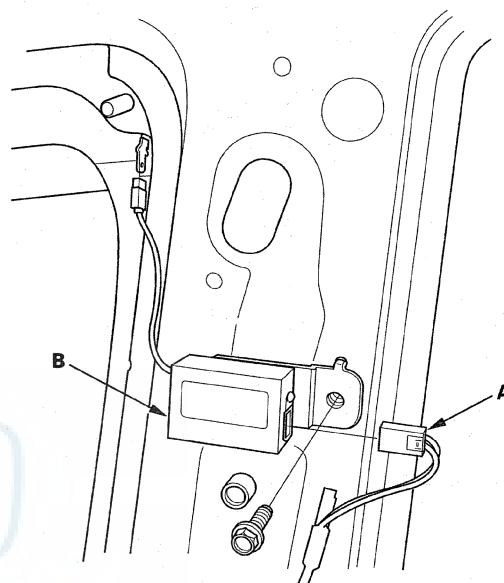
3. Remove the two screws from the audio remote switch (B).
4. Disconnect the 4P connector from the audio remote switch.
5. Measure the resistance between the No. 3 and No. 4 (with navigation system) or No. 1 (without navigation system) terminals in each switch position according to the table.

Position	Resistance
OFF	About 10 k Ω
MODE	About 2.4 k Ω
CH	About 900 Ω
▲ (VOL. UP)	About 300 Ω
▼ (VOL. DOWN)	About 50 Ω

6. If the resistance is not as specified, replace the remote switch.

AM/FM Antenna Amplifier Replacement

1. Remove the left C-pillar trim (see page 20-74).
2. Disconnect the 3P connector (A) from the AM/FM antenna amplifier (B).



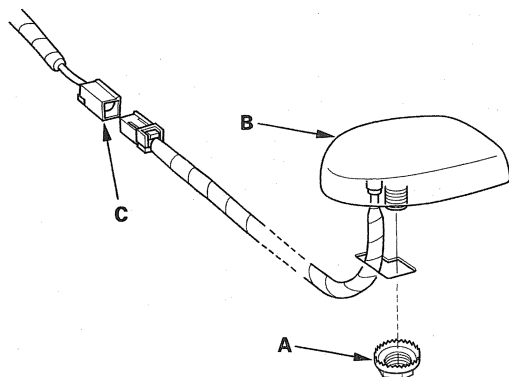
3. Disconnect all the connectors, then remove the bolt and AM/FM antenna amplifier.
4. Remove the mounting bolt from the AM/FM antenna amplifier.



XM Antenna Replacement

With XM

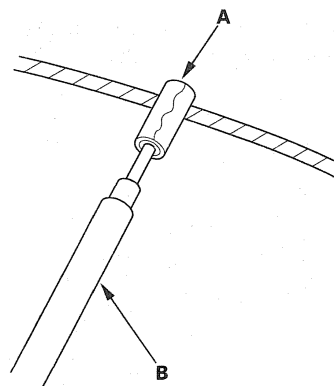
1. Remove the headliner (see page 20-83).
2. Remove the nut (A) from the XM antenna (B).



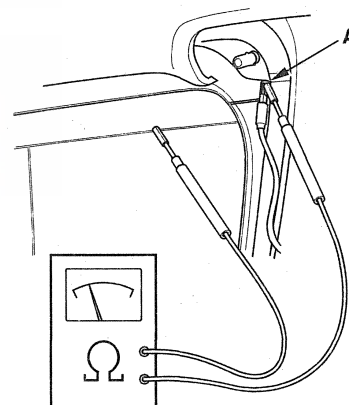
3. Disconnect the connector (C), and remove the XM antenna.
4. Install the XM antenna in the reverse order of removal.

AM/FM Antenna Test

1. Wrap aluminum foil (A) around the tip of the tester probe (B) as shown.



2. Touch one tester probe near the window antenna terminal (A) and move the other tester probe along the antenna wires to check for continuity. Repair if there is no continuity.

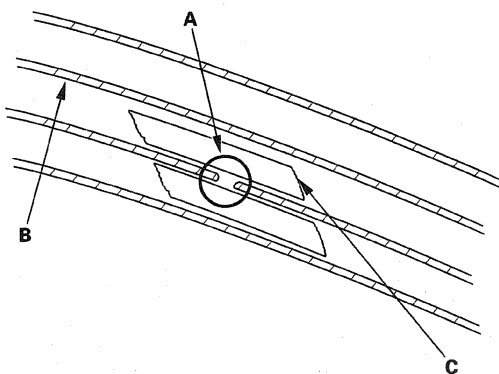


Audio System

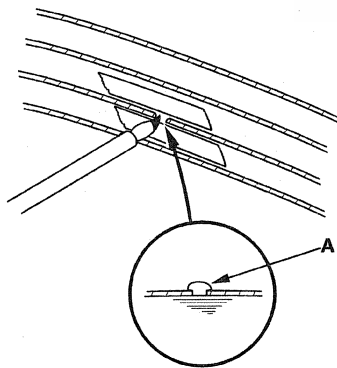
AM/FM Antenna Repair

NOTE: To make an effective repair, the broken section must be no longer than 1 inch.

1. Lightly rub the area around the broken section (A) with fine steel wool, then clean it with isopropyl alcohol.



2. Carefully mask the area above and below the broken portion of the AM/FM antenna wire (B) with cellophane tape (C).
3. Mix the silver conductive paint thoroughly. Using a small brush, apply a heavy coat of paint (A) extending about 1/8 " on both sides of the break. Allow 30 minutes to dry.

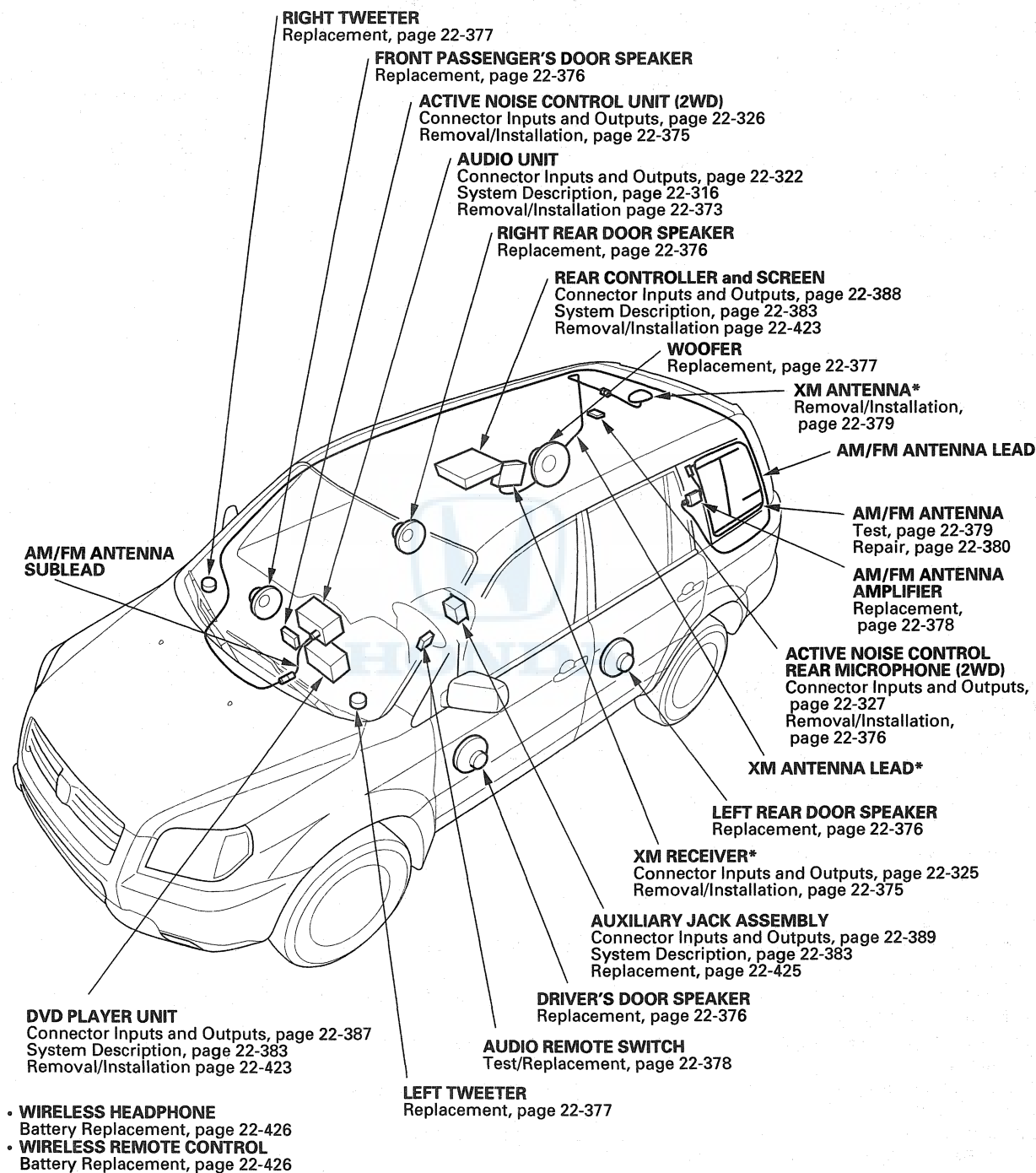


4. Check for continuity in the repaired wire.
5. Apply a second coat of paint in the same way. Let it dry 3 hours before removing the tape.

Rear Entertainment System



Component Location Index

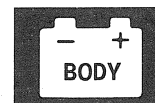


*: With XM

Rear Entertainment System

Symptom Troubleshooting Index

Symptom	Diagnostic procedure	Also check for
RES disc does not load	Symptom Troubleshooting (see page 22-404)	<ul style="list-style-type: none"> • Peeled label stuck in player • Wrong type disc
RES disc does not eject	Symptom Troubleshooting (see page 22-404)	<ul style="list-style-type: none"> • Peeled label stuck in player • Wrong type disc
RES disc does not play	Symptom Troubleshooting (see page 22-405)	<ul style="list-style-type: none"> • Peeled label stuck in player • Wrong type disc
RES disc skips	Symptom Troubleshooting (see page 22-406)	<ul style="list-style-type: none"> • Peeled label stuck in player • Wrong type disc
Black picture is shown on the display	Symptom Troubleshooting (see page 22-407)	
White picture is shown on the display/display lock	Symptom Troubleshooting (see page 22-408)	
Display area picture has lines or has shifted	Symptom Troubleshooting (see page 22-408)	
Display does not go off when screen is closed	Symptom Troubleshooting (see page 22-409)	
No display appears on the rear controller indicator	Symptom Troubleshooting (see page 22-409)	
No sound/no display with auxiliary video unit inputs	Symptom Troubleshooting (see page 22-410)	<ul style="list-style-type: none"> • Poor connections or disconnected device • Low batteries in accessory device, or disconnected from power source
Wired headphone sound is weak, distorted, volume does not change, or there is no sound	Symptom Troubleshooting (see page 22-413)	
Wireless headphones do not work or there is static in DVD mode	Symptom Troubleshooting (see page 22-414)	
Wireless headphone sound is weak, sound is distorted, there is static, volume does not change, or there is no sound in all modes	Symptom Troubleshooting (see page 22-416)	Wireless headphone batteries
Wireless remote control does not work (all buttons)	Symptom Troubleshooting (see page 22-418)	Wireless remote control batteries
Wireless remote control does not work (source select buttons)	Symptom Troubleshooting (see page 22-418)	Wireless remote control batteries
Wireless remote control does not work (rear power button)	Symptom Troubleshooting (see page 22-419)	Wireless remote control batteries
Screen backlight does not dim/remains dim	Symptom Troubleshooting (see page 22-419)	
DVD player unit illumination does not come on/does not dim	Symptom Troubleshooting (see page 22-421)	
DVD player unit DISC IN indicator or DISC DISTINCTION indicator does not come on/does not go off	Symptom Troubleshooting (see page 22-422)	
Wireless remote control illumination does not come on	Symptom Troubleshooting (see page 22-422)	Wireless remote control batteries



System Description

The rear entertainment system is composed of a special audio unit, a DVD player unit, a rear controller, a screen wireless headphones, a wireless remote control, and auxiliary input jacks.

System Components

Audio Unit

- Provides rear system power
- Provides control for the rear functions
- Allows the rear display to show information about the rear system status
- Provides a method to stop the rear passenger's from having control of the rear system

DVD Player Unit

- Offers simple operation (control in the audio unit)
- Automatically turns off when battery voltage drops below 12 volts

Rear Screen

- Has a flip down 9" display
- Displays information on the LCD
- Display does not work when pushed beyond the detent
- Provides output for infrared (IR) headphones

Wireless Headphone

- Has automatic ON/OFF control
- Has volume control
- Works only in the second and third row seats, not outside the vehicle or in the front seats

Wireless Remote Control

Allows remote operation of the audio and DVD units.

Auxiliary Jack Assembly Input Jacks

- Allows input from standard video game and video equipment using RCA connectors
- Provides three headphone connectors and separate volume controls

Audio Remote Switch

Allows operation of the audio and DVD units from the steering wheel.

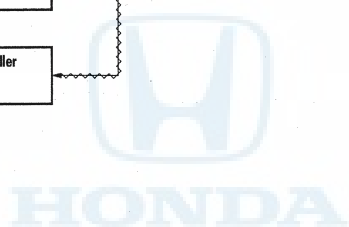
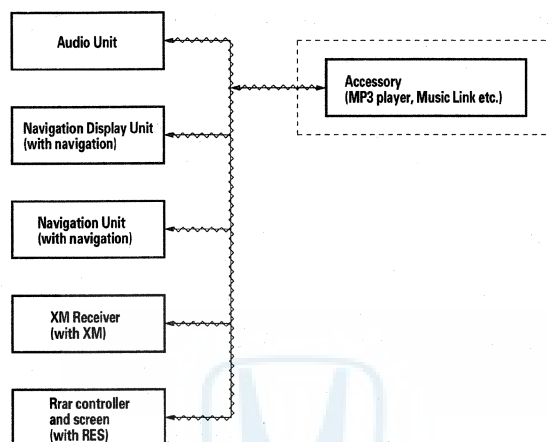
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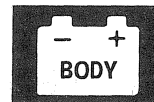
Rear Entertainment System

System Description (cont'd)

GA-Net Bus Configuration

The GA-Net bus passes audio, RES and navigation commands throughout the navigation, RES and audio components. These commands include the navigation touch screen and hard button signals, audio/XM selections by voice, and XM station and music title names. Because the entire bus is “daisy chained” between components (see diagram), any open or short in the GA-Net bus harness can cause any one or all of these functions to become inoperative. The addition of any audio accessory must maintain the continuity of the GA-Net bus by installing the “Y” cable included with the accessory kit.



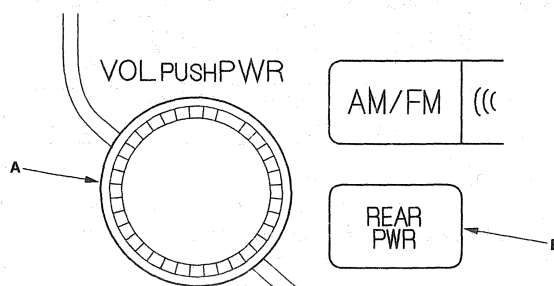


Operating Method

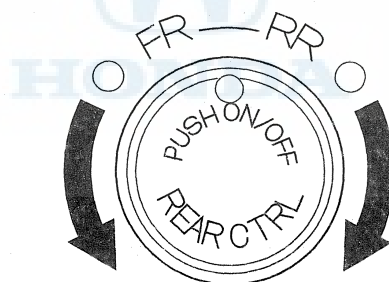
NOTE: Refer to the Owner's Manual for full operation details.

Audio Unit

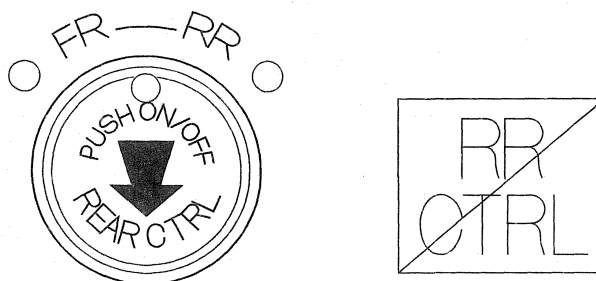
1. Turn the rear entertainment system ON.
 - After the main power switch "VOL PUSH PWR" (A) is turned ON, push "REAR PWR" switch (B) to turn the rear system ON. To turn the rear system OFF, push "REAR PWR", and to turn the whole system OFF, push "VOL PUSH PWR".



2. Using the selector knob.
 - Turn left to select the front controls (Audio).
 - Turn right to select the rear controls (After rear operation is finished, selector will automatically return to the front control in 10 seconds).



3. Rear Control Enable/Disable.
 - By pushing the selector knob, the driver can prevent the rear passengers from operating the system. Each push of the selector knob cycles the switch between ON-OFF (Rear Control Enabled/Rear Control Disabled). When rear operation is disabled, the LCD on the audio unit displays "RR CONT OFF".

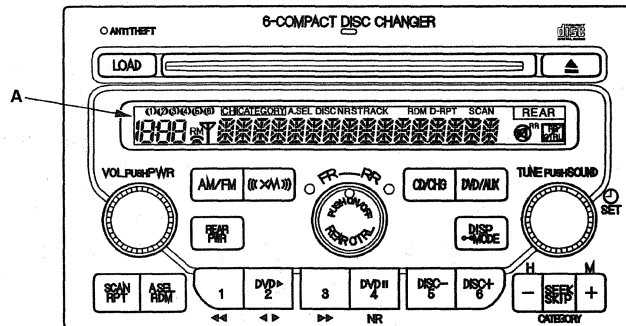


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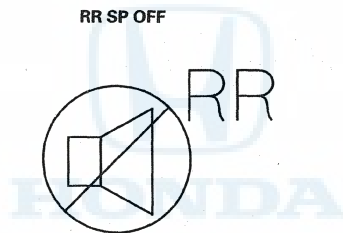
Rear Entertainment System

System Description (cont'd)

4. Viewing the display.
 - The display (A) indicates the status of the front and rear systems.



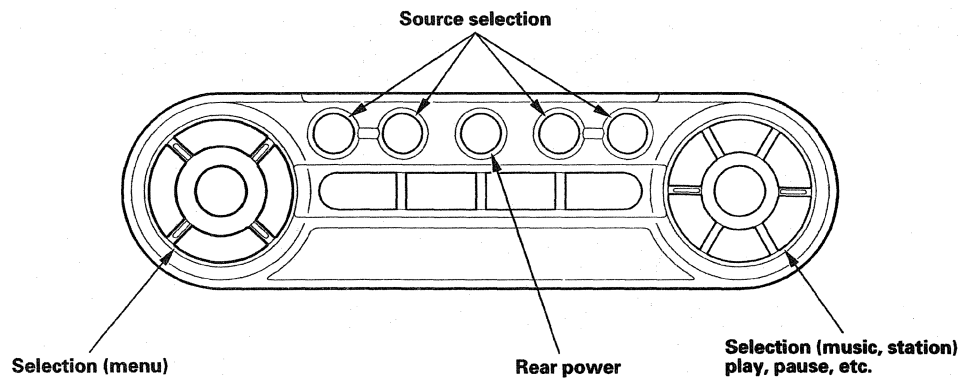
5. Rear speaker automatic OFF Function.
 - By turning the rear speaker OFF, you can reduce the interference between the front source and the rear source (Headphone). The speaker will be turned ON/OFF automatically when the front and rear have different sources selected. When the rear speaker is in the OFF mode, the LCD display on the audio unit displays "RR SP OFF".



Wireless Remote Control

Remote control switch use and function.

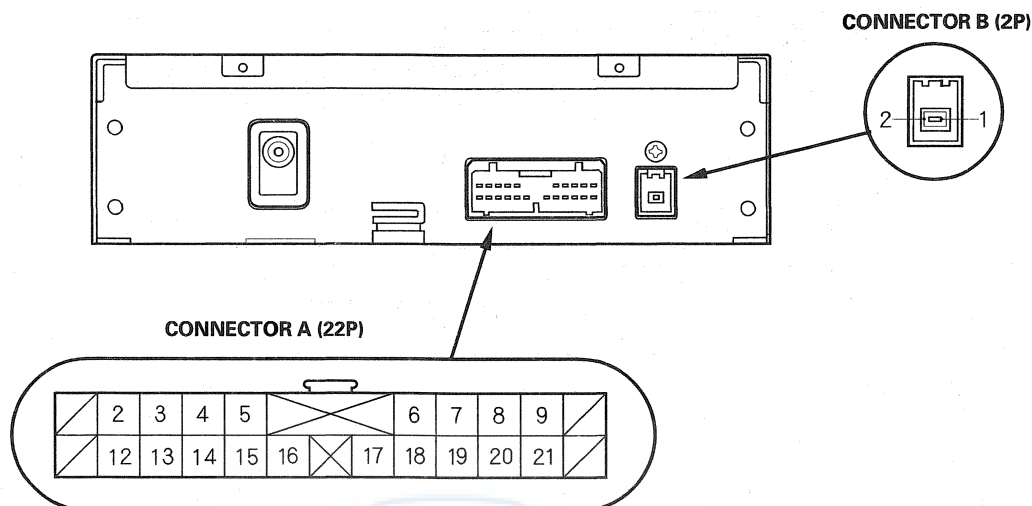
- With "Rear Power ON", and the rear control enabled, the rear passengers can control the functions with the remote, except volume.
- Rear passengers can control the functions, unless the rear control has been turned off by the front user.





DVD Player Unit Connector for Inputs and Outputs

When replacing a DVD player unit connector, match the wires to the cavities listed in the following table.



CONNECTOR A (22P)

Cavity	Wire	Connect to
A2	WHT	Constant power (+B)
A3	RED/BLK	Lights-on signal (ILL+)
A4	WHT/RED	ACC (Main stereo power supply)
A5	BLU	Audio unit (DVD)
A6	WHT	Audio unit (DVD COMM2)
A7	GRN/BLU	Audio unit (DVD COMM GND)
A8	ORN	Audio unit (L CH)
A9	BLU/GRN	Audio unit (R CH)
A12	BLK	Ground (G501)
A13	RED	Dash lights brightness controller (ILL-)
A14	PNK	Audio unit (DVD GND)
A15	GRY/PNK*	Audio unit (DVD SHIELD)
A16	BRN/WHT	Audio unit (SCTY AUDIO)
A17	BRN/YEL	Rear controller and screen (SCTY DVD)
A18	BRN	Audio unit (DVD COMM1)
A19	BRN/WHT*	Audio unit (DVD COMM SHIELD)

A20	ORN/BLU	Audio unit (R/L GND)
A21	GRY/ORN*	Audio unit (R/L SHIELD)

*: The shielded wires have a heat-shrunk tube insulating the outside of the wire. The color of the insulating tube, typically black or dark gray, may not match the color of the wire listed on the schematic.

CONNECTOR B (2P)

Cavity	Wire	Connect to
B1	—	Audio unit (DIGITAL SIG)
B2	—	Audio unit (DIGITAL SHIELD)

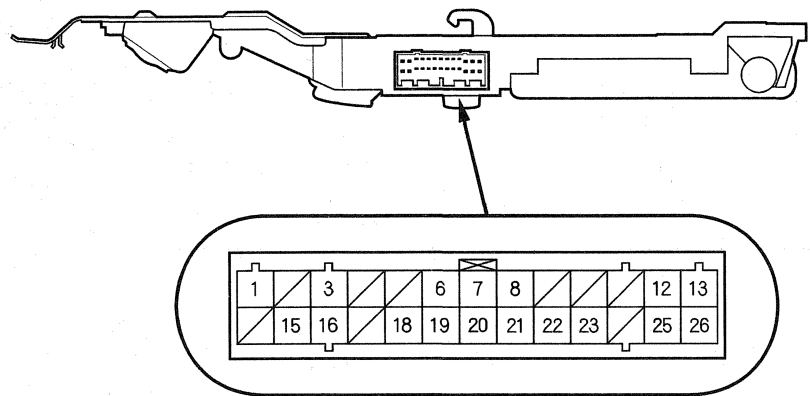
(cont'd)

Rear Entertainment System

System Description (cont'd)

Rear Controller and Screen Connector for Inputs and Outputs

When replacing a rear controller and screen connector, match the wires to the cavities listed in the following table.



26P CONNECTOR

Cavity	Wire	Connect to
1	WHT	Constant power (+B)
3	RED/WHT	Audio unit (RR BUS+)
6	PNK	Audio unit (RR NTSC GND)
7	BRN	Audio unit (HP L)
8	GRN/BLU	Audio unit (HP R)
12	RED/BLK	Lights-on signal (ILL+)
13	YEL/RED	Audio unit (RR SYSTEM ACC)
15	BRN*	Audio unit (RR BUS SHIELD)

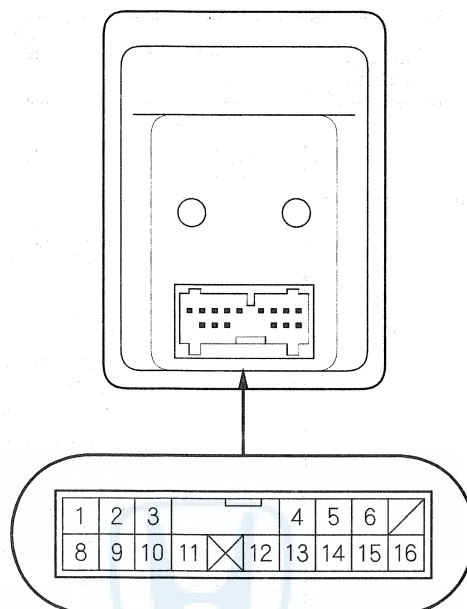
*: The shielded wires have a heat-shrunk tube insulating the outside of the wire. The color of the insulating tube, typically black or dark gray, may not match the color of the wire listed on the schematic.

16	RED/BLU	Audio unit (RR BUS-)
18	BLU	Audio unit (RR NTSC)
19	BRN/BLK*	Audio unit (RR NTSC SHIELD)
20	WHT	Audio unit (HP R/L GND)
21	BRN*	Audio unit (HP R/L SHIELD)
22	BLU	Passenger's multiplex control unit (SCTY RR DISP)
23	BRN/YEL	DVD player unit (SCTY DVD)
25	RED	Dash lights brightness controller (ILL-)
26	BLK	Ground (G901)



Auxiliary Jack Assembly Connector for Inputs and Outputs

When replacing an auxiliary jack assembly connector, match the wires to the cavities listed in the following table.

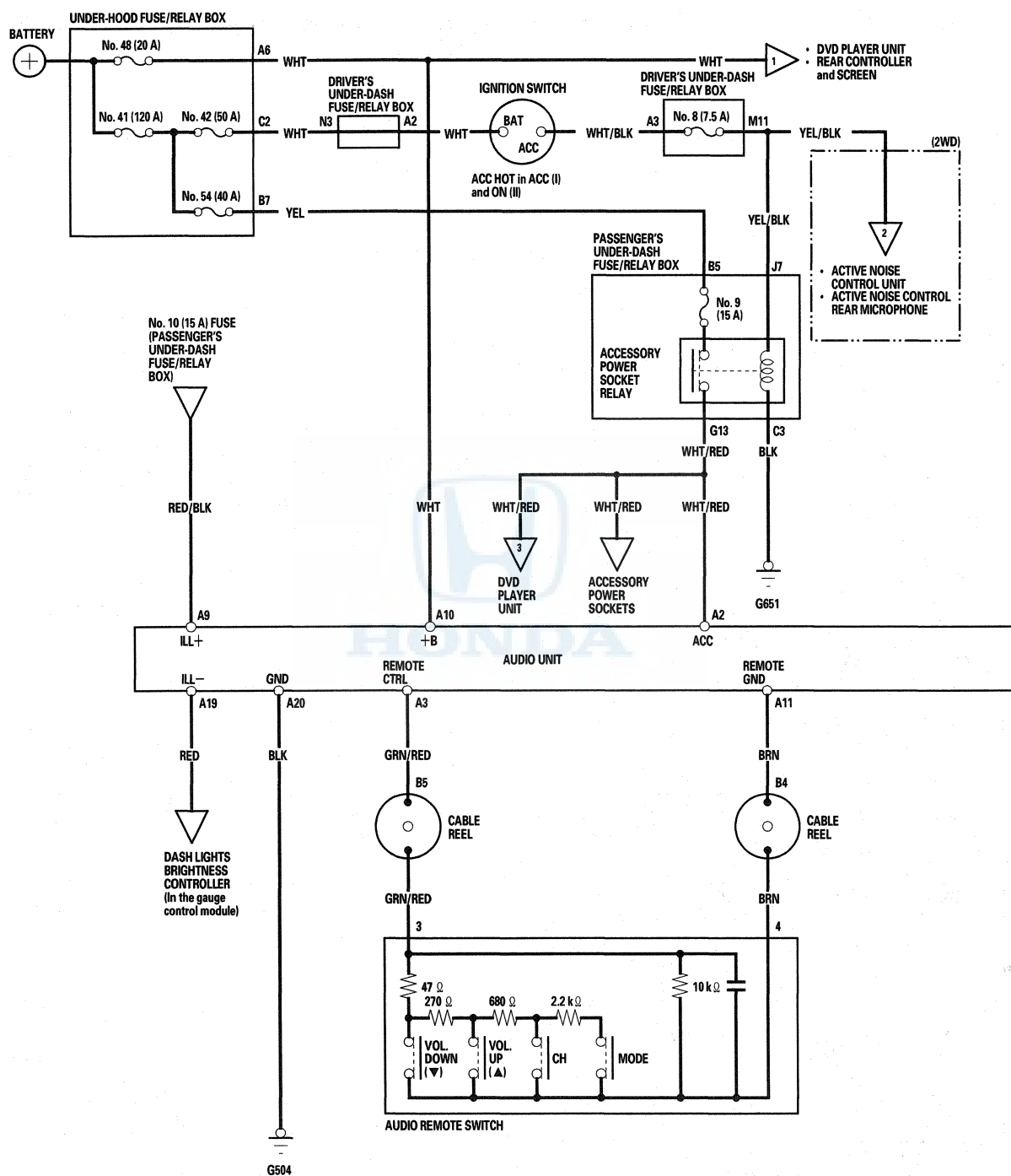


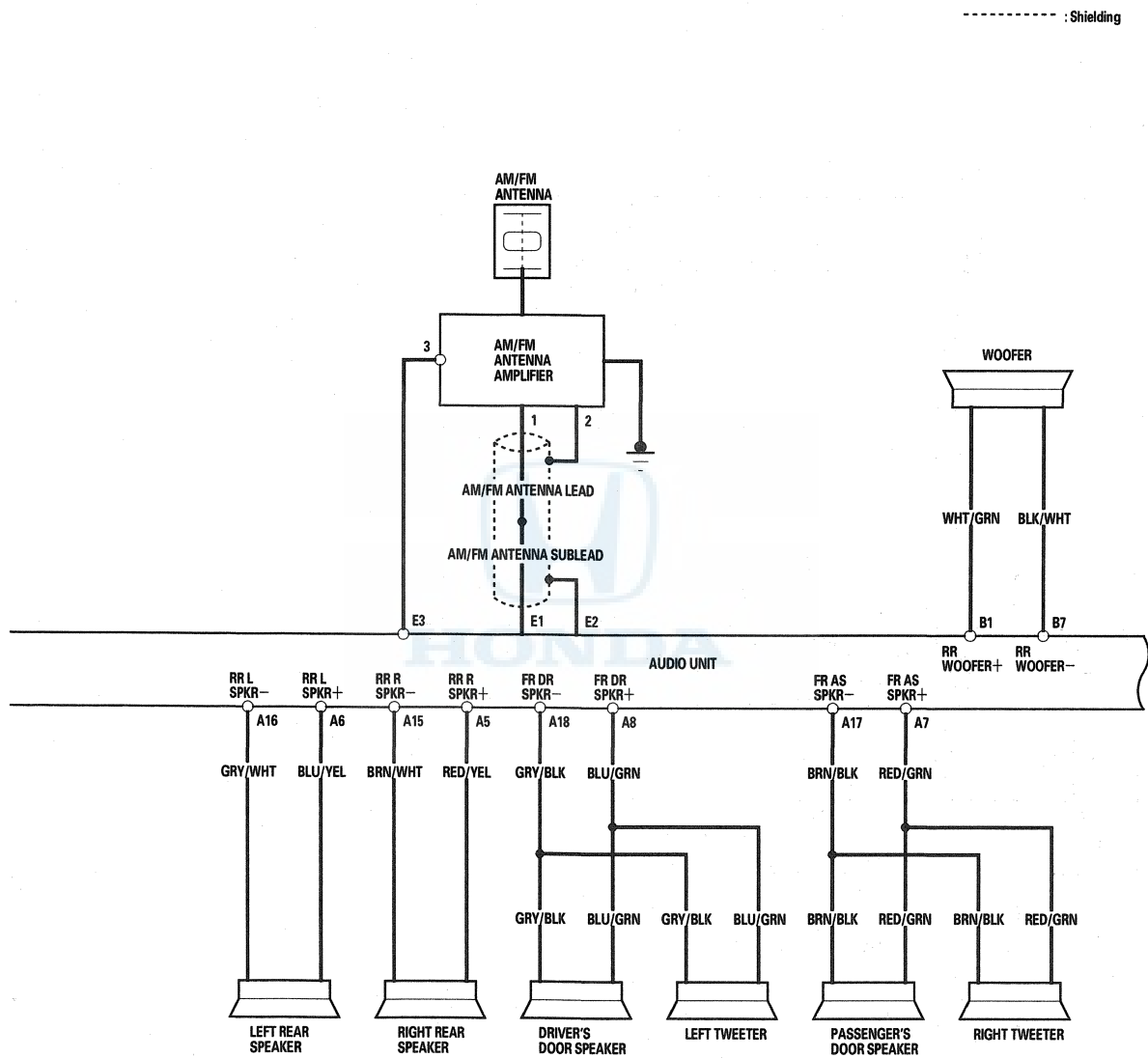
Cavity	Wire	Connect to
1	BLK	Ground (G504)
2	RED/BLK	Light-on signal (ILL+)
3	BRN/WHT*	Audio unit (HP R/L OUT SHIELD)
4	GRY/YEL*	Audio unit (VIDEO1 SHIELD)
5	GRY/ORN*	Audio unit (R/L SHIELD)
6	WHT/RED	Audio unit (CONN CHECK)
8	RED	Audio unit (HP R/L OUT GND)
9	WHT	Audio unit (VIDEO1 GND)
10	BLK	Audio unit (VIDEO1)
11	WHT	Audio unit (L CH)
12	BRN	Audio unit (R/L GND)
13	GRN/BLU	Audio unit (R CH)
14	BLK	Audio unit (HP L OUT)
15	WHT	Audio unit (HP R OUT)
16	RED	Dash lights brightness controller (ILL-)

*: The shielded wires have a heat-shrunk tube insulating the outside of the wire. The color of the insulating tube, typically black or dark gray, may not match the color of the wire listed on the schematic.

Rear Entertainment System

Circuit Diagram

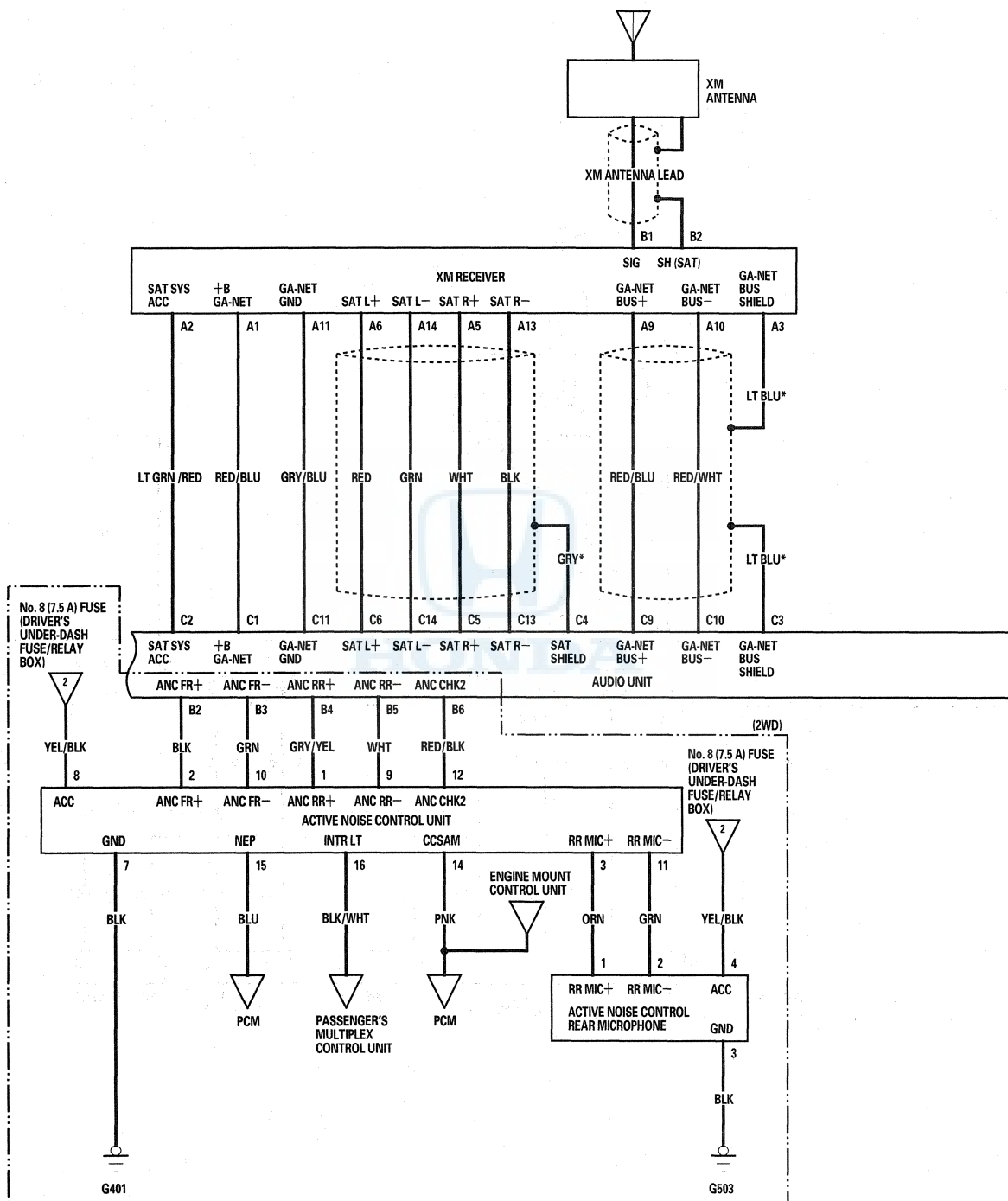


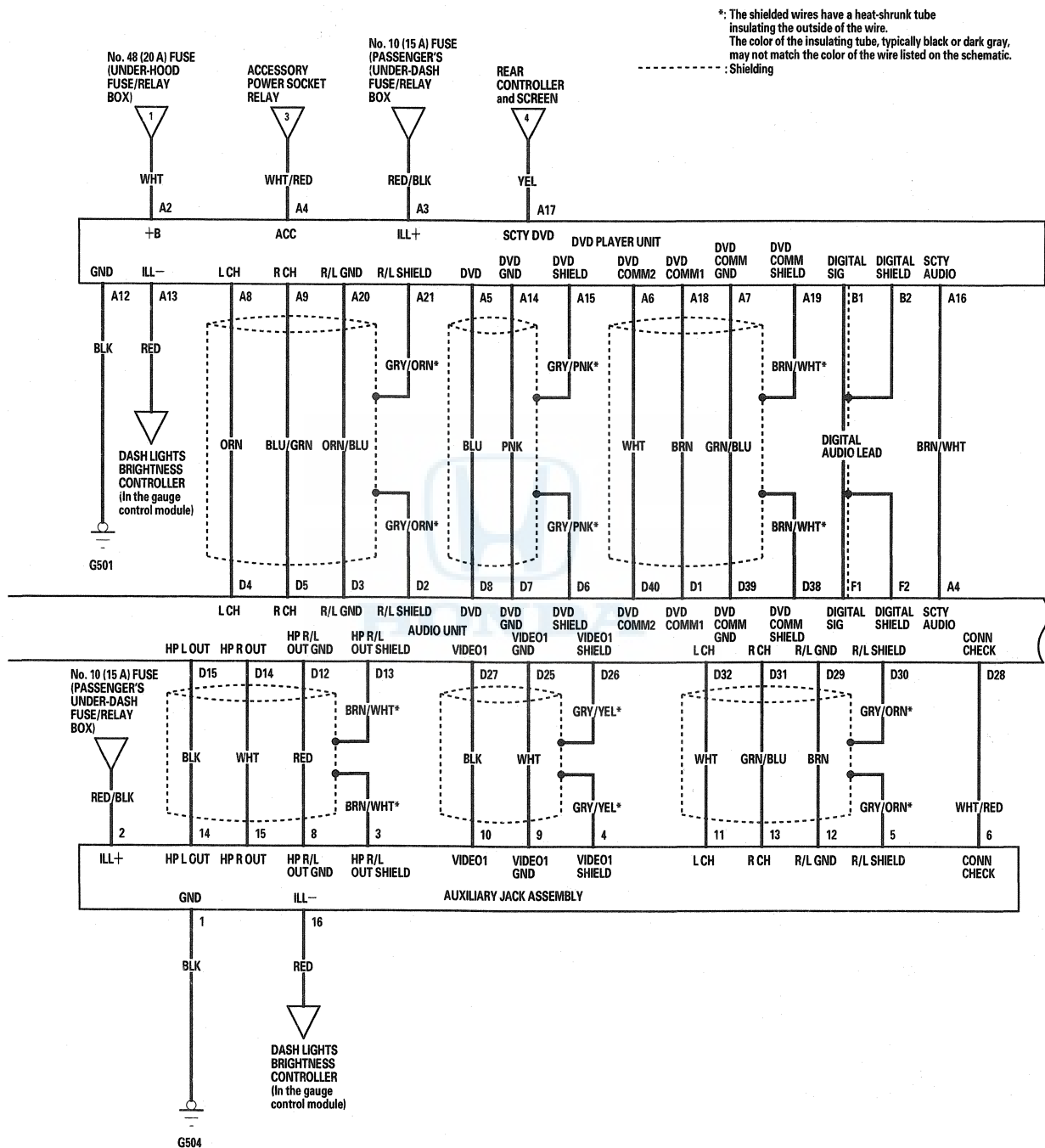


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Rear Entertainment System

Circuit Diagram (cont'd)



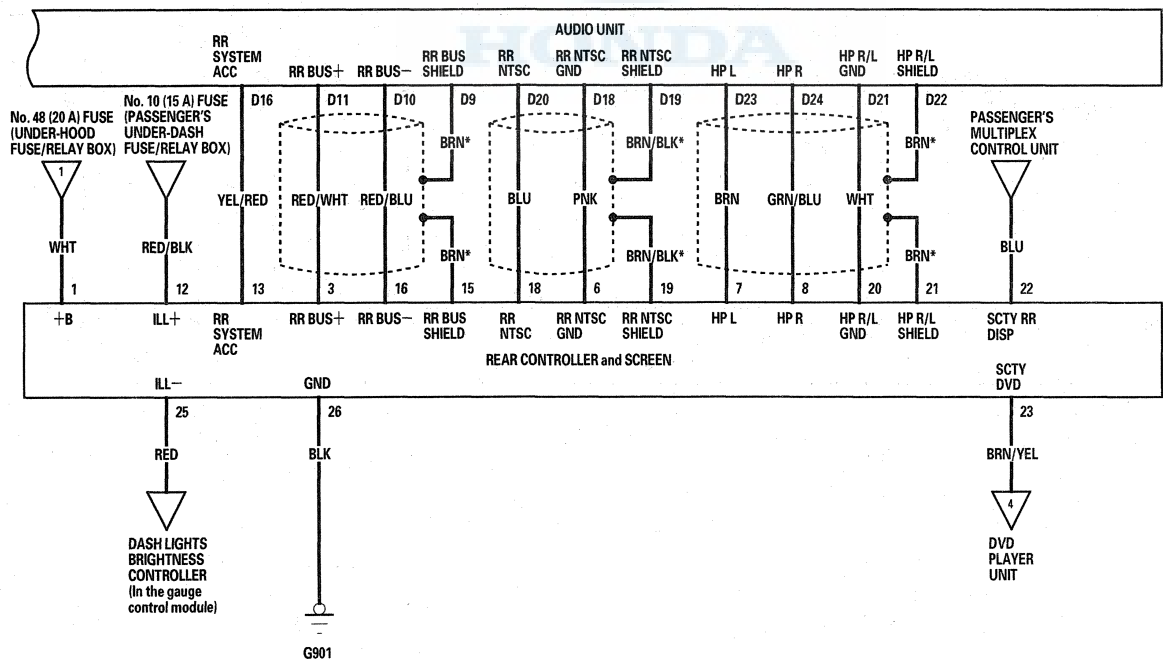


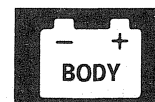
(cont'd)

Rear Entertainment System

Circuit Diagram (cont'd)

*: The shielded wires have a heat-shrunk tube insulating the outside of the wire.
The color of the insulating tube, typically black or dark gray, may not match the color of the wire listed on the schematic.
-----: Shielding





Self-diagnostic Function

The rear entertainment system has a self-diagnostic function that shows on the display. To run the self-diagnostic function, do the following:

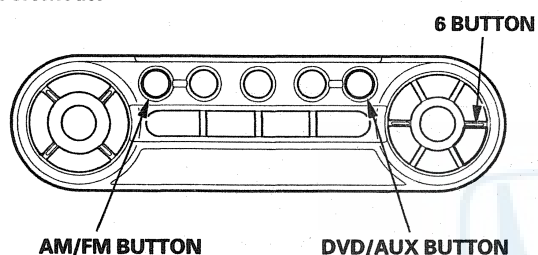
How to Enter for Self-diagnostic Function with the Wireless Remote Control

1. Turn the ignition switch to the ACC (I) position.
2. To run the self-diagnosis, press the DVD/AUX button (KA model) or DVD button (KC model), the AM/FM button, the 6 button, and then the AM/FM button again. The buttons must be pressed in that order, within 2 seconds of each other (see table), and the self-diagnostic begins.

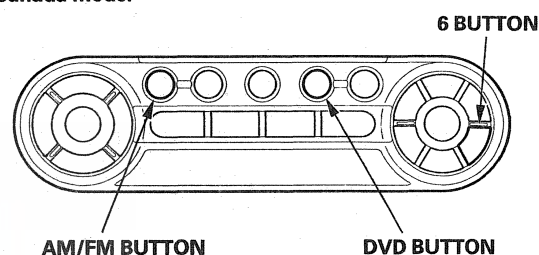
NOTE:

- If the display does not work, try to enter the self-diagnostic function by using the audio unit.
- Use the wireless remote to navigate within the self-diagnostic function.

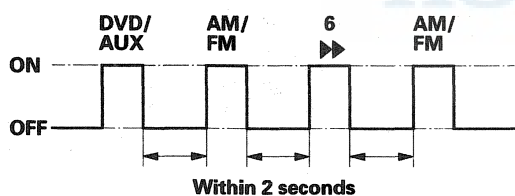
USA model



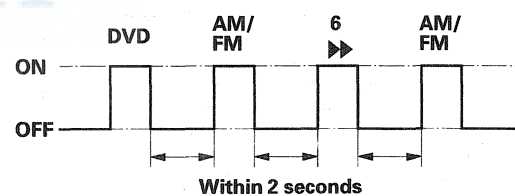
Canada model



USA model



Canada model



(cont'd)

Rear Entertainment System

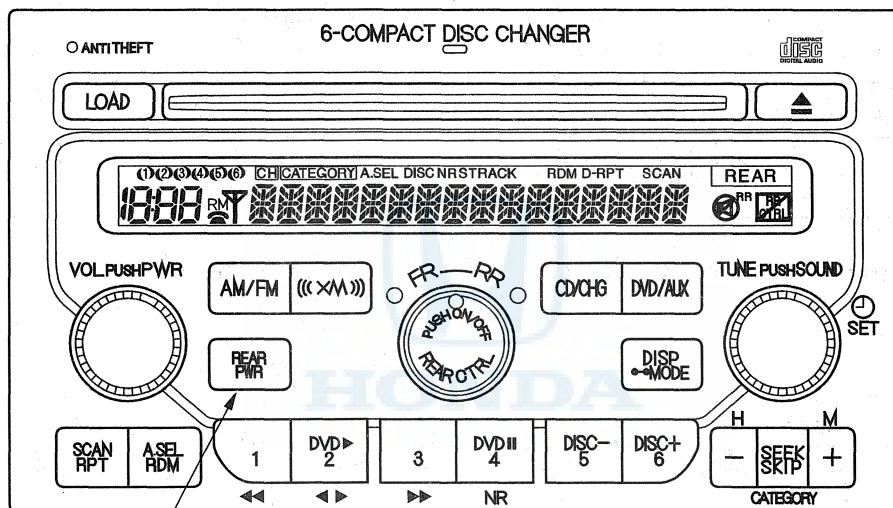
Self-diagnostic Function (cont'd)

How to Enter the Self-diagnostic Function with the Audio Unit

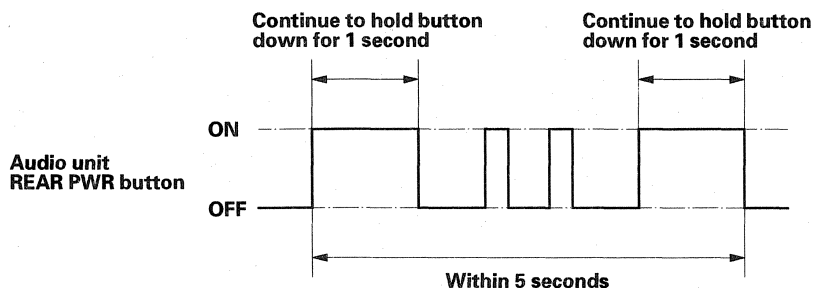
NOTE:

- Use the wireless remote control to enter the self-diagnostic function prior to entering the self-diagnostic function with the audio unit.
- If you can't enter the self-diagnostic function using the wireless remote control, but get an image on the display when entering using the audio unit, swap a known-good remote. If OK, replace the remote.
- If you can't enter the self-diagnostic function using the wireless remote control, and don't get an image on the display when entering using the audio unit, check the units that are connected to the audio unit.
- Use the wireless remote to navigate within the self-diagnostic function.

1. Turn the ignition switch to the ACC (I) position.
2. To run the self-diagnosis, press the REAR PWR button four times within 5 seconds.

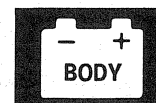


REAR POWER BUTTON



Canceling the Self-diagnostic Function

Turn the ignition switch OFF to cancel the self-diagnostic function. After completing the repair, run the self-diagnostic function again to make sure that there are no other malfunctions.



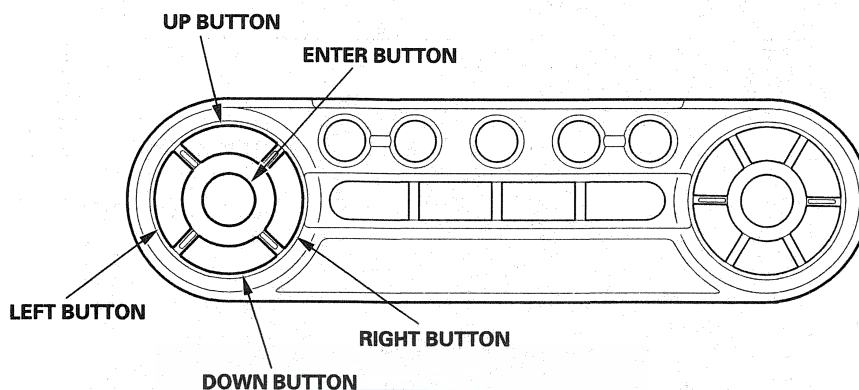
Self-diagnostic Function Mode Select

Use the wireless remote control to navigate within the self-diagnostic function.

LEFT/RIGHT button: Change the function mode

UP/DOWN button: Change the detection

ENTER button: Select the detection point



Function No.	Category		Check item or information	Judge display
1	CONNECT	DVD PLAYER	DVD player unit connection check	OK or NG with GRN or RED
		H/U	Audio unit connection check	OK or NG with GRN or RED
		JACK ASSY	Auxiliary jack assembly connection check	OK or NG with GRN or RED
		DEVICE	Device connection information	Device code
2	STATUS	+B VOLT	+B voltage	* * V or Err
		TEMP.	Screen temperature	* * h or Err
		DISP PANEL	Screen open or close condition	OPEN or NG
3	UNIT CHECK	RAM CHECK	Rear controller and screen RAM check	OK or NG
		ERR. STATUS	DVD player unit error status	Error code
		DIGITAL OUT	Digital out connection check	OK or NG
4	VERSION	RR DISPLAY	Rear controller and screen version information	—
		DVD PLAYER	DVD player unit version information	—
		H/U	Audio unit version information	—

(cont'd)

Rear Entertainment System

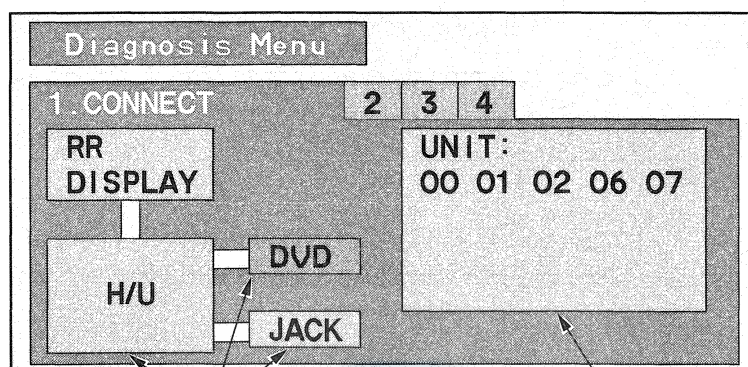
Self-diagnostic Function (cont'd)

Self-diagnostic Function Mode Display

1. CONNECT

The screen will display connection check status for each device while in this self-diagnostic mode.

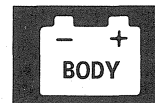
- "RR DISPLAY" (rear controller and screen) will always indicate OK (green color).
- The screen indicates connecting device codes.
- If the connection for the "H/U" (audio unit) is "DVD" (DVD player unit), or "JACK" (auxiliary jack assembly) is faulty, the screen will display NG (red color).



Connection check
Connection OK: Green color
Connection NG: Red color

Connecting device codes

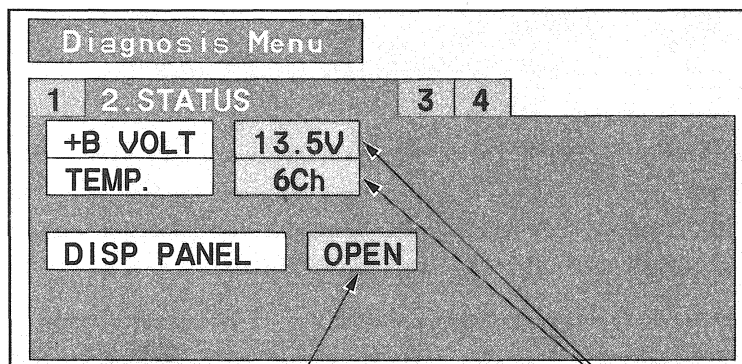
Connecting device code	Connecting device
0	Built-in control block
1	Audio unit button and LCD
2	Built-in audio block
6	Built-in CD changer
7	Built-in AM/FM tuner unit
19	XM receiver
1B	DVD player unit



2. STATUS

The screen will display the screen status while in this self-diagnostic mode.

- If there is a change (analog to digital) of signal error for the categories "+B VOLT" or "TEMP", the screen will display "Err".
- The screen indicates an open or closed condition of the screen.



Screen open/close condition
OPEN: Green color
CLOSE: Red color

Normal: Green color
Error: Red color



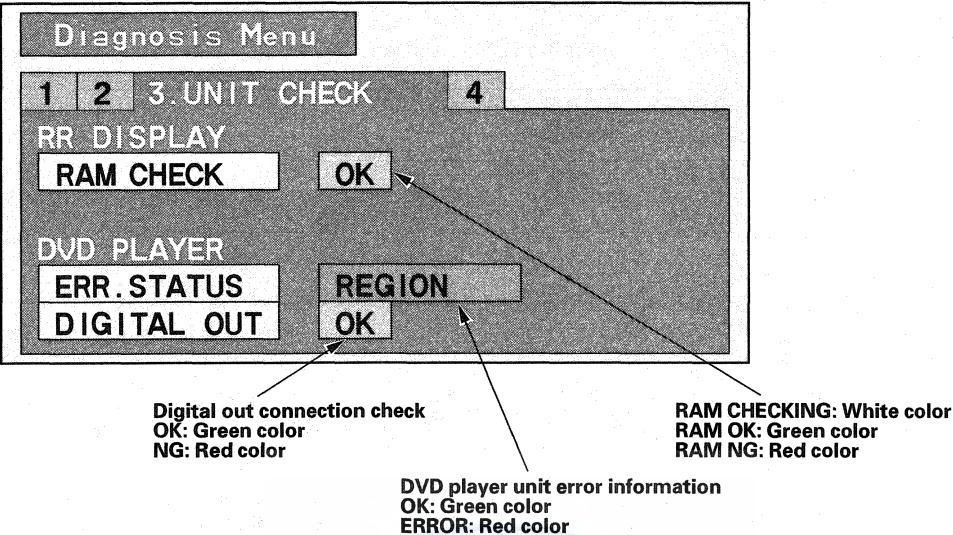
(cont'd)

Rear Entertainment System

Self-diagnostic Function (cont'd)

3. UNIT CHECK

The screen will display self-diagnostic status while in this self-diagnostic mode.

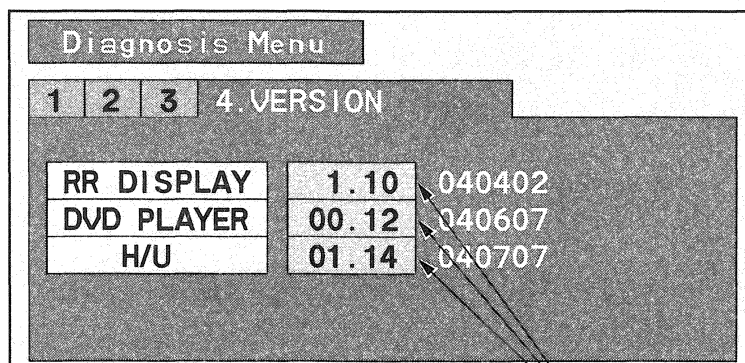


Error Code Displayed	Possible Cause
MECHA	Disc read or eject error
FOCUS	Cannot read disc
REGION	Region code mismatch
ROM	Built-in FLASH memory data broken
PARENTAL	Parental error
DISC	Disc format that is not recognized



4. VERSION

The screen will display the device version information while in this self-diagnostic mode. If a connection to a device is no-good, the screen will display “—”.



Device version



(cont'd)

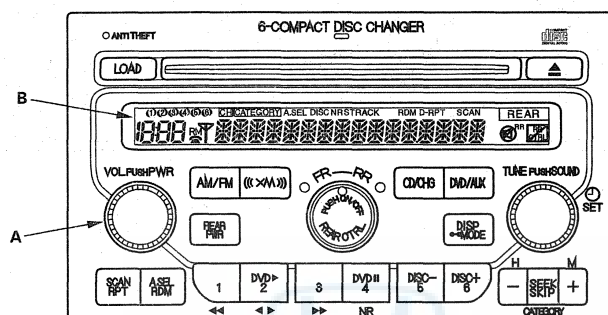
Rear Entertainment System

Self-diagnostic Function (cont'd)

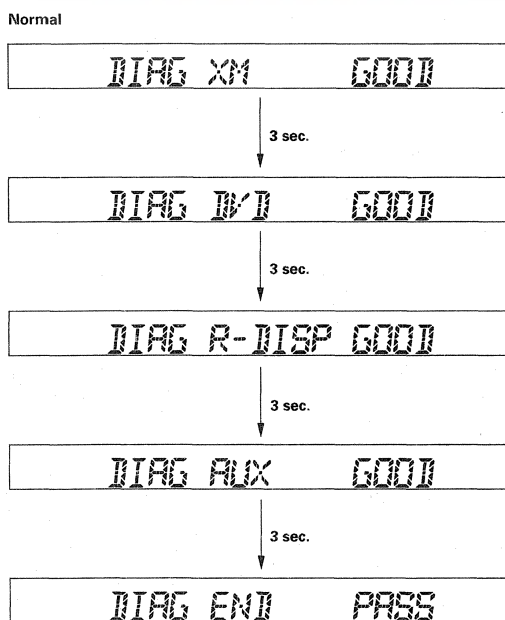
How to Enter the Audio System Self-diagnostic Function to Check the Connected Units Status

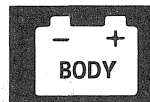
NOTE: This function operates when the rear controller and screen does not function, and can be used to check the status of the units connected to the audio unit.

1. Turn the ignition switch to the ACC (I) or ON (II) position.
2. Push the "VOL push PWR" knob (A) to ON.
3. To run the self-diagnosis mode, simultaneously push and hold the buttons "DISC+6" "SEEK+" and "A.SEL" for more than 2 seconds.



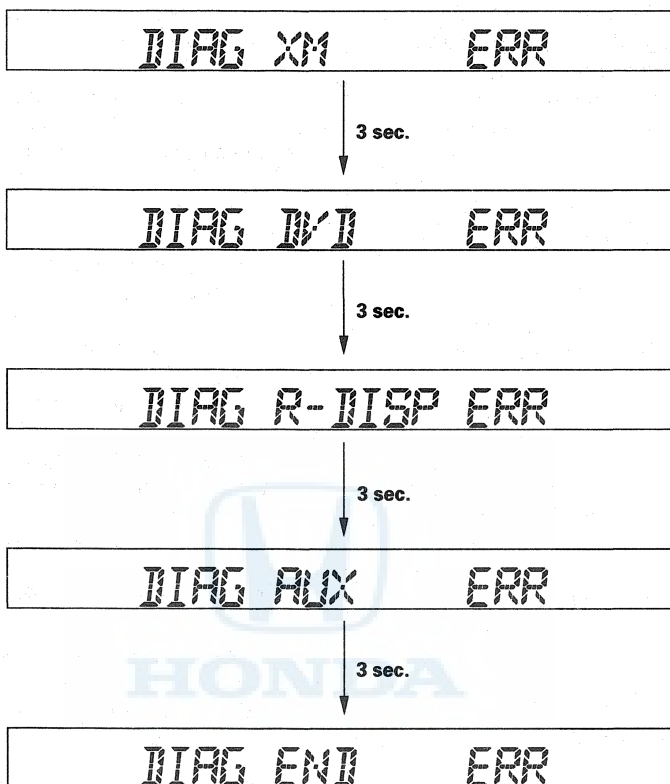
4. Release the buttons when a diagnosis message and diagnosis indication shows in the display (B) of the audio unit. It changes every 3 seconds for the XM receiver (XM), DVD player unit (DVD), the rear controller and screen (R-DISP), and auxiliary jack assembly (AUX).
5. When no problem is detected, the system returns to normal operation automatically followed by a single audible beep.





6. When a problem is detected, the system will display which component has the error followed by three audible beeps.

Faulty



Refer to the following table for troubleshooting procedures:

Error Code Displayed	Diagnostic Procedure
DIAG XM ERR (only)	Symptom troubleshooting (see page 22-344)
DIAG DVD ERR (only)	Symptom troubleshooting (see page 22-404)
DIAG R-DISP ERR (only)	Symptom troubleshooting (see page 22-407)
DIAG AUX ERR (only)	Symptom troubleshooting (see page 22-410)
DIAG XM ERR and R-DISP ERR	Symptom troubleshooting (see page 22-407)

7. Turn the ignition switch OFF or push the "VOL push PWR" button to cancel the self-diagnostic function.

Rear Entertainment System

Symptom Troubleshooting

RES disc does not load

NOTE:

- Check the vehicle battery condition first.
- Discs with labels should not be used in the DVD player unit. They may damage the player mechanism.
- Make sure the CD or DVD is compatible with the system (refer to the Owner's Manual for more information).

1. Turn the ignition switch ON (II).
2. Try loading a disc into the DVD player unit.

Does the disc load?

YES—Intermittent failure, the DVD player unit is OK at this time. ■

NO—Go to step 3.

3. Insert a known-good disc into the DVD player unit.

Does the disc load?

YES—The original disc is faulty. ■

NO—Go to step 4.

4. Check the Diagnosis Menu 1. CONNECT of the RES self-diagnostic test (see page 22-398).

Is the DVD player unit connect condition OK?

YES—Replace the DVD player unit (see page 22-423). ■

NO—Repair the loose connection in the DVD player unit connections. ■

RES disc does not eject

NOTE:

- Check the vehicle battery condition first.
- Disc with labels should not be used in the DVD player unit. They may damage the player mechanism.

1. Turn the ignition switch ON (II).
2. Try ejecting the disc from the DVD player unit.

Does the disc eject?

YES—Intermittent failure, the DVD player unit is OK at this time. ■

NO—Go to step 3.

3. Turn the ignition switch off.
4. Disconnect the DVD player unit 22P connector and wait 2 minutes, then reconnect the connector.
5. Turn the ignition switch ON (II).
6. Try ejecting the disc from the DVD player unit.

Does the disc eject?

YES—Intermittent failure, the DVD player unit is OK at this time. ■

NO—Replace the DVD player unit (see page 22-423). ■



RES disc does not play

NOTE:

- Check the vehicle battery condition first.
- CD-R/RWs and DVD-R/RWs will not work in the DVD player unit.
- Damaged or contaminated discs may not always play properly.
- Discs with labels should not be used in the DVD player unit. They may damage the player mechanism.

1. Turn the ignition switch ON (II).
2. Try loading a disc into the DVD player unit.

Does the disc play (display and sound)?

YES—Intermittent failure, the DVD player unit is OK at this time. ■

NO—Go to step 3.

3. Insert a known-good disc into the DVD player unit.

Does the disc play (display and sound)?

YES—The original disc is faulty or is an unreadable format. ■

NO—Go to step 4.

4. Check the Diagnosis Menu 1. CONNECT of the rear entertainment system self-diagnostic (see page 22-398).

Is the DVD player unit connect condition OK?

YES—Go to step 5.

NO—Repair the poor connection in the DVD player unit connectors. ■

5. Check the "UNIT CHECK" of the rear entertainment system self-diagnostic (see page 22-398).

Is the DVD player unit error status indicator OK?

YES—Go to step 6.

NO—

- If "MECHA" or "FOCUS" or "ROM" is indicated: Replace the DVD player unit. ■
- If "REGION" or "DISC" is indicated: Change the unrecognized format disc. ■
- If "INVALID REGION" is indicated: Replace the DVD player unit information). ■
- If "PARENTAL" is indicated: Check the parental level or password (refer to the Owner's Manual for more information). ■

6. Turn the ignition switch OFF.

7. Substitute a known-good DVD player unit (see page 22-423), then test the DVD player unit.

Is the sound normal?

YES—Replace the original DVD player unit. ■

NO—Check for loose wires or poor connections at DVD player unit connectors, and recheck. ■

Rear Entertainment System

Symptom Troubleshooting (cont'd)

RES disc skips

NOTE:

- Check the vehicle battery condition first.
- Copy protected material on a CD-R/RW or DVD-R/RW disc will skip or not play.
- Check for scratches, smudges, and finger prints on the disc.

1. Turn the ignition switch ON (II).
2. Insert the disc into the DVD player unit and try playing a disc.

Does the disc skip?

YES—Go to step 3.

NO—Intermittent failure, the DVD player unit is OK at this time. ■

3. Clean the disc, and recheck.

Does the disc play properly?

YES—The original disc was dirty. ■

NO—Go to step 4.

4. Insert a known-good disc.

Does the disc play properly?

YES—The original disc is dirty or wrong type. ■

NO—Go to step 5.

5. Check the "UNIT CHECK" of the rear entertainment system self-diagnostic (see page 22-398).

Is the DVD player unit error status indicator OK?

YES—Go to step 6.

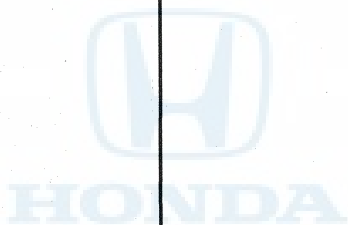
NO—Replace the DVD player unit (see page 22-423). ■

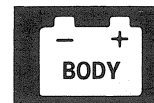
6. Compare the disc skipping to a known-good vehicle under the same conditions.

Does the known-good vehicle's disc skip under the same conditions (over the same bumps and on the same rough roads)?

YES—Operation is normal. ■

NO—Substitute a known-good DVD player unit, and recheck. If the symptom/indication goes away, replace the original DVD player unit (see page 22-423). ■





Black picture is shown on the display

NOTE:

- Check the vehicle battery condition first.
- If the audio unit, or XM radio do not function properly, troubleshoot and resolve those problems first.

1. Turn the ignition switch ON (II).
2. Push the audio unit rear power switch ON to see if the screen turns ON.

Does the screen come ON?

YES—Operation is normal at this time. ■

NO—Go to step 3.

3. Check for brightness settings in the display set up (refer to the Owner's Manual for more information).

Are the display setting set properly?

YES—Go to step 4.

NO—Adjust the display setting and recheck the function. ■

4. Turn the ignition switch OFF.
5. Check the No. 48 (20 A) fuse in the under-hood fuse box.

Is the fuse OK?

YES—Go to step 6.

NO—Replace the fuse, and recheck. ■

6. Remove the display cover (see page 22-423). Then check that the rear controller and screen is properly connected.

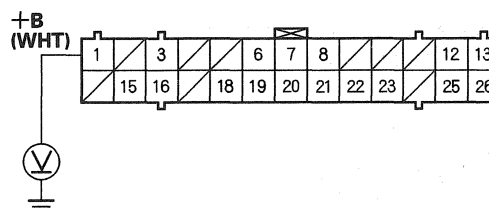
Is the rear controller and screen connected properly?

YES—Go to step 7.

NO—Reconnect the connector, and recheck the function. ■

7. Measure the voltage between the No. 1 terminal of the rear controller and screen 26P connector and body ground.

REAR CONTROLLER AND SCREEN 26P CONNECTOR



Wire side of female terminals

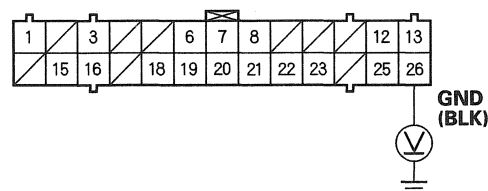
Is there battery voltage?

YES—Go to step 8.

NO—Repair open in the wire(s) between the No. 48 (20 A) fuse in the under-hood fuse box and the rear controller and screen. ■

8. Measure the voltage between the rear controller and screen 26P connector terminal No. 26 and body ground.

REAR CONTROLLER AND SCREEN 26P CONNECTOR



Wire side of female terminals

Is there less than 0.1 V?

YES—Replace the rear controller and screen. ■

NO—Repair open in the wire between the rear controller and screen 26P connector terminal No. 26 and body ground (G901). ■

Rear Entertainment System

Symptom Troubleshooting (cont'd)

White picture is shown on the display/ display lock

NOTE: Check the vehicle battery condition first.

1. Turn the ignition switch ON (II).
2. Push the audio unit rear power switch ON to see if the screen turns ON.

Does the display turn on?

YES—Operation is normal. ■

NO—Go to step 3.

3. Do the rear entertainment system self-diagnostic (see page 22-395).

Does the self-diagnostic indicate OK?

YES—Check the self-diagnostic information. ■

NO—Substitute a known-good rear controller and screen, and recheck. If the symptom/indication goes away, replace the original rear controller and screen (see page 22-423). ■

Display area picture has lines or has shifted

NOTE: Check the vehicle battery condition first.

1. Turn the ignition switch ON (II).
2. Push the rear power switch ON to see if the screen turns ON.

Does the screen have lines or has the image shifted?

YES—Go to step 3.

NO—Operation is normal at this time. ■

3. Check the screen set up (refer to the Owner's Manual for more information).

Are the settings set properly?

YES—Substitute a known-good rear controller and screen, and recheck. If the symptom/indication goes away, replace the original rear controller and screen (see page 22-423). ■

NO—Adjust the display settings and recheck the function. ■



Display does not go off when screen is closed

NOTE: Check the vehicle battery condition first.

1. Turn the ignition switch ON (II).
2. Open the screen, and push the audio unit rear power switch ON. Then close the screen by pivoting it up.

Does the screen go off?

YES—Operation is normal at this time. ■

NO—Go to step 3.

3. Check the lock switch.

Does the screen close securely?

YES—If the screen securely closes, and the screen does not go off, replace it. ■

NO—Relock the screen, and recheck. If the screen will not securely lock into position, replace it. ■

No display appears on the rear controller indicator

NOTE: Check the vehicle battery condition first.

1. Turn the ignition switch ON (II).
2. Push the audio unit rear power switch ON to see if the indicator turns ON.

Does the indicator come on?

YES—Operation is normal at this time. ■

NO—Go to step 3.

3. Check the operation and display of the screen, the wireless remote control, and the wireless headphone.

Does the system operate normally, and does the display come on?

YES—Faulty rear indicator. ■

NO—

- Screen faulty: Go to the "Black picture is shown on the display" troubleshooting (see page 22-407). ■
- Wireless remote control faulty: Go to the "Wireless remote control does not work (all buttons)" troubleshooting (see page 22-418). ■
- Wireless headphone faulty: Go to the "Wireless headphone sound is weak, distorted, volume does not change, or there is no sound in all modes" troubleshooting (see page 22-416). ■

Rear Entertainment System

Symptom Troubleshooting (cont'd)

No sound/no display with auxiliary video unit inputs

NOTE:

- Check the vehicle battery condition first.
- Check that the auxiliary device is properly connected, and has fresh batteries or power source connected.
- Do not connect an RCA type shorting plug with the auxiliary jack assembly 16P connected, or system damage may occur.

1. Turn the ignition switch ON (II).
2. Connect an auxiliary video source, and check the volume/display operation.

Are the sound and display normal?

YES—Operation is normal at this time. ■

NO—Go to step 3.

3. Substitute a known-good auxiliary video unit, and recheck.

Does the auxiliary video unit operate properly?

YES—Original auxiliary video unit faulty. ■

NO—Go to step 4.

4. Check the Diagnosis Menu 1. CONNECT of the rear entertainment system self-diagnostic mode (see page 22-398).

Is the auxiliary jack assembly connection OK (green color)?

YES—Go to step 7.

NO—Go to step 5.

5. Turn the ignition switch OFF.
6. Remove the auxiliary jack assembly (see page 22-425). Check that the auxiliary jack assembly is properly connected.

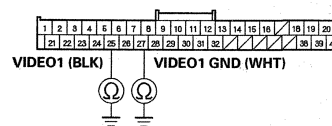
Is the auxiliary jack assembly connected properly?

YES—Go to step 7.

NO—Reconnect the connector, and recheck the function. ■

7. Remove the audio unit (see page 22-372), and disconnect audio unit connector D (40P).
8. Disconnect auxiliary jack assembly 16P connector.
9. Check for continuity between body ground and audio unit connector D (40P) terminal No. 25 and No. 27 individually.

AUDIO UNIT CONNECTOR D (40P)



Wire side of female terminals

Is there continuity?

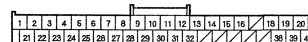
YES—Short to body ground in the wire(s) between audio unit connector D (40P) and auxiliary jack assembly 16P connector. Replace the affected shielded harness. ■

NO—Go to step 10.

10. Check for continuity between audio unit connector D (40P) according to the table.

From terminal	To terminals
D25	D26, D27
D26	D27

AUDIO UNIT CONNECTOR D (40P)

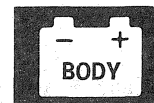


Wire side of female terminals

Is there continuity between any of the terminals?

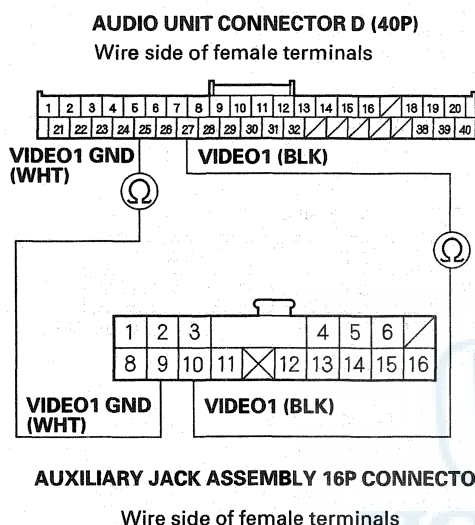
YES—Short in the wire(s) between audio unit connector D (40P) and auxiliary jack assembly 16P connector. Replace the affected shielded harness. ■

NO—Go to step 11.



11. Check for continuity between audio unit connector D (40P) and auxiliary jack assembly 16P connector according to the table.

Audio unit connector	Auxiliary jack assembly connector
D25	9
D27	10



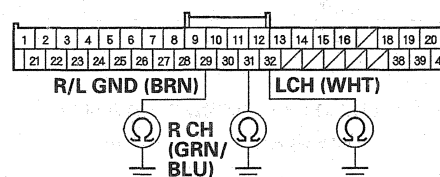
Is there continuity?

YES—Go to step 12.

NO—Open in the wire(s) between audio unit connector D (40P) and auxiliary jack assembly 16P connector. Replace the affected shielded harness. ■

12. Check for continuity between body ground and audio unit connector D (40P) terminal No. 29, No 31 and No. 32 individually.

AUDIO UNIT CONNECTOR D (40P)



Wire side of female terminals

Is there continuity?

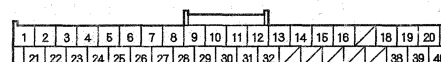
YES—Short to body ground in the wire(s) between audio unit connector D (40P) and auxiliary jack assembly 16P connector. Replace the affected shielded harness. ■

NO—Go to step 13.

13. Check for continuity between the audio unit connector D (40P) according to the table.

From terminal	To terminals
D30	D29, D31, D32
D29	D31, D32
D31	D32

AUDIO UNIT CONNECTOR D (40P)



Wire side of female terminals

Is there continuity between any of the terminals?

YES—Short in the wire(s) between audio unit connector D (40P) and auxiliary jack assembly 16P connector. Replace the affected shielded harness. ■

NO—Go to step 14.

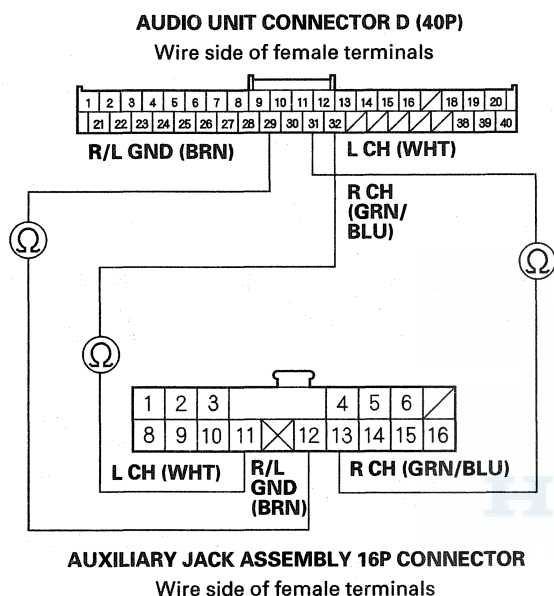
(cont'd)

Rear Entertainment System

Symptom Troubleshooting (cont'd)

14. Check for continuity between audio unit connector D (40P) and auxiliary jack assembly 16P connector according to the table.

Audio unit connector	Auxiliary jack assembly connector
D29	12
D31	13
D32	11



Is there continuity?

YES—Go to step 15.

NO—Open in the wire(s) between audio unit connector D (40P) and auxiliary jack assembly 16P connector. Replace the affected shielded harness. ■

15. Connect an RCA type shorting plug to each audio input (R and L).

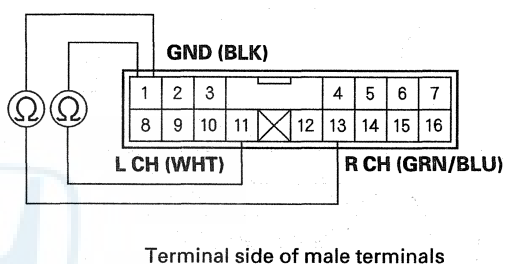
NOTE: Do not connect the RCA type shorting plug with the auxiliary jack assembly 16P connector, or system damage may occur.

16. Check for continuity between the following terminals of the auxiliary jack assembly.

No. 11 ↔ No. 1

No. 13 ↔ No. 1

AUXILIARY JACK ASSEMBLY 16P CONNECTOR



Is there continuity?

YES—Go to step 17.

NO—Faulty auxiliary jack assembly. ■

17. Remove the RCA type shorting plug(s) and check the same terminals again for continuity.

Is there continuity?

YES—Faulty auxiliary jack assembly. ■

NO—Faulty audio unit. ■



Wired headphone sound is weak, distorted, volume does not change, or there is no sound

NOTE: Check the vehicle battery condition first.

1. Check that the wired headphone jack is properly connected.

Is the headphone jack connected properly?

YES—Go to step 2.

NO—Reconnect the wired headphone connector, and recheck the symptom. ■

2. Turn the ignition switch ON (II).
3. Substitute a known-good wired headphone set, and recheck the symptom.

Does the symptom go away?

YES—Original wired headphone set is faulty. ■

NO—Go to step 4.

4. Plug the wired headphones into the other ports of the auxiliary jack assembly to check their condition.

Do all the ports have the same symptom?

YES—Go to step 5.

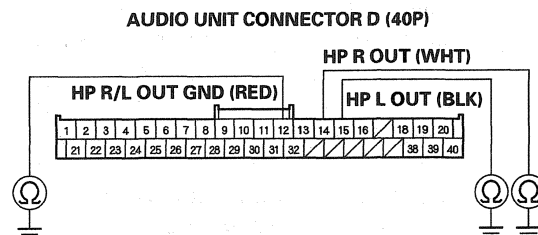
NO—Replace the auxiliary jack assembly (see page 22-425).

5. Turn the ignition switch OFF.
6. Remove the audio unit (see page 22-372), and disconnect audio unit connector D (40P).

NOTE: Eject all the discs before removing the audio unit to prevent damaging the CD player's load mechanism.

7. Disconnect auxiliary jack assembly 16P connector.

8. Check for continuity between body ground and audio unit connector D (40P) terminal No. 12, No 14 and No. 15 individually.



Wire side of female terminals

Is there continuity?

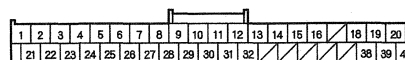
YES—Short to body ground in the wire(s) between audio unit connector D (40P) and auxiliary jack assembly 16P connector. Replace the affected shielded harness. ■

NO—Go to step 9.

9. Check for continuity between audio unit connector D (40P) as shown.

From terminal	To terminals
D12	D13, D14, D15
D13	D14, D15
D14	D15

AUDIO UNIT CONNECTOR D (40P)



Wire side of female terminals

Is there continuity between any of the terminals?

YES—Short in the wire(s) between audio unit connector D (40P) and auxiliary jack assembly 16P connector. Replace the affected shielded harness. ■

NO—Go to step 10.

(cont'd)

Rear Entertainment System

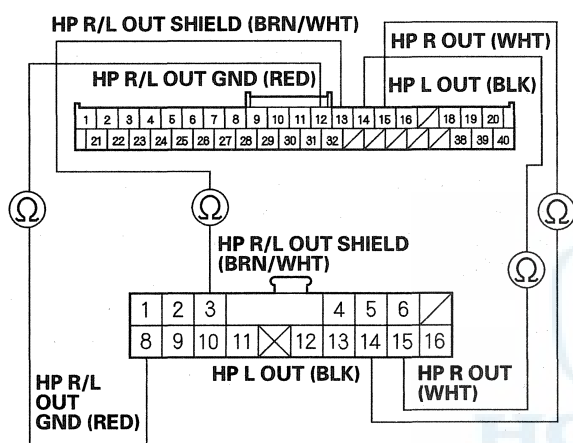
Symptom Troubleshooting (cont'd)

10. Check for continuity between audio unit connector D (40P) and auxiliary jack assembly 16P connector according to the table.

Audio unit connector	Auxiliary jack assembly connector
D12	8
D13	3
D14	15
D15	14

AUDIO UNIT CONNECTOR D (40P)

Wire side of female terminals



AUXILIARY JACK ASSEMBLY 16P CONNECTOR

Wire side of female terminals

Is there continuity?

YES—Substitute a known-good auxiliary jack assembly (see page 22-425) and recheck. If the symptom/indication goes away, replace the original auxiliary jack assembly. If the symptom is still present, substitute a known-good audio unit (see page 22-372) and recheck. If the symptom/indication goes away, replace the original audio unit. ■

NO—Open in the wire(s) between audio unit connector D (40P) and auxiliary jack assembly 16P connector. Replace the affected shielded harness. ■

Wireless headphones do not work or there is static in DVD mode

NOTE:

- Check the vehicle battery condition first.
- Check the wireless headphone battery condition first.

1. Turn the ignition switch ON (II).
2. Check the diagnosis menu 1. CONNECT and 3. UNIT CHECK of the rear entertainment system self-diagnostic (see page 22-398).

Is the self-diagnostic status indicator OK (Green color)?

YES—Go to the "Wireless headphone sound is weak, distorted, there is static volume does not change, or there is no sound in all modes (see page 22-416)." ■

NO—Go to step 3.

3. Turn the ignition switch OFF.
4. Remove the audio unit (see page 22-372).

NOTE: Eject all the discs before removing the audio unit to prevent damaging the CD player's load mechanism.

5. Check that the audio unit digital audio lead 2P connector is properly connected to the audio unit.

Is the digital audio 2P connector connected properly?

YES—Go to step 6.

NO—Reconnect the digital audio lead 2P connector and recheck the wireless headphone function. ■

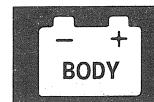
6. Remove the DVD player unit (see page 22-423).
7. Check that the DVD player unit digital audio lead 2P connector is properly connected to the DVD player unit.

Is the digital audio lead 2P connector connected properly?

YES—Go to step 8.

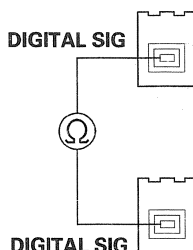
NO—Reconnect the digital audio lead 2P connector and recheck the wireless headphone function. ■

8. Disconnect the digital audio lead 2P connector from the audio unit and the DVD player unit.



9. Check for continuity between the audio unit digital audio lead 2P connector No. 1 terminal and the DVD player unit digital audio 2P connector No. 1 terminal.

AUDIO UNIT DIGITAL AUDIO 2P CONNECTOR
Terminal side of female terminals



DVD PLAYER UNIT DIGITAL AUDIO 2P CONNECTOR
Terminal side of female terminals

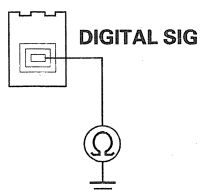
Is there continuity?

YES—Go to step 10.

NO—Replace the digital audio lead. ■

10. Check for continuity between the audio unit digital audio lead 2P connector No. 1 terminal and body ground.

AUDIO UNIT DIGITAL AUDIO 2P CONNECTOR



Terminal side of female terminals

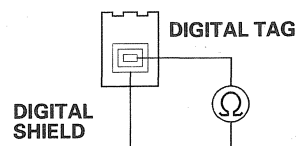
Is there continuity?

YES—Go to step 11.

NO—Replace the digital audio lead. ■

11. Check for continuity between the audio unit digital audio lead 2P connector No. 1 terminal No. 2 terminal.

AUDIO UNIT DIGITAL AUDIO 2P CONNECTOR



Terminal side of female terminals

Is there continuity?

YES—Replace the digital audio lead. ■

NO—Go to step 12.

12. Substitute a known-good DVD player unit, and recheck the wireless headphone function.

Do the wireless headphones work in DVD mode?

YES—Replace the original DVD player unit (see page 22-423). ■

NO—Replace the audio unit (see page 22-372). ■

Rear Entertainment System

Symptom Troubleshooting (cont'd)

Wireless headphone sound is weak, sound is distorted, there is static, volume does not change, or there is no sound in all modes

NOTE:

- Check the vehicle battery condition first.
- Check the wireless headphone battery condition first.

1. Check the lens on the rear edge of the rear screen for dirt or damage.

Does the rear screen appear to be in good condition?

YES—Go to step 2.

NO—Substitute a known-good rear controller and screen and recheck the symptom. ■

2. Substitute a known-good wireless headphone.
3. Turn the ignition switch ON (II).
4. Turn on the RES system and recheck the symptom.

Does the symptom go away?

YES—Replace the original wireless headphone. ■

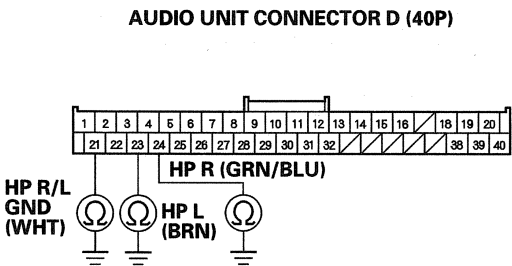
NO—Go to step 5.

5. Turn the ignition switch OFF.
6. Remove the audio unit (see page 22-372), and disconnect audio unit connector D (40P).

NOTE: Eject all the discs before removing the audio unit to prevent damaging the CD player's load mechanism.

7. Disconnect rear controller and screen 26P connector.

8. Check for continuity between body ground and audio unit connector D (40P) terminal No. 21, No 23 and No. 24 individually.



Wire side of female terminals

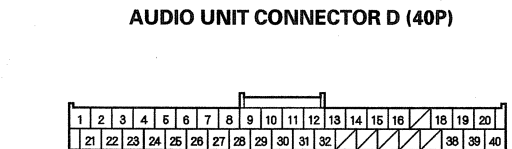
Is there continuity?

YES—Short to body ground in the wire(s) between audio unit connector D (40P) and rear controller and screen 26P connector. Replace the affected shielded harness. ■

NO—Go to step 9.

9. Check for continuity between audio unit connector D (40P) according to the table.

From terminal	To terminals
D21	D22, D23, D24
D22	D23, D24
D23	D24

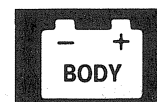


Wire side of female terminals

Is there continuity between any of the terminals?

YES—Short in the wire(s) between audio unit connector D (40P) and rear controller and screen 26P connector. Replace the affected shielded harness. ■

NO—Go to step 10.

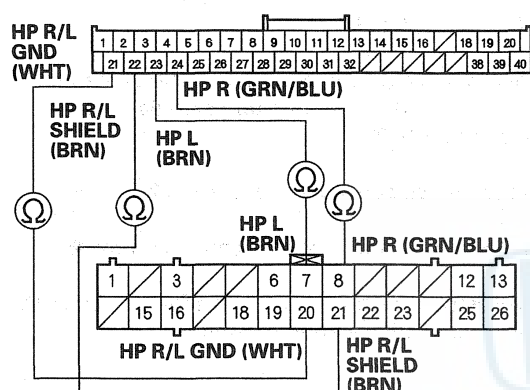


10. Check for continuity between audio unit connector D (40P) and rear controller and screen 26P connector according to the table.

Audio unit connector	Rear controller and screen connector
D21	20
D22	21
D23	7
D24	8

AUDIO UNIT CONNECTOR D (40P)

Wire side of female terminals



REAR CONTROLLER AND SCREEN 26P CONNECTOR

Wire side of female terminals

Is there continuity?

YES—Go to step 11.

NO—Open in the wire(s) between audio unit connector D (40P) and rear controller and screen 26P connector. Replace the affected shielded harness. ■

11. Substitute a known-good audio unit and recheck.

Does the symptom go away?

YES—Replace the original audio unit. ■

NO—Replace the rear controller and screen. ■

Rear Entertainment System

Symptom Troubleshooting (cont'd)

Wireless remote control does not work (all buttons)

NOTE:

- Check the battery condition first.
- Make sure that the rear control (RR CTRL) on the audio unit is turned off (refer to the Owner's Manual for more information).

1. Turn the ignition switch ON (II).
2. Check the wireless remote control operation.

Does the wireless remote control operate normally?

YES—Operation is normal at this time. ■

NO—Go to step 3.

3. Substitute a known-good wireless remote control, and recheck.

Does the wireless remote control operate normally?

YES—Replace the original wireless remote control. ■

NO—Go to step 4.

4. Check the audio unit operation.

Does the audio unit operate normally?

YES—Go to step 5.

NO—Go to the "Power switch will not turn ON (No information display and no sound)" troubleshooting (see page 22-337). ■

5. Check the rear controller display.

Does the display operate normally?

YES—Replace the rear indicator printed circuit board (see page 22-423). ■

NO—Go to the "No display appears on the rear controller indicator" troubleshooting (see page 22-409). ■

Wireless remote control does not work (source select buttons)

NOTE: Check the battery condition first.

1. Turn the ignition switch ON (II).
2. Check the wireless remote control operation.

Does the source select button operate?

YES—Operation is normal at this time. ■

NO—Go to step 3.

3. Check the diagnosis menu 1, CONNECT status of the rear entertainment system self-diagnostic (see page 22-398).

Is the device connect condition OK?

YES—Replace the wireless remote control. ■

NO—Repair the poor connection for the device that has a connection error indicated. ■



Wireless remote control does not work (rear power button)

NOTE: Check the vehicle battery condition first.

1. Turn the ignition switch ON (II).
2. Check the wireless remote control operation.

Does the audio unit indicate "REAR PWR"?

YES—Replace the wireless remote control. ■

NO—Go to step 3.

3. Press the "REAR PWR" button of the audio unit.

Is it normal?

YES—Operation is normal at this time. ■

NO—Replace the wireless remote control. ■

Screen backlight does not dim/remains dim

NOTE: Check the vehicle battery condition first.

1. Turn the ignition switch ON (II).
2. Turn the combination light switch ON and OFF.

Does the screen backlight dim with the combination light switch in the ON position?

YES—Operation is normal at this time. ■

NO—Go to step 3.

3. Check the backlight settings in the display set up (refer to the Owner's Manual for more information).

Are the display settings set properly?

YES—Go to step 4.

NO—Adjust the display settings and recheck the functions. ■

4. Turn the ignition switch OFF.
5. Check that No. 10 (15 A) fuse in the passenger's under-dash fuse/relay box.

Is the fuse OK?

YES—Go to step 6.

NO—Replace the fuse and recheck the symptom. ■

6. Check that the rear controller screen and audio unit are properly connected.

Are the connections OK?

YES—Go to step 7.

NO—Reconnect the connector, and recheck the function. ■

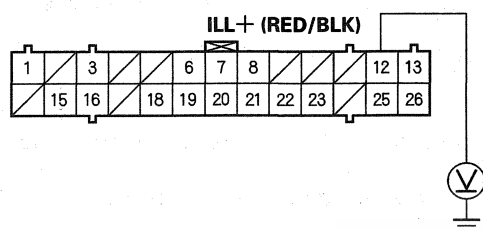
(cont'd)

Rear Entertainment System

Symptom Troubleshooting (cont'd)

7. Disconnect the rear controller and screen 26P connector.
8. Turn the ignition switch ON (II).
9. Measure the voltage between the rear controller and screen 26P connector No. 12 terminal and body ground. Operate the combination light switch on and off to see if the voltage changes.

REAR CONTROLLER AND SCREEN 26P CONNECTOR



Wire side of female terminals

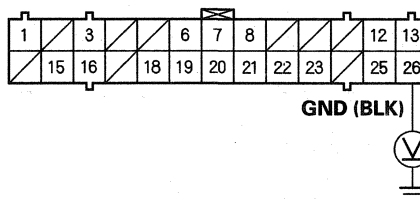
Is there battery voltage with the combination light switch ON?

YES—Go to step 10.

NO—Repair open in the wire(s) between the No. 10 (15 A) fuse in the passenger's under-dash fuse/relay box and the rear controller and screen. ■

10. While opening the combination light switch, measure the voltage between the rear controller and screen 26P connector terminal No. 26 and body ground.

REAR CONTROLLER AND SCREEN 26P CONNECTOR



Wire side of female terminals

Is there less than 0.1 V?

YES—Repair open in the wire between rear controller and screen 26P connector terminal No. 26 and body ground (G901). ■

NO—Replace the rear controller and screen (see page 22-423). ■



DVD player unit illumination does not come on/does not dim

NOTE:

- Check the vehicle battery condition first.
- If all of the dash lights does not come on, check the No. 10 (15 A) fuse in the passenger's under-dash fuse/relay box first.

1. Turn the ignition switch ON (II).
2. Turn the combination light switch ON and OFF.

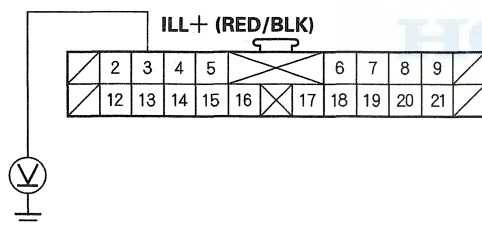
Does the DVD player unit illumination dim with the combination light switch in the ON position?

YES—Operation is normal at this time. ■

NO—Go to step 3.

3. Measure the voltage between the DVD player unit 22P connector No. 3 terminal and body ground. Operate the combination light switch to see if the voltage changes.

DVD PLAYER UNIT 22P CONNECTOR



Wire side of female terminals

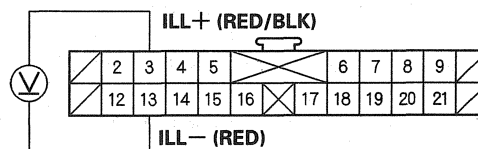
Is there battery voltage?

YES—Go to step 4.

NO—Repair open in the wire between the passenger's under-dash fuse/relay box and the DVD player unit. ■

4. Measure the voltage between DVD player unit 22P connector No. 3 terminal and No. 13 terminal. Operate the dash brightness controller dial to see if the voltage changes.

DVD PLAYER UNIT 22P CONNECTOR



Wire side of female terminals

Does the voltage change?

YES—Replace the DVD player unit (see page 22-423). ■

NO—Repair open or short in the wire between the DVD player unit and gauge control module. ■

Rear Entertainment System

Symptom Troubleshooting (cont'd)

DVD player unit DISC IN indicator or DISC DISTINCTION indicator does not come on/does not go off

NOTE: Check the vehicle battery condition first.

1. Turn the ignition switch ON (II).
2. Check the DVD player unit operation.

Does the DVD player unit operate normally?

YES—Operation is normal at this time. ■

NO—Go to step 3.

3. Substitute a known-good disc, and recheck.

Is it normal?

YES—Original disc is faulty. ■

NO—Substitute a known-good DVD player unit, and recheck. ■

Wireless remote control illumination does not come on

NOTE: Check the vehicle battery condition first.

1. Turn the ignition switch ON (II).
2. Check the wireless remote control button illumination.

Does the illumination for all the buttons come on (10 seconds)?

YES—Operation is normal at this time. ■

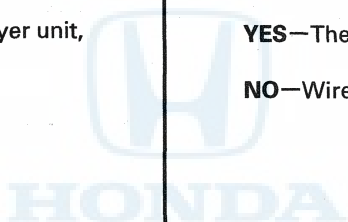
NO—Go to step 3.

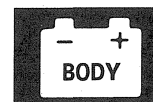
3. Replace the batteries in the wireless remote control, and recheck (see page 22-426).

Does the wireless control illumination come on?

YES—The original batteries were faulty. ■

NO—Wireless remote control is faulty. ■





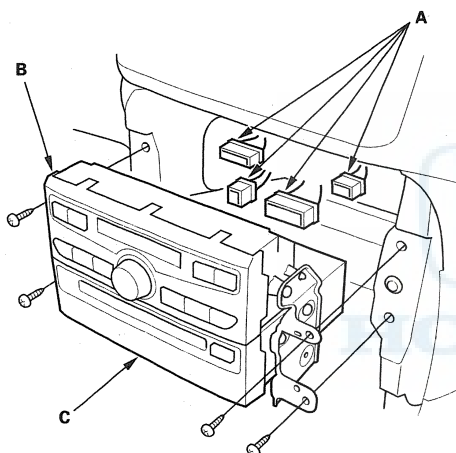
DVD Player Unit Removal/Installation

SRS components are located in this area. Review the SRS component locations (see page 23-17), and the precautions and procedures (see page 23-19) before doing repairs or service.

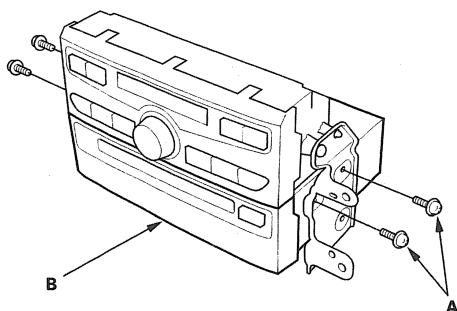
NOTE:

- Put on gloves to protect your hands.
- Take care not to scratch the dashboard and related parts.

1. Remove the center lower cover (see page 20-88).
2. Disconnect the connectors (A) from the climate control unit (B) and DVD player unit (C).



3. Remove the screws, then remove the climate control unit and DVD player unit.
4. Remove the screws (A) and the DVD player unit (B).



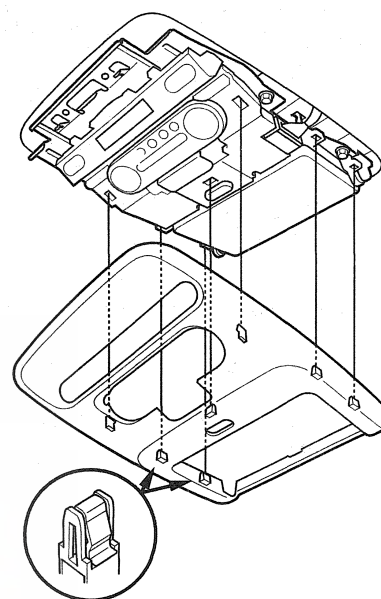
5. Install the DVD player unit in the reverse order of removal, and make sure the DVD player unit connectors are plugged in properly.

Rear Controller and Screen Removal/Installation

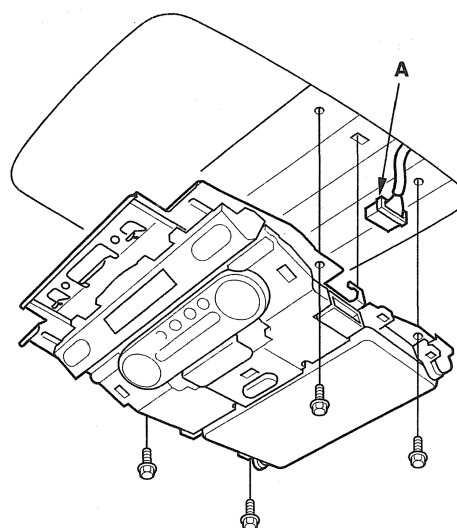
NOTE:

- Put on gloves to protect your hands.
- Take care not to scratch the headliner and display cover.

1. Remove the display cover.



2. Remove the mounting bolts, disconnect the connector (A) from the rear controller and screen.

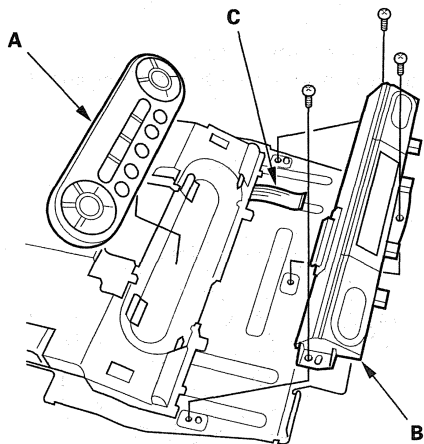


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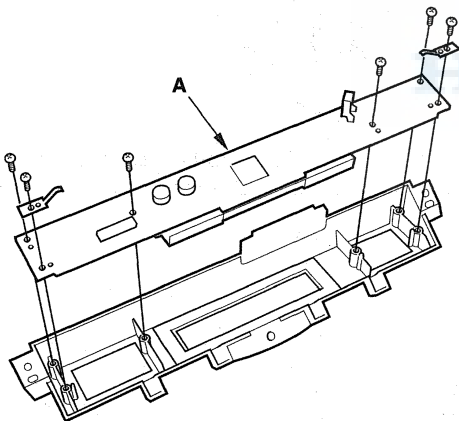
Rear Entertainment System

Rear Controller and Screen Removal/Installation (cont'd)

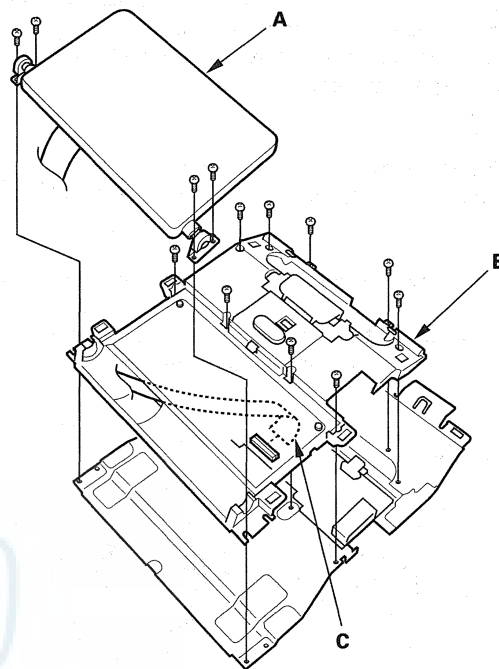
3. Remove the wireless remote control (A).



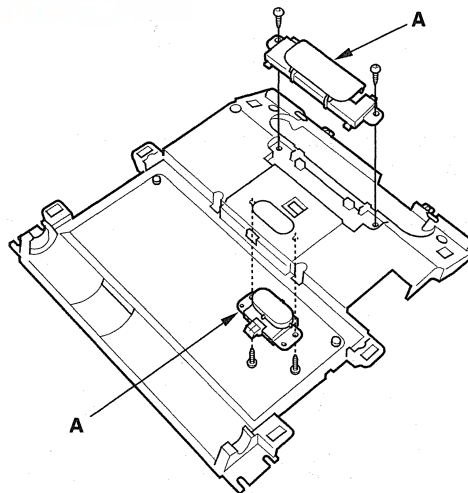
4. Remove the screws from the rear indicator (B).
5. Disconnect the cable (C) from the rear indicator.
6. Remove the screws, then remove the rear indicator printed circuit card (A).

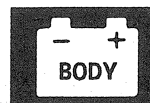


7. Remove the screws, then remove the screen (A) and base (B). Disconnect the cable (C).

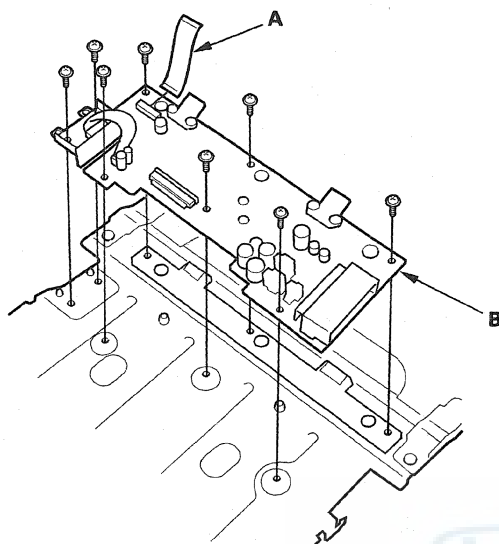


8. Remove the screws and lock switches (A).





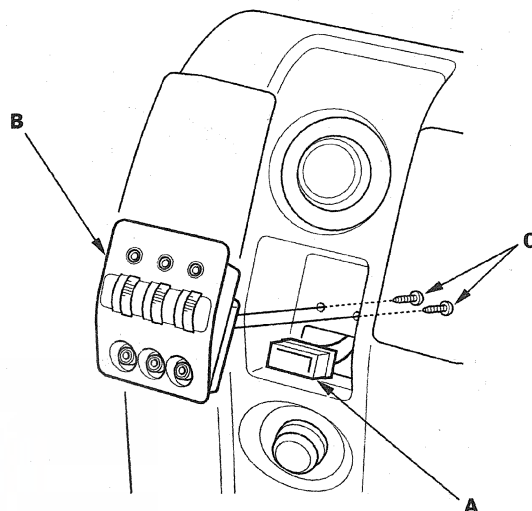
9. Disconnect the cable (A), then remove the screws and the rear control printed circuit card.



10. Install the parts in the reverse order of removal, and make sure the rear controller and screen connector is plugged in properly.

Auxiliary Jack Assembly Replacement

1. Remove the console rear trim (see page 20-88).
2. Disconnect the 16P connector (A) from the auxiliary jack assembly (B).

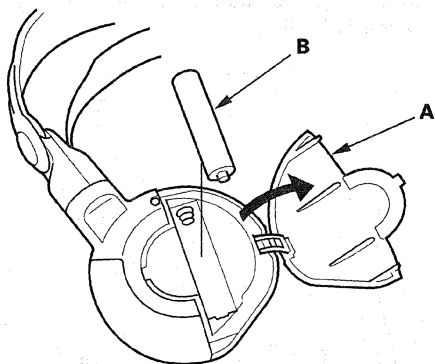


3. Remove the screws (C) from the auxiliary jack assembly.
4. Carefully pry the auxiliary jack assembly out of the console rear trim.
5. Install the auxiliary jack assembly in the reverse order of removal.

Rear Entertainment System

Wireless Headphone Battery Replacement

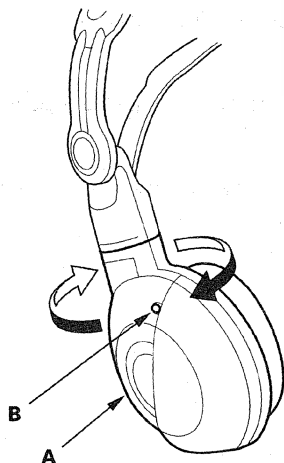
1. Remove the battery cover (A) from the wireless headphone and lift the covers.



2. Remove the battery (B) from the wireless headphone.

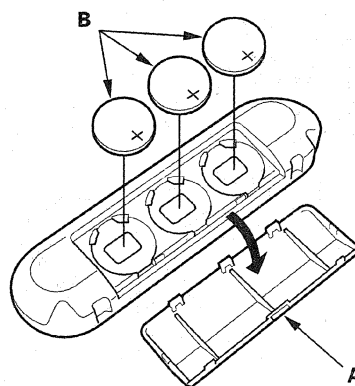
Replacement Battery Size: AAA

3. Turn the left speaker (A), and confirm that the indicator (B) comes on after the battery is replaced.



Wireless Remote Control Battery Replacement

1. Remove the cover (A) from the remote control.



2. Remove the batteries (B).

Replacement Battery: BR3032

3. Confirm that each operation works normally after replacing the batteries.

Navigation System

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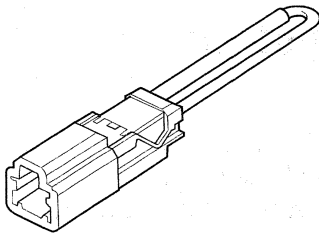
HONDA



Navigation System

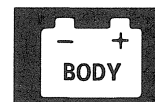
Special Tools

Ref. No.	Tool Number	Description	Qty
①	07PAZ-0010100	SCS Service Connector	1

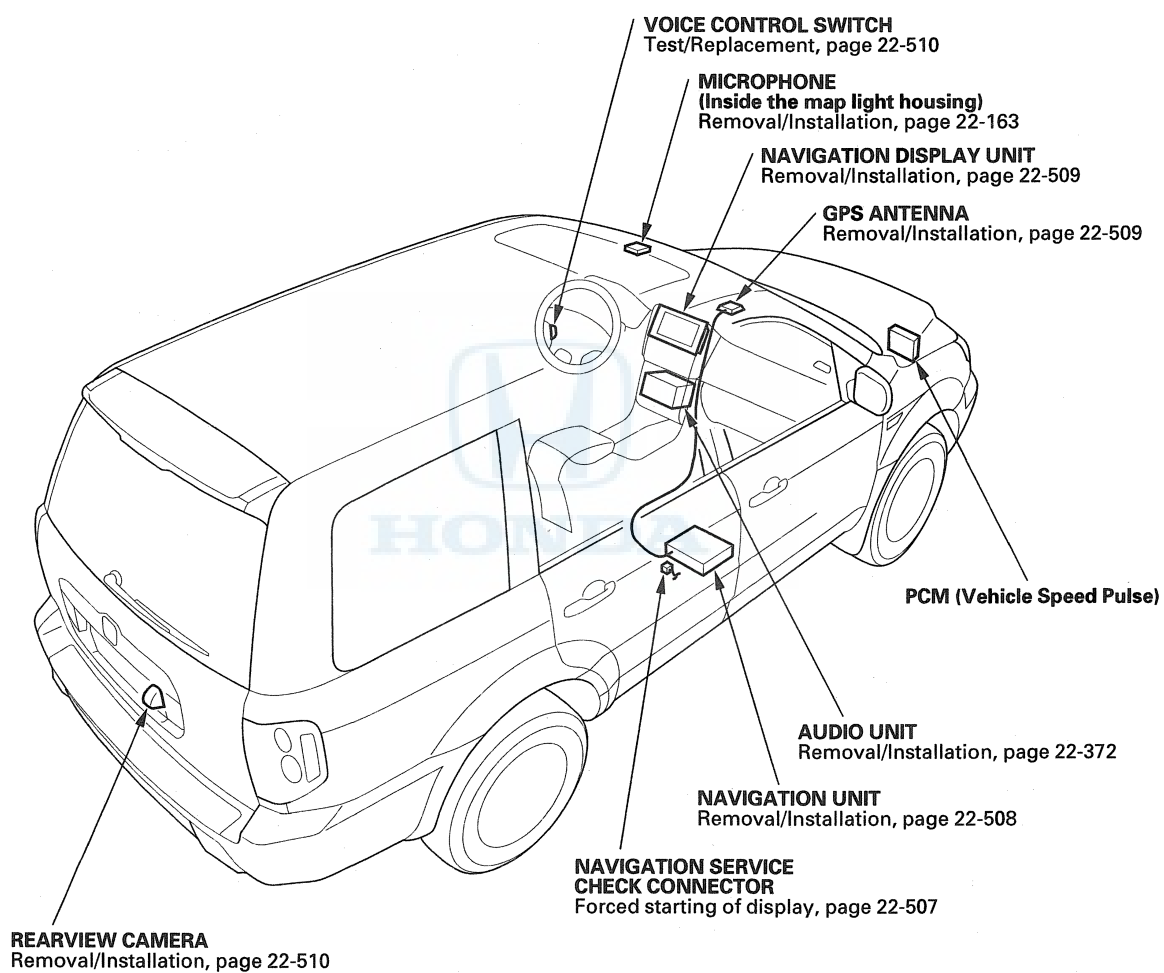


①





Component Location Index



Navigation System

General Troubleshooting Information

General Operation

Refer to the Honda Navigation System manual, for the navigation system operating procedures.

Anti-theft Feature

The navigation system has a coded theft protection circuit. Be sure to get the customer's 4-digit anti-theft security code before;

- Disconnecting the battery
- Disconnecting the navigation unit 8P connector
- Removing the INTR LIGHT (10 A) fuse from the passenger's under-dash fuse/relay box

After service, reconnect the power to the navigation unit, and turn the ignition switch ON (II). Enter the 4-digit anti-theft security code, then select "Done".

If you cannot find the 4-digit anti-theft code, you must look it up using the Interactive Network (iN). To do this select Service, Vehicle Information, Anti-Theft Code Inquiry, and then select the "Navigation" choice from the "Product" dropdown box. You can obtain the navigation unit serial number from the diagnostic screen "Navi ECU", found under the navigation diagnostic menu item "Unit Check" (see page 22-489). Alternately, the serial number can be found on the underside of the navigation unit located under the passenger seat.

When replacing the navigation unit, be sure to give the customer the new anti-theft security code.

Symptom Diagnosis

Certain circumstances and system limitations will result in occasional vehicle positioning errors. Some customers may think this indicates a problem with the navigation system when, in fact, the system is normal. Keep the following items in mind when interviewing customers about navigation system symptoms.

Self-Inertial Navigation Limitations

The limitations of the self-inertial portion of the navigation system (the yaw rate sensor and the vehicle speed signal) can cause some discrepancies between the vehicle's actual position, and the indicated vehicle position (GPS vehicle position). However, if GPS signals cannot be received, you must tune the vehicle's position manually.

The following circumstances may cause vehicle positioning errors:

- Moving the vehicle with the engine stopped, such as by ferry or tow truck, or if the vehicle is spun on a turn table
- Tire slippage, changes in tire rolling diameters, and some driving situations may cause discrepancies in travel distances. Examples of this include:
 - Continuous tire slippage on a slippery surface
 - Driving with snow chains mounted
 - Abnormal tire pressure
 - Incorrect tire size
 - Frequent lane changes across a wide highway
 - Continuous driving on a straight or gently curving highway
 - Very bumpy roads
- Tolerances in the system and map inaccuracies sometimes limit how precisely the vehicle position is indicated. Examples of this include:
 - Driving on roads not shown on the map (map matching is not possible).
 - Driving on a road that winds in one direction, such as a loop bridge, an interchange, or a spiral parking garage.
 - Driving on a road with a series of sharp hair-pin turns.
 - Driving near a gradual highway exit or transition.
 - Driving on one of two close parallel roads.
 - Making many 90 degree turns.
 - The direction to destination icon or the "Destination icon" shown on the map may be up to several hundred feet away from the actual location.
- The system does not know the number of lanes of a highway, therefore it may place the vehicle icon several feet behind an intersection.



Global Positioning System (GPS) Limitations

The GPS cannot detect the vehicle's position during the following instances:

- For the first 5 to 10 minutes after reconnecting the battery (This can take as long as 45 minutes).
- When the satellite signals are blocked by tall buildings, mountains, tunnels, large trees, or large trucks.
- When the GPS antenna is blocked by an object placed above it in the vehicle. The GPS antenna requires a clear unobstructed view of the sky.
- When the satellite signals are blocked by the operation of some electronic aftermarket accessories including, but not limited to non-OEM in-dash entertainment units (radio, CD players/changers radar detectors, and Lo Jack), cell phones placed near the navigation system.
- Metallic window tinting above the GPS antenna.

The accuracy of GPS is reduced during these instances:

- When only three satellite signals can be received (Four satellite signals are required for accurate positioning).
- When the satellite control centers are experiencing problems.
- When driving near high tension power lines.

LCD Display Unit Limitations

- In cold temperatures, the display may stay dark for the first 2 or 3 minutes until it warms up.
- When the display is too hot because of direct summer sunlight, it will remain dark until the temperature drops.
- When the humidity is high and the interior temperature is low, the display may appear cloudy. The display will clear up after some use.
- Fingerprints on the touch panel may sometimes be noticeable because of the panel's low-reflection coating. Clean the screen with a soft damp cloth. You may use a mild cleaner intended for eye glasses or computer screens. To avoid scratching the panel, do not rub too hard, or use abrasive cleaners, or shop towels.
- The touch panel uses a resistive membrane that is unaffected by sunlight. If a touch switch does not function immediately, shift your finger slightly, and touch it again.

Muting Logic

Whenever the navigation system is giving guidance, the front speakers are muted. When the voice control system is being used, all of the speakers are muted.

Symptom Duplication

- If you can duplicate the symptom, compare it to a known-good vehicle. If you can duplicate the symptom in the known-good vehicle, then it is a characteristic of the system.

A known-good vehicle is another vehicle of the same year and model that has the same software version installed.

- When the symptom can be duplicated, follow the self-diagnostic procedures, and the appropriate troubleshooting procedures.
- When the symptom does not reappear, or only reappears intermittently, ask the customer about the conditions when the symptom occurred.
- Always ask the customer to demonstrate the problem.
- Try to establish possible user error, or a misunderstanding of the system.
 - Try to establish if outside interference may have been the cause.
 - Try to duplicate the symptom under the same conditions that the customer experienced.
 - Vibration, temperature extremes, and moisture (dew, humidity) are factors that are difficult to duplicate.
 - Inspect the vehicle for after-market electronic devices (vehicle locators, radar detectors amps, etc.) that may be hidden.

NOTICE

When interchanging navigation DVD/parts during diagnosis.

When troubleshooting navigation system problems, ensure that the known-good vehicle is the same software version year and model as the vehicle being serviced. Mixing incompatible navigation DVDs or other system components can delay the troubleshooting process by causing side effects unrelated to the original problem.

(cont'd)

Navigation System

General Troubleshooting Information (cont'd)

Service Precautions

- If the navigation unit needs to be replaced, inform the customer that personal information in the navigation system will be lost. If possible, have the customer record their personal information before the unit is replaced. On '07-'08 models you can back-up the navigation data and transfer it to a new navigation unit. See save users memory (see page 22-503).
- Check for service bulletins or service news articles that may relate to the customer's concern.
- Before disconnecting the battery, make sure you have the anti-theft codes for the audio and the navigation system, and write down the audio presets.
- The navigation unit is located under the passenger's seat. The unit can be damaged if fluids leak down through the passenger's seat, such as a spilled beverage.
- When the battery is disconnected, the internal GPS clock is reset to "0:00". The clock will reset to the correct time after the system finishes GPS initialization.
- After reconnecting the battery, you have to wait to get the initial signal from the satellite. It will take from 10 to 45 minutes.
- Verify map matching.
- Before returning the vehicle to the customer, enter the audio and navigation system anti-theft security codes, then enter the audio presets.
- Adjust the setup clock settings (time zone and daylight savings) in the navigation system.

System Initialization

If for any reason, you lose power to the navigation system (like the battery was disconnected), the navigation system will require initialization. Once completed, your system is ready to use.

This initialization requires the following:

- Entering the 4-digit anti-theft security code to "unlock" the system
- GPS initialization (may not be needed depending of the length of time the system was without power)
- Map matching to align the GPS to a location on the map

Entering Security Code

Any time power is disconnected from the navigation unit, the 4-digit anti-theft code must be entered on the navigation system display. This 4-digit code can be found on a small code card that was given to the client. Enter the 4-digit code, then select "Done".

If the navigation system anti-theft code cannot be found, use the interactive Network (iN) to look it up. You will need the serial number for the navigation unit to do this. You can view the serial number by entering the diagnostic mode. Select "Unit Check" from the main menu, then the "Navi ECU" diagnostic screen. This allows you to get the serial number without removing the navigation unit.

The iN may display more than one code for a given serial number. This is because serial numbers are not unique. You may have to try more than one 4-digit code. If no code is shown, or if the code(s) given do not work in the navigation unit, contact the Automobile Warranty department. If the code "0000" works, then replace the navigation unit.

When replacing the navigation unit or audio unit, be sure to give the customer the new anti-theft security code.

GPS initialization

Depending on the length of time the battery was disconnected, your system may require GPS initialization. If it does, the following screen appears:

*****Wait*****
The system is acquiring its GPS signal.
This could take up to 10 minutes.
• Engine must be running
• Vehicle must be parked outside,
away from buildings
• Do not move the vehicle at this time

If this procedure is not necessary, the system proceeds directly to the Disclaimer screen. During initialization, the system searches for all available GPS satellites, and obtains their orbital information. During this procedure, the vehicle should be out in the open with a clear view of the sky.



If the navigation system finds the satellites properly, this box clears, and changes to the Disclaimer screen. If within 10 minutes the system fails to locate a sufficient number of satellites to locate your position, the following screen appears.

Navigation system is unable acquire a proper GPS signal.

- Move vehicle to another location
- Turn the ignition switch off
- Disconnect the battery for 30 minutes to clear the GPS receiver's memory
- Reconnect the battery and follow the screen prompts

After 30 minutes with this screen displayed, turn off the engine, then restart the vehicle. If you now see the Disclaimer screen, the GPS initialization is complete.

NOTE:

- The average acquiring time is less than 10 minutes, but it can take as long as 45 minutes.
- If the system is still unable to acquire a signal, follow the instructions on the screen. If this screen appears again, go to troubleshooting for the GPS icon is white or not shown (see page 22-474).

Map Matching

This part of the initialization matches the GPS coordinates with a road on the map screen. To perform this part of the procedure, ensure that the navigation system is displaying a map. Check the GPS icon in the upper left corner of the screen, it should be green when the vehicle is parked outside, with the correct color labeled DVD installed in the navigation unit. Drive the vehicle on a mapped road shown on the map screen. Do not enter a destination at this time. When the name of the current road you are driving on, appears at the bottom of the screen, the entire procedure is complete. Your system is now ready to use.

Obtaining A Navigation DVD

If the Navigation DVD is lost or damaged, or you need a yearly updated DVD, you have two ways to purchase one. You can either call (888) 549-3798, or order on-line at www.honda.com.

Both methods require a credit card. The DVD for this model has a white label, and cannot be ordered through the parts system. The following DVDs will not work in this navigation system:

- Earlier model navigation DVDs (black label)
- Map software programs manufactured by other companies
- DVD movies, or DVDs containing audio recordings

Update DVDs are available for purchase usually in the fall of each year. They may contain the following:

- Enhanced maps and points of interest (POI) coverage
- Fixes for minor software bugs
- Additional features

NOTE:

- Map matching must be done any time the DVD is removed or replaced.
- Always order navigation DVDs on an as-needed basis. During a typical model year, each color DVD may undergo a half a dozen software only version upgrades to fix minor issues on some or all models the DVD supports. This is normal. Usually only the letter at the end of the version number changes, while the database (maps and POIs) remain unchanged.
- Never promise your customer future free updates. There are no free programs for updating the navigation DVD. Update DVDs are generally available for purchase each fall. The on-line DVD order site provides information when an update for a particular color DVD is available.
- Damaged discs are not covered by warranty unless the disc is damaged by the navigation unit.

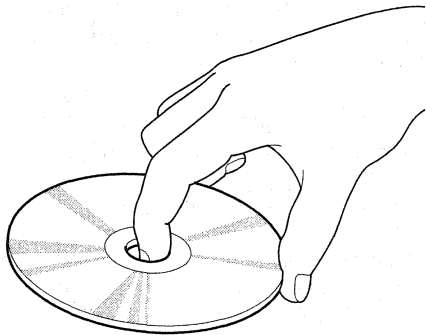
(cont'd)

Navigation System

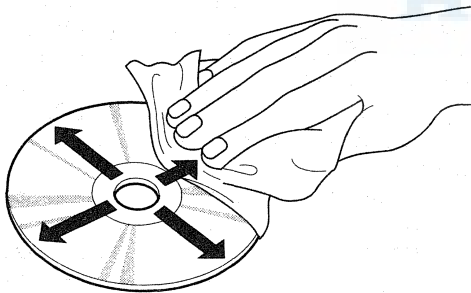
General Troubleshooting Information (cont'd)

DVD Handling and Cleaning

To avoid damaging or leaving fingerprints on the DVD, always handle it by the edges and place it in a jewel case whenever it is outside the navigation unit. Deep scratches or fingerprints on the back of the DVD can cause intermittent rebooting or other system errors.



Smudges and fingerprints can be carefully removed using a mild cleaner and tissues designed to clean eyeglasses. To clean a DVD, use a clean soft cloth. Very gently wipe across the DVD from the center to the outside edge, never in a circular motion.



Do not place stabilizer rings or labels on the DVD.

Earliest DVD Version Application for Each Model

Each navigation system DVD contains a map/POI (point of interest) database and the navigation system software for each model that it supports. Inserting an older DVD can cause problems since it lacks the software to provide the specific features needed for that model. Unfortunately, the navigation software does not detect or warn you that the version is outdated, and it may even appear to operate.

NOTE: Replacing a DVD just because the version number is higher is not always justified. A higher software version does not necessarily mean it contains newer software for your model. The DVD contains software for all models that use the same color DVD, and a revised number may or may not have software fixes or upgrades for the model in question.

Typical warning symptoms that an outdated DVD is being used include:

- The Honda model navigation screen may display a Acura logo while booting up.
- A newly introduced model future or accessory may not display properly, and Extension will display instead.

NOTE: Extension may be displayed when using MusicLink, but should never be displayed when XM is selected.

- The current street (the street being driven on) may not appear properly at the bottom of the map screen display when the vehicle is driven on a main road.

NOTE: If necessary, compare the operation to the navigation system of the same model and year vehicle that has a current DVD.



How to Identify Navigation DVD Versions, and How to Inspect A DVD for Damage

To determine the navigation version on a particular model, start the engine, then locate the navigation unit. Open the DVD door, and push the eject button to eject the DVD. Hold the DVD by the edges, and check for these items:

- The label color.
- Read the DVD version on the label, and note it on the repair order. The version number is near the bottom of the label text (for example, ver: 4.23A). You will need this version number:
 - To verify that the DVD version is appropriate for the vehicle.
 - Any time you call Tech Line regarding a navigation system issue.
 - To answer customer inquires concerning update or coverage issue.

NOTE: Customers may obtain DVDs from sources outside the normal ordering process. If you determine this is the case, recommend that your customer purchase the appropriate DVD from the Honda Disc Fulfillment Center (see ORDERING A DVD).

- Check the underside of the DVD for signs of mishandling. Deep scratches, swirl marks, or fingerprints can cause random lock-ups, reboots, and DVD read or format errors.

NOTE: A damaged DVD is not covered under warranty unless the disc is damaged by the navigation unit. Damage by the navigation unit typically appears as circular scratches caused by something rubbing against the DVD as it spins. The damage may appear as arcs or complete circles on the DVD reading surface.

- Verify that the underside of the DVD is silver, and not a “copy” with a blue color. Copies will not work properly and can cause other symptoms that mimic hardware problems.

- Incorrectly colored DVDs being put into navigation vehicles. This causes the system to either display error messages, or it causes system malfunctions that mimic a hardware problem. This result in the customer driving away with a malfunctioning navigation system.
- The DVD version provided to the customer is out-of date or incompatible with a particular model. This inconveniences your customer by delaying the repair, or by causing additional (and unnecessary) returns to your dealership.
- The customer experiences bugs or other issues that have already been resolved in later versions currently available at the fulfillment desk.

If the DVD is defective, or has any of the issues mentioned above, return the vehicle to your customer and recommend that they order the proper DVD from the Honda Disc Fulfillment Center (see ORDERING A DVD).

NOTE: If it is determined that the navigation unit is defective (through the appropriate service manual troubleshooting procedures) and the DVD will not eject, order a replacement navigation unit, and also order a DVD from the Honda Disc Fulfillment Center.

(cont'd)

Navigation System

General Troubleshooting Information (cont'd)

How to Answer Customer Questions About Navigation Coverage

Some customers may ask questions regarding a city, address or POI (point of interest) covered by the navigation system. It is better to verify a coverage question on an actual vehicle than to disappoint your customer by promising coverage that may be incomplete or missing in their area. The following suggestions can be used to answer coverage inquiries from your customer.

Is my address covered by the navigation system?

Using a current production vehicle (of the same model), try entering the customer's address (street first) to see if their area is covered. Always enter the street first, because sometimes their city may be included in a neighboring township, or under some larger metropolitan city name. If the address is shown in a later year vehicle, but not your customer's vehicle, you might want to recommend that your customer purchase an update.

Is my city covered by the navigation system?

For general questions about whether a city is covered, view the map coverage link on the DVD order site. On the site, you enter a year and model, and then click on the Coverage link. You then select a state or province, and the cities are listed. Of course, this does not guarantee that the customer's road or address is in the system. Verifying on an actual production vehicle is always the best guarantee that your information is accurate.

The gas station on my corner is now a restaurant. Why is it still incorrect in the navigation system?

For POI-related customer questions, explain that businesses are constantly moving, and there can be a considerable lag in updating the millions of POIs in the system. The database is updated annually, and the best way to verify whether the POI is accurate is verify the inquiry on a current production vehicle.

Answers to these and other questions regarding coverage can be found in these locations:

- In the Frequently Asked Questions section of the navigation system manual.
- At the on-line DVD order site, by clicking on the **FAQs** link (see ORDERING A DVD).

Precaution on Customer "Sneak Previews"

Your customer might request a look (or "sneak preview") at features in the latest navigation software. You should never preview a navigation DVD in a customer's vehicle. Inserting a new DVD installs the latest software from the DVD into the memory of the customer's navigation system. When the original DVD is reinstalled, the newer software remains in memory and is often incompatible with the customer's original DVD Map and POI database.

If your customer wishes to see the latest navigation coverage or software features, demonstrate it on an in-stock vehicle that already has the latest DVD version.

If, by chance, a newer version is located accidentally, either by the dealer or the customer, the only remedy is to enter the navigation diagnostic mode's Version screen and do a forced download. Refer to the *IN* for applicable patches that may need reinstalling.



Symptom Troubleshooting Index

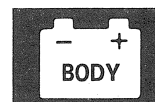
Symptom	Diagnostic procedure	Also check for
No picture is displayed	Symptom Troubleshooting (see page 22-464)	<ul style="list-style-type: none"> Navigation unit DVD damaged or wrong color Navigation display unit Non-OEM device tapped into the system like gaming system or TV tuner Harness/fuses/switches
Picture is missing a color or tone or is an odd color	Symptom Troubleshooting (see page 22-465)	<ul style="list-style-type: none"> Navigation unit DVD damaged or wrong color Non-OEM device tapped into the system like gaming system or TV tuner Harness/fuses/switches Navigation screen settings
Picture has lines or rolls	Symptom Troubleshooting (see page 22-467)	<ul style="list-style-type: none"> Navigation unit DVD damaged or wrong color Navigation display unit Non-OEM device tapped into the system like gaming system or TV tuner Harness/fuses/switches
Navigation display buttons do not work or respond properly	Symptom Troubleshooting (see page 22-468)	<ul style="list-style-type: none"> Navigation display unit DVD damaged or wrong color Short in the GA-NET Bus Open in the GA-NET Bus A defect in the XM receiver, audio unit, or navigation display unit causing an open or short in the GA-NET Bus Harness/fuses/switches
GPS icon is white or not shown	Symptom Troubleshooting (see page 22-474)	<ul style="list-style-type: none"> Navigation unit GPS antenna/cable Harness/fuses/switches
Voice guidance cannot be heard, is broken up, or there is static	Symptom Troubleshooting (see page 22-474)	<ul style="list-style-type: none"> Navigation unit DVD damaged or wrong color Navigation settings Audio unit/amplifier Harness/fuses/switches
Vehicle position icon constantly leaves road, moves erratically, or is very far from actual position	Symptom Troubleshooting (see page 22-476)	<ul style="list-style-type: none"> Navigation unit DVD damaged or wrong color GPS antenna/cable PCM (speed and fuel pulses) Harness/fuses/switches
DVD screen error messages	Symptom Troubleshooting (see page 22-477)	<ul style="list-style-type: none"> Navigation unit Navigation display unit DVD damaged or wrong color

(cont'd)

Navigation System

Symptom Troubleshooting Index (cont'd)

Symptom	Diagnostic procedure	Also check for
Navigation system stays on the GPS initialization screen	System Initialization (see page 22-432) GPS Initialization (see page 22-432)	<ul style="list-style-type: none"> Navigation unit DVD damaged or wrong color GPS antenna/cable is disconnected or damaged Harness/fuses/switches
Voice control does not work/respond	Symptom Troubleshooting (see page 22-463)	<ul style="list-style-type: none"> Navigation unit Volume or Voice feedback settings (see Owner's manual for details) DVD damaged or wrong color Microphone/steering buttons Harness/fuses/switches
Time is not correct	Reset Time Adjustment in set-up	<ul style="list-style-type: none"> See Owner's manual for adjusting automatic time zone DVD damaged or wrong color
Navigation system will not Map Match	Refer to the troubleshooting for Vehicle position icon constantly leaves road, moves erratically, is very far from actual position (see page 22-476)	GPS antenna/cable is disconnected or damaged
The navigation anti-theft code card is lost or missing	See anti-theft feature (see page 22-430)	GPS antenna/cable is disconnected or damaged
The vehicle icon lags behind when the vehicle turns	See self-inertial navigation limitations (see page 22-430)	<ul style="list-style-type: none"> Aftermarket accessories connected to the system GPS antenna/cable
Navigation screen is darker than normal or takes time to start up when it is cold	See LCD display unit limitations (see page 22-431)	Compare to known-good vehicle under the same conditions
The navigation clock is off by 1 to 3 hours after replacing the navigation unit	See service precautions (see page 22-432)	<ul style="list-style-type: none"> Do the map matching (see page 22-433) Compare to known-good vehicle under the same conditions DVD damaged or wrong color GPS antenna/cable Check and adjust the clock settings
OK cannot be selected at the disclaimer screen and the screen turns black	Refer to troubleshooting for Navigation display buttons do not work or respond properly (see page 22-468)	<ul style="list-style-type: none"> Compare to known-good vehicle under the same conditions DVD damaged or wrong color
A new navigation DVD is needed	See obtaining a navigation DVD (see page 22-433)	



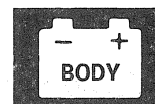
Symptom	Diagnostic procedure	Also check for
System always comes up in in-line diagnostic mode	See factory Diagnostic screen "In-Line Diag" (see page 22-488)	<ul style="list-style-type: none"> • Software remedy, do not replace hardware • Factory diag mode • SCS connected diag connector
Navigation cannot control HVAC by voice command	Symptom Troubleshooting (see page 22-479)	<ul style="list-style-type: none"> • Navigation display unit • DVD damaged or wrong color • Harness/fuses/switches • Faulty HVAC system
Display day/night mode does not work	Symptom Troubleshooting (see page 22-481)	<ul style="list-style-type: none"> • Navigation display unit or setting • Gauge control module (CAN) • Harness/fuses/switches
System locks up or freezes constantly	Symptom Troubleshooting (see page 22-481)	<ul style="list-style-type: none"> • Navigation unit • Harness/fuses/switches • DVD damaged or wrong color
Vehicle icon wanders across the map when driving (does not follow a displayed road) or map or vehicle ICON spins	Refer to the troubleshooting for vehicle position icon constantly leaves road, moves erratically, is very far from actual position troubleshooting (see page 22-476)	Navigation unit (Yaw rate sensor)
Vehicle icon moves by itself when parked	Symptom Troubleshooting (see page 22-482)	Navigation unit
Navigation display stays on with ignition switch OFF	Symptom Troubleshooting (see page 22-482)	<ul style="list-style-type: none"> • Harness/fuses/switches • Non-OEM assembly
Navigation cannot control audio system	Symptom Troubleshooting (see page 22-483)	<ul style="list-style-type: none"> • Navigation display unit • DVD damaged or wrong color • Audio unit
Navigation cannot control XM radio	Symptom Troubleshooting (see page 22-477)	<ul style="list-style-type: none"> • Navigation display unit • DVD damaged or wrong color • Harness
Navigation frequently asks for anti-theft code and needs GPS initialization	Symptom Troubleshooting (see page 22-478)	<ul style="list-style-type: none"> • Navigation unit • Low battery • Harness/fuses/switches
Rearview camera image does not come on or work properly	Symptom Troubleshooting (see page 22-484)	<ul style="list-style-type: none"> • Navigation unit • Rearview camera • No reverse (back-up) signal • Harness
The navigation display does not respond and XM cannot be selected on the audio unit	Refer to the troubleshooting for Navigation display buttons do not work or respond properly (see page 22-468)	<ul style="list-style-type: none"> • Short in the GA-NET Bus • Open in the GA-NET Bus • A defect in the XM receiver, audio unit, navigation unit or navigation display unit causing an open or short in the GA-NET Bus

(cont'd)

Navigation System

Symptom Troubleshooting Index (cont'd)

Symptom	Diagnostic procedure	Also check for
Address cannot be found or system gives poor routing	<ul style="list-style-type: none"> • See "Answering customer questions about navigation coverage" in general troubleshooting • Verify proper operation and system limitations using the navigation system manual 	<ul style="list-style-type: none"> • The wrong colored DVD or version is installed • Database limitations (address not in database)
Some set-up and information functions of the navigation system are grayed-out and do not work	Customer did not select "OK" from Disclaimer screen	
Previous Destinations button is dim and not selectable in the Enter destination by screen (grayed-out)	The vehicle may be new, or the customer deleted them. Enter a destination, and allow the system to route to it. After the trip, the Previous Destinations button will be selectable	See Owner's Manual for more details
Today's Destinations button is dim and not selectable in the Enter destination by screen (grayed-out)	The customer has not entered a group of locations for Today's Destinations. This is normal. The button is only selectable if the customer is using this function	
The map will not display the Southern portion of the U.S. or the Northern parts of Canada	North American coverage is different for U.S./Canada markets. See the version diagnostic screen (see page 22-502) for details on coverage differences	The wrong colored DVD or version is installed
The DVD is scratched or dirty	See "DVD Handling and Cleaning" (see page 22-434)	Navigation unit
The wrong DVD was installed and now the system does not function properly	See "Precaution customer Sneak Previews" (see page 22-436)	<ul style="list-style-type: none"> • Install the correct version DVD • Check on-line for service bulletins or other service information for the navigation system
A POI cannot be found	See "How to answer customer questions about navigation coverage" (see page 22-436)	The DVD is scratched or dirty
A specific city cannot be found	See "How to answer customer questions about navigation coverage" (see page 22-436)	The DVD is scratched or dirty
An In Line Diagnosis screen appears every time vehicle is started	See factory diagnostic screen "In Line Diag" (see page 22-488)	
Navigation unit will not eject or accept the navigation DVD	Symptom troubleshooting (see page 22-472)	



System Description

Overview

The navigation system is a highly-sophisticated, hybrid locating system that uses satellites and a map database to show where the vehicle is and to help guide you to a desired destination.

The navigation system receives signals from the global positioning system (GPS), a network of 24 satellites in orbit around the earth. By receiving signals from several of these satellites, the navigation system can determine the latitude, longitude elevation of the vehicle. In addition, signals from the system's yaw rate sensor and the PCM (vehicle speed pulse) enable the system to keep track of the vehicle's direction and speed of travel.

This hybrid system has advantages over a system that is either entirely self-contained or one that relies totally on the GPS. For example, the self-contained portion of the system can keep track of vehicle position even when satellite signals cannot be received. When the navigation system is on, the GPS can keep track of the vehicle position even when the vehicle is transported by ferry.

The navigation system applies all location, direction, and speed information to maps and calculates a route to the destination entered. As you drive to that destination, the system provides both visual and audio guidance.

This navigation system also has voice recognition that allows voice control of most of the navigation functions. The TALK and BACK buttons on the steering wheel activate the voice control. The voice control also allows control of the audio and climate control.

The navigation system provides a trip computer function. The fuel economy display is calculated by data provided by the PCM. The PCM provides fuel use and level data via the F-CAN bus, and a dedicated speed signal.

The illumination signal is used by the navigation unit to automatically switch the display between Night and Day brightness modes when Display is set to Auto. When the instrument panel brightness control is set to full brightness, the navigation system stays in the Day mode, even with the headlights on. Display unit button illumination is supplied through the audio unit.

The GA-Net II bus passes information back and forth between the navigation display, the navigation unit, the climate control unit, and the audio system components. The information passed on this bus are touch button commands, audio muting signal, and audio (radio and XM), when commanded by voice control.

The rear view camera image is shown on the display when in reverse. Camera brightness is adjustable by touching the "Zoom in/Zoom out" button while viewing the camera image.

The clock on the audio unit display is set, and maintained by the navigation unit. The time is automatically adjusted for daylight savings, and time zone changes while driving. The time can be adjusted in the setup menu.

Additional information is available about the navigation components following the System Diagram. A glossary of terms that are used throughout this section follows the detailed information.

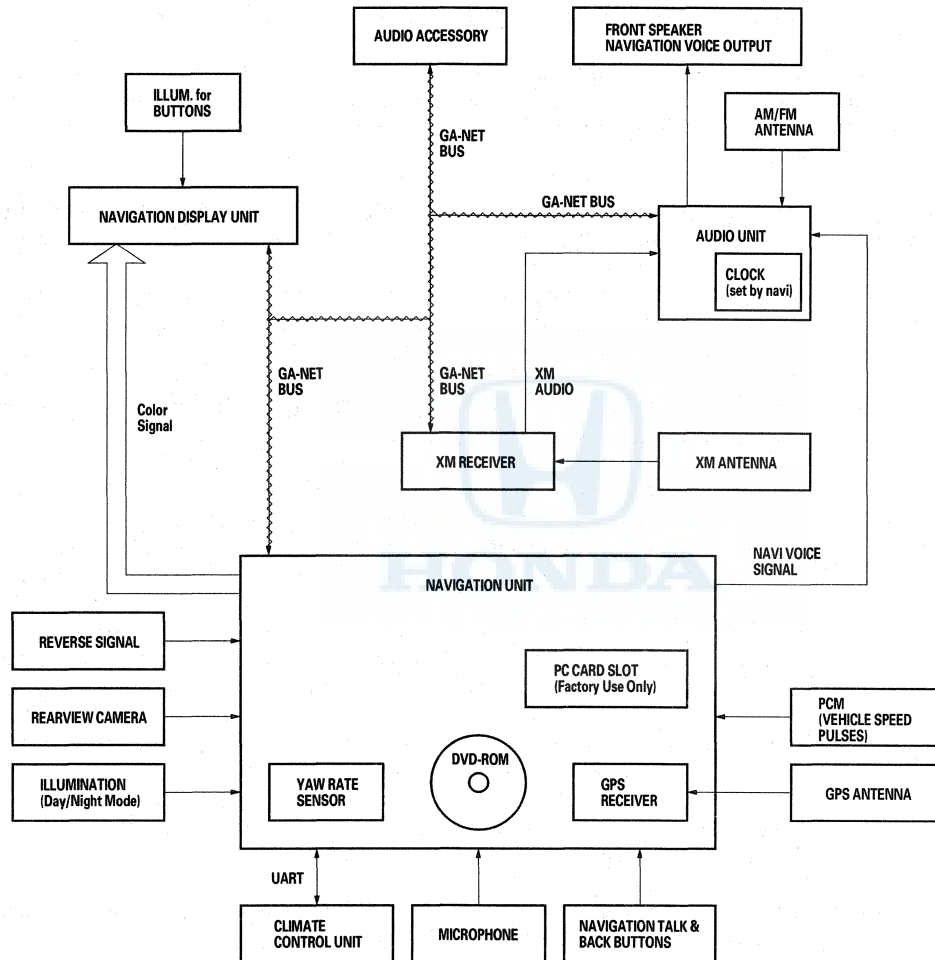
The UART serial bus is used to communicate with the climate control unit. Voice commands to adjust climate feature such as, "Climate control full Automatic", are sent over this bus. In return, climate control status (such as the current fan speed) is sent to the navigation unit.

(cont'd)

Navigation System

System Description (cont'd)

System Diagram

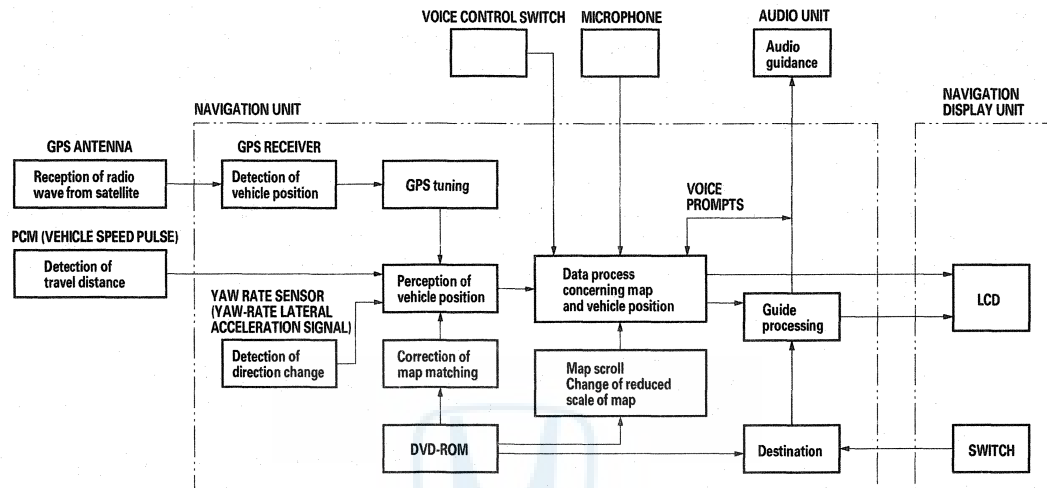




Navigation Function

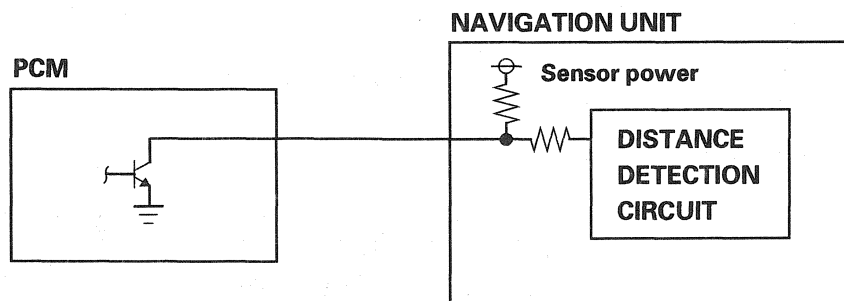
The navigation system is composed of the navigation unit, the PCM (vehicle speed signal), the GPS antenna, microphone, voice control switch, audio unit, climate control unit, and the navigation display.

Function Diagram



Vehicle Speed Pulse

The vehicle speed pulse is produced by the PCM. The PCM receives a signal from the countershaft speed sensor, then it processes the signal and transmits it to the navigation unit speedometer (F-CAN) and other systems.



Charge Signal and Navigation Unit Cooling Fan Operation

The PCM sends a charge signal to the navigation unit via F-CAN. A thermister inside the navigation unit monitors the units internal temperature. This information combined with the charge signal determines the control units internal cooling fan operation.

(cont'd)

Navigation System

System Description (cont'd)

Yaw Rate Sensor

The yaw rate sensor (located in the navigation unit) detects the direction change (angular speed) of the vehicle. The sensor is an oscillation gyro built into the navigation unit.

Sensor Element Structure

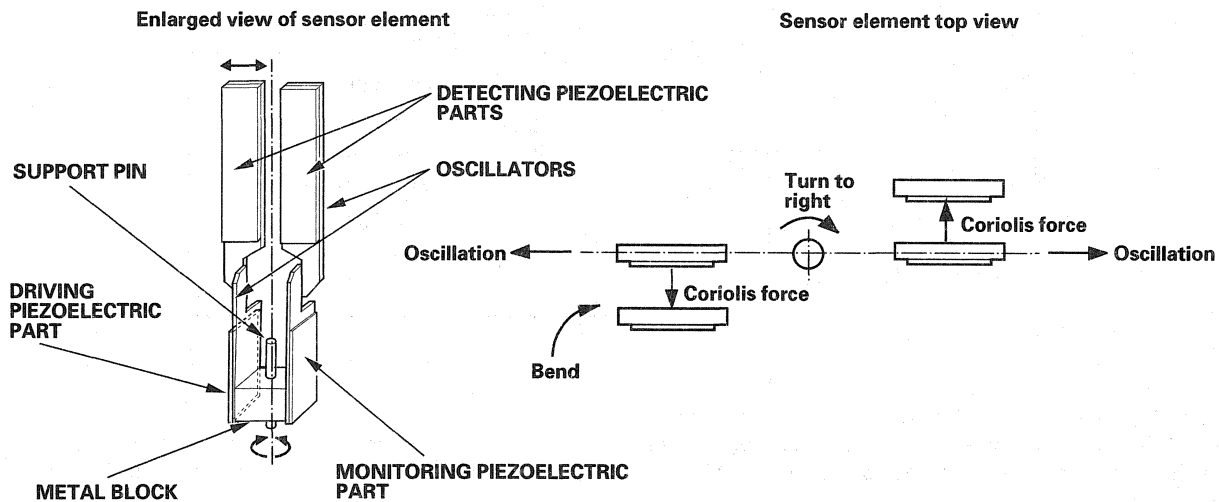
The sensor element is shaped like a tuning fork, and it consists of the piezoelectric parts, the metal block, and the support pin. There are four piezoelectric parts: one to drive the oscillators, one to monitor and maintain the oscillation at a regular frequency, and two to detect angular velocity. The two oscillators, which have a 90-degree twist in the center, are connected at the bottom by the metal block, and supported by the support pin. A detection piezoelectric part is attached to the top of each oscillator. The driving piezoelectric part is attached to the bottom of one oscillator, and the monitoring piezoelectric part is attached to the bottom of the other oscillator.

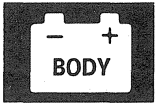
Oscillation Gyro Principles

The piezoelectric parts have "electric/mechanical transfer characteristics." They bend vertically when voltage is applied to both sides of the parts, and voltage is generated between both sides of the piezoelectric parts when they are bent by an external force. The oscillation gyro functions by utilizing this characteristic of the piezoelectric parts and "Coriolis force." (Coriolis force deflects moving objects as a result of the earth's rotation.) In the oscillation gyro, this force moves the sensor element when angular velocity is applied.

Operation

1. The driving piezoelectric part oscillates the oscillator by repeatedly bending and returning when an AC voltage of 6 kHz is applied to the part. The monitoring-side oscillator resonates because it is connected to the driving-side oscillator by the metal block.
2. The monitoring piezoelectric part bends in proportion to the oscillation, and outputs voltage (the monitor signal). The navigation unit control circuit controls the drive signal to stabilize the monitor signal.
3. When the vehicle is stopped, the detecting piezoelectric parts oscillate right and left with the oscillators, but no signal is output because the parts are not bent (no angular force).
4. When the vehicle turns to the right, the sensor element moves in a circular motion with the right oscillator bending forward and the left oscillator bending rearward. The amount of forward/rearward bend varies according to the angular velocity of the vehicle.
5. The detecting piezoelectric parts output voltage (the yaw rate signal) according to the amount of bend. The amount of vehicle direction change is determined by measuring this voltage.

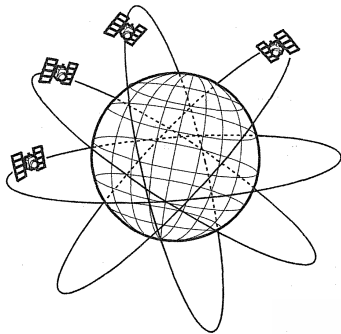




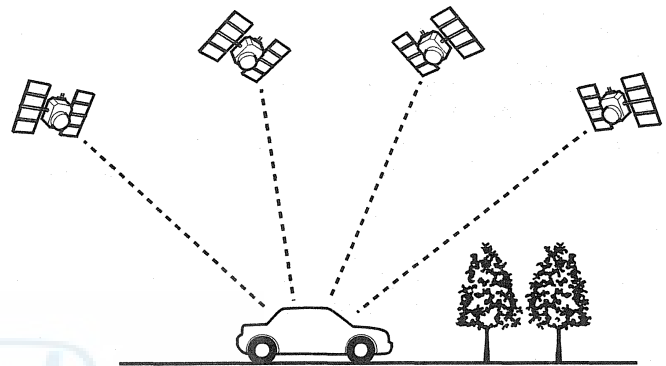
Global Positioning System (GPS)

The global positioning system (GPS) enables the navigation system to determine the current position of the vehicle by using the signals transmitted from the satellites in orbit around the earth. The satellites transmit the satellite identification signal, orbit information, transmission time signal, and other information. When the GPS receiver receives a signal from four or more satellites simultaneously, it calculates the current position of the vehicle based on the distance to each satellite and the satellite's positions in its respective orbit.

Position detection Image with GPS satellite



NOTE: Four satellites on each of six orbits.



Precision of GPS

The precision of the GPS varies according to the number of satellites from which signals are received and the view of the sky. The precision is indicated by the color and shape of the GPS icon shown on the display.

GPS ICON	NUMBER OF SATELLITES	CONDITION	DESCRIPTION
No GPS icon shown	2 or less	Impossible to detect vehicle position	GPS function is normal. The satellite signals received by the GPS are too few to detect the vehicle position.
Square GPS icon shown with white "GPS"	3	Vehicle position detectable in 2 dimensions	The longitude and latitude of the vehicle position can be detected. (Less precise than detection in three dimensions)
Cube GPS icon shown with green "GPS"	4 or more	Vehicle position detectable in 3 dimensions	The longitude, latitude and the altitude of the vehicle position can be detected. (More precise than detection in two dimensions)

GPS Antenna

The GPS antenna amplifies and transmits the signals received from the satellites to the GPS receiver.

GPS Receiver

The GPS receiver is built into the navigation unit. It calculates the vehicle position by receiving the signal from the GPS antenna. The current time, vehicle position, and signal reception condition is transmitted from the GPS receiver to the navigation unit to adjust vehicle position.

(cont'd)

Navigation System

System Description (cont'd)

Navigation Unit

The navigation unit calculates the vehicle position and guides you to the destination. The unit performs map matching correction, GPS correction, and distance tuning. It also controls the menu functions, the DVD-ROM drive, the back-up camera, and interprets voice commands. With control of all these items, the navigation unit makes the navigation picture signal, then it transmits the signal to the navigation display and audio driving instructions to the audio unit.

Calculation of Vehicle Position

The navigation unit calculates the vehicle position (the driving direction and the current position) by receiving the directional change signals from the yaw rate sensor and the travel distance signals from the PCMs vehicle speed pulse (VSP) signal.

Map Matching Tuning

The map matching tuning is accomplished by indicating the vehicle position on the roads on the map. The map data transmitted from the DVD-ROM is checked against the vehicle position data, and the vehicle position is indicated on the nearest road. Map matching tuning does not occur when the vehicle travels on a road not shown on the map, or when the vehicle position is far away from a road on the map.

GPS Tuning

The GPS tuning is accomplished by indicating the vehicle position as the GPS's vehicle position. The navigation unit compares its calculated vehicle position data with the GPS vehicle position data. If there is a large difference between the two, the indicated vehicle position is adjusted to the GPS vehicle position.

Distance Tuning

The distance tuning reduces the difference between the travel distance signal from the VSP and the distance data on the map. The navigation unit compares its calculated vehicle position data with the GPS vehicle position data. The navigation unit then decreases the tuning value when the vehicle position is always ahead of the GPS vehicle position, and it increases the tuning value when the vehicle position is always behind the GPS vehicle position.

Route Guidance

The navigation unit can calculate different routes to a selected destination. You have five options:

- Direct Route — Calculate a route that is the most direct.
- Easy Route — Calculate a route that minimizes the number of turns needed.
- Minimize Freeways — Calculate a route that avoids freeway travel. If that is not possible, keep the amount of freeway travel to a minimum.
- Minimize Toll Roads — Calculate a route that avoids, or minimizes travel on toll roads.
- Maximize Freeways — Calculate a route that uses freeways as much as possible.

Audio Guidance

The navigation unit transmits audio driving instructions before entering an intersection or passing a junction. The audio instructions come through the audio unit to the front speakers.

NOTE: The front speakers are muted whenever the navigation system is giving guidance commands, and all of the speakers are muted when the voice control system is being used.

DVD-ROM

The map data (including all scale rates) is stored in the DVD-ROM. The map data includes:

- Road distances, road widths, speed limits, traffic regulations, passing time at junction, distances to junctions, and the driving instructions for audio guidance.
- Latitude and longitude GPS.



Solar Angle

The navigation system uses the sun's angle, along with the sunlight sensor to control the driver/passenger A/C air flow.

Off Road Tracking (breadcrumbs)

Off road tracking dots that can be followed on the map retrace your route back to a mapped (digitized) road.

Clock and Time Zone

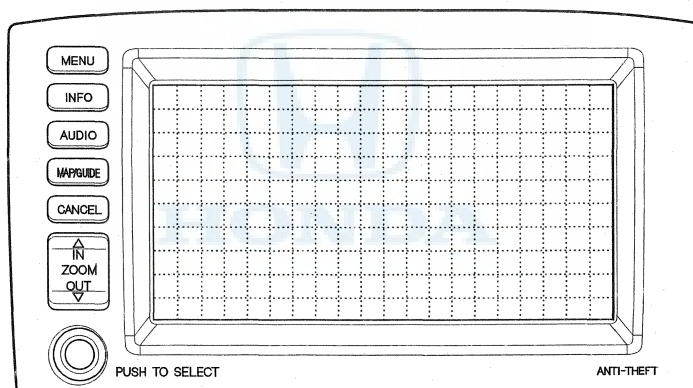
The clock set up allows you to set daylight savings time, auto time zone and time adjustment.

Audio Unit

The audio unit receives the audio driving instructions from the navigation unit, and transmits the instructions through the front speakers even when the audio system is in use.

Navigation Display

The navigation display uses a liquid crystal display (LCD). The LCD is a 7-inch-diagonal, thin film transistor (TFT), stripe type with 336,960 picture elements. The color film and fluorescent light are laid out on the back of the liquid crystal film. The touch sensor on the front of the LCD consists of a touch sensitive resistive membrane with a large number of possible touch locations. The navigation display transmits the signal from each operation key and the touch switches to the navigation unit over the GA-Net bus.



Microphone

The microphone (on the ceiling, near the front map light) receives voice commands and transmits them to the navigation unit for interpretation.

TALK Button

Activates the voice control system in the navigation unit to accept voice commands.

BACK Button

Returns the display to the previous screen (similar function as the CANCEL button).

(cont'd)

Navigation System

System Description (cont'd)

Glossary

The following is a glossary of terms pertaining to the Voice Recognition Navigation System.

Item	Definition
Audio-HVAC subdisplay	The upper display that shows the time and current status of the audio and climate control system.
Breadcrumbs (white dots)	Off road tracking dots that can be followed on the map to retrace your route back to a mapped (digitized) road. This function can be turned on/off in Setup screen 1.
CAN	Controller Area Network. This communication network allows processors in the vehicle to send/receive information. The fuel pulses used by the trip computer are received from the PCM using the F-CAN (Fast Controller Area Network) bus.
B-CAN	Body CAN Bus (see CAN)
CPU	Central Processing Unit. The main device within the navigation unit that coordinates the rest of the electronic functions.
Database	This consists of the Map data, and the POI (Points Of Interest) data stored on the DVD.
DBW	Drive By Wire. Allows electrical control of the throttle without the need of a mechanical linkage.
DCA	Detailed coverage area, an area that is covered in the database digital mapping. For example, the 48 continuous United States are within the DCA. Hawaii and Alaska are outside of the DCA.
DTC	Diagnostic Trouble Codes. Use the HDS tablet to obtain, and troubleshoot the cause of these codes.
Dead Reckoning	The use of the speed signal, and yaw rate sensor to position the vehicle on the map even when tall buildings, or driving in a tunnel obscures the GPS signal.
Digitized Road	A road that appears on the navigation screen. The road name will appear at the bottom of the navigation screen. If the user drives "off road", the navigation system will display "Not on a digitized road". The "breadcrumbs" will appear after driving for 1/2 mile.
Disclaimer Screen	Screen containing cautionary information. It is meant to be read carefully, and acknowledged by the customer when using the navigation system.
DVD or DVD-ROM	Digital Versatile Disk. The navigation program and database resides on this disk. See the Navigation Owner's Manual for information on how to order a replacement or an update DVD.
ECM	Engine Control Module. Typically referred to as the ECM.
E/T	Elapsed Time for the current trip as displayed by the trip computer screen.
FAQ	Frequently Asked Question. See the Navigation Owner's Manual for a list of the customer FAQs, and troubleshooting information.
F-CAN	Fast CAN Bus (see CAN)
FE	Fuel Economy value as displayed on the trip computer screen.
Fuel Pulses	This signal is transmitted on the CAN bus, and is used by the Trip Computer to calculate the fuel economy.
GA-Net bus	Units communication line.
GPS	Global Positioning System. A network of 24 satellites in orbit around the earth. The navigation system can simultaneously receive signals from up to 12 satellites to accurately position the vehicle on the map.
HDS	Honda Diagnostic System. A hand held tablet PC used for diagnosing vehicle problems.
H/U	Head Unit. The navigation system display unit assembly in the dash.
Initialization	This refers to the period needed to re-acquire the GPS satellite orbital information whenever the navigation system power has been disconnected. This can take from 10 to 45 minutes.
LCD	Liquid Crystal Display (the navigation screen)



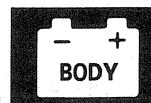
Item	Definition
Map Matching	The received GPS information allows the navigation system to position the vehicle on the map. Map matching has occurred if the map screen is displaying the current street name in the bottom-shaded area.
Mic	Abbreviation for the microphone used for receiving voice commands. It is located near the map light in the ceiling.
Model (in the diagnosis Version screen)	A "model code" stored on an internal "chip" in the navigation unit. The model code tells the navigation unit what software to load. Every navigation unit "model" has a unique part number for the navigation unit.
MID	Multi-Information Display.
MW	Maneuver Window. While on-route to a destination, this window displays information about the next maneuver.
Navi	Abbreviation for the Navigation System.
Off Road Tracking	See Breadcrumbs.
Off Route	This occurs when the user leaves mapped roads. Off road tracking dots ("breadcrumbs") are displayed if the option is enabled in the setup menu. The user can use them to return to a mapped road. The bottom of the navigation screen will say "Not on a digitized road", and the breadcrumbs will appear after driving for 1/2 mile.
Outlying Areas	These are rural areas that typically have only their main roads mapped. All other roads are shown in light brown for reference only, since they have not been verified. So street numbers, direction, etc may be unreliable (see Unverified Streets).
PC Card Slot	The PC Card (PCMCIA, type II) slot is for factory use only. Make sure that the sliding door is closed at all items. If opened, an error message is displayed on the screen.
PCM	Powertrain Control Module. This unit supplies the navigation system speed signal, fuel level, and sends fuel use pulses for the trip computer function.
PCMCIA	A computer industry defined term referring to the PC Card slot standard.
PIN	Personal Identification Number. A random 4 digit number created by the customer to protect personal information. There are 2 different PINs for 2 different users.
POI	Point Of Interest. These are the businesses, schools, etc. found under the "places" option on the main menu.
Polygon	Colored areas on the map screen denoting parks, schools, etc. See the Navigation Owner's Manual "Traveling to Your Destination" for a list of the assigned colors.
QWERTY	Keyboard layout resembling the typewriter keys. The keyboard layout can be changed to an alphabetical layout in the Setup mode.
SCS connector	The 2-pin connector used to put the navigation system into the diagnostic mode.
Security Code	Code needed to activate the navigation system. You can obtain the security code from the "iN" by entering the navigation system control serial number. You can find the serial number on the diagnostic screens (Unit Check, Navi ECU), or on the underside of the navigation unit.
Touch Screen Buttons or Touch Sensor	The display panel has 2 layers of clear film on the screen panel. If you touch the screen panel, the layers engage and the navigation display detects the touch point.
Tuning	A continual update of internal navigation system scaling factors. See the individual sensor tuning discussions under either "System Description", or "System Diagnosis Mode" (see page 22-487).
Unverified Streets	These streets have not been verified for turn restrictions, one-way, etc. They are shown in light brown on the map. You can enter address destinations in these areas, but, depending on your "Unverified Routing" choice in setup, voice guidance may end at the last verified street closest to your destination.

(cont'd)

Navigation System

System Description (cont'd)

Item	Definition
CSF (Cold Start Fix) screens	These screens are displayed if the system requires a GPS initialization. The vehicle should be moved outside in an open area away from buildings/power line.
SCS Connector	A 2-pin shorting plug used to force the navi system into the diagnostic mode. This is used to bypass the CSF screen, or to invoke the diagnostic mode if the display hard buttons are inoperative.
UART (climate Bus)	This serial bus passes climate control commands to the climate ECU.
Verified Streets	These streets consist of the detailed metropolitan coverage areas, and all other inter-town connection roads. These roads are shown in black on the map.
VP	Vehicle Position. When in map mode, this circular icon shows the vehicle position on the map. Touch this icon to show the latitude, longitude, and elevation of your current position.
VR	Voice Recognition. This allows voice control for many of the navigation functions. The hardware consists of the microphone, steering wheel (TALK/BACK) buttons, and the front speakers. See the overview for more information.
VSP	Vehicle Speed Pulse. This pulse signal coming from the PCM is used to update the Vehicle position on the map, and to calculate the trip computer fuel economy. These pulses do not indicate direction (forward or backward). When in reverse, the navigation receives a signal from the MICU, and directs the VP to move backwards on the map.
VSS	Vehicle Speed Sensor. This sensor reads the output shaft speed at the transmission, and provides a speed pulse to the PCM. The PCM sends this pulse to the navigation system and speedometer.
XM Satellite Radio	A satellite band radio system where signals are received from either a satellite or land based transmitters.
Yaw Sensor	This device is located in the navigation unit, and senses the side-to-side twisting force generated when the vehicle turns. See a detailed description of how this sensor works in this manual.



Navigation Unit Inputs and Outputs for Connector A (20P)

1	2	3	4	5			8	9	10
11	12	13	14	15			18		20

Wire side of female terminals

Terminal Number	Wire Color	Terminal Name	Description	Voltage (about)	Symptom
1	WHT	R SIG (Red signal)	Red color signal	0—1 V AC	If open: Red color missing (see “RGB Color” diagnostic). If short to ground: Red color missing (see “RGB Color” diagnostic).
2	RED	G SIG (Green signal)	Green color signal	0—1 V AC	If open: Green color missing (see “RGB Color” diagnostic). If short to ground: Green color missing (see “RGB Color” diagnostic).
3	BRN/BLK*	SHIELD SIG (Shield signal)	Shield for terminal No. 1, 2, 11, 12, 13	0 V	If open: No change to display. If short to ground: No change to display.
4	GRN/ORN	UART BUS SI (A/C Signal input)	A/C input signal	0—battery voltage pulses	If open: Voice control does not work for climate control. Navi system link is NG shown in RED. If short to ground: Voice control does not work. Navi system link is NG shown in RED.
5	RED/BLK	ILL (+) (Illumination positive)	Parking light on signal from dash and console lights	Lights on=battery voltage, Lights off=0 V	If open: When brightness=“Auto”, night mode for the display is inoperative when lights on. If short to ground: Blows fuse 7 in passenger’s under-dash fuse/relay box.
8	WHT	F-CAN-HI (CAN high)	F-CAN bus communication	Pulses 2.5—6 V average 3 V	If open: 1)System Links FI-ECU, and Meter both show “NG”. 2)F-CAN diagnostic=“NG”. 3)B-CAN diagnostic=“NG”. If short: Check for F-CAN malfunction DTCs with the HDS.
9	LT BLU*	GA-NET BUS SHIELD (Shield display bus)	Shield for display bus terminal No. 10, 20	0 V	If open: No change to display or audio. If short to ground: No change to display or audio.
10	RED/BLU	GA-NET BUS (+) (Display bus positive)	Data bus (+) GA-Net	0—5 V pulses average 2.5 V depends on bus traffic	If open: Navigation buttons, audio accessories, touch screen and XM radio do not work. Navi system links is NG shown in RED. If short to ground: Navigation buttons, audio accessories, touch screen and XM radio do not work. Navi system links is NG shown in RED.

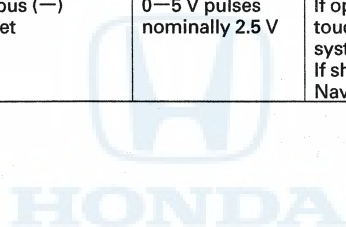
* : The shielded wires have a heat-shrunk tube insulating the outside of the wire. The color of the insulating tube, typically black or dark gray, may not match the color of the wire listed on the schematic.

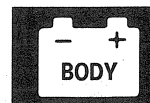
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Navigation System

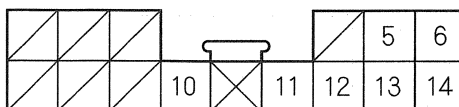
System Description (cont'd)

Terminal Number	Wire Color	Terminal Name	Description	Voltage (about)	Symptom
11	YEL	B SIG (Blue signal)	Blue color signal	0—1 V AC	If open: Blue color missing (see "RGB Color" diagnostic). If short to ground: Blue color missing (see "RGB Color" diagnostic).
12	BRN	C SIG (Composite signal)	Composite video (vertical/horizontal) Synchronizing signal	0.3 V AC	If open: Picture rolls horizontally as lines, colors still visible. If short to ground: Picture rolls horizontally as lines, colors still visible.
13	BLU	GND SIG (Ground signal)	Ground for color signal	0 V	If open: No change to display. If short to ground: No change to display.
14	RED/GRN	UART BUS SO (A/C Signal output)	A/C output signal	0—battery voltage pulses	If open: A/C voice control does not work for climate control. If short to ground: A/C voice control does not work. Navi system link is NG shown in RED.
15	YEL/BLU	UART BUS CLK (A/C Clock signal)	Time set sync signal for the climate control unit	0—battery voltage pulses	If open: A/C voice control does not work for climate control. If short to ground: A/C voice control does not work for climate control.
18	RED	F-CAN-LO (CAN low)	F-CAN bus communication	Pulses 2.5—6 V average 3 V	If open: 1) System Links PCM, and Gauge Control Module both show "NG". 2) F-CAN diagnostic="NG". 3) B-CAN diagnostic="NG". If short: Check for F-CAN malfunction DTCs with the HDS.
20	RED/WHT	GA-NET BUS (—) (Display bus negative)	Data bus (—) GA-Net	0—5 V pulses nominally 2.5 V	If open: Navigation buttons, audio accessories, and touch screen and XM radio do not work. Navi system link is NG shown in RED. If short to ground: Hard and touch buttons work OK. Navi system link is NG shown in RED.





Navigation Unit Inputs and Outputs for Connector B (14P)



Wire side of female terminals

Terminal Number	Wire Color	Terminal Name	Description	Voltage (about)	Symptom
5	LT GRN	RG L (+) (Route guidance voice left positive)	Left audio signal of voice guidance, and Voice Recognition (VR) prompts	Audio signal 0.004—0.04 V	If open: If voice activated, radio speakers buzz; if voice off, no effect. If short to ground: If voice activated, radio speakers buzz; if voice off, no effect.
6	BLU	MIC SIG (+) (Mic signal positive)	Microphone output signal positive	4—5 V (with TALK button pressed)	If open: No microphone signal shown in diagnostic screens: "Navi System Link" NG shown in RED and Functional Setup "Mic Level". If short to ground: No microphone signal shown in diagnostic screens: "Navi System Link" NG shown in RED and Functional Setup "Mic Level".
10	ORN	NAVI REMOTE SWITCH (Steering switches)	Steering switch output	3.7 V (TALK button pressed) 2.5 V (BACK button pressed) 4.3 V (No buttons pressed)	If open: Steering wheel TALK and BACK buttons do not work or respond in the Navi System links test. If short to ground: Steering wheel TALK and BACK buttons do not work or respond in the Navi System links test.
11	LT BLU*	RG SHIELD (Shield route guidance)	Shield for terminal No. 5, 12	0 V	If open: No effect on voice output. If short to ground: No effect on voice output.
12	PUR	RG GND (Ground route guidance)	Ground for voice guidance, and Voice Recognition (VR) prompts	0 V	If open: No effect on voice output. If short to ground: No effect on voice output.
13	LT BLU*	MIC SHIELD (Shield mic)	Shield for terminal No. 6, 14	0 V	If open: No effect on voice recognition. If short to ground: No effect on voice recognition.
14	RED	GND MIC (Ground mic)	Ground for microphone signal	0 V	If open: No microphone signal shown in diagnostics: "Navi System Link" NG shown in RED and Functional Setup "Mic Level". If short to ground: No effect on voice recognition.

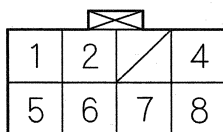
*: The shielded wires have a heat-shrunk tube insulating the outside of the wire. The color of the insulating tube, typically black or dark gray, may not match the color of the wire listed on the schematic.

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Navigation System

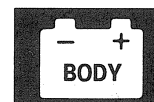
System Description (cont'd)

Navigation Unit Inputs and Outputs for Connector C (8P)

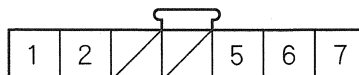


Wire side of female terminals

Terminal Number	Wire Color	Terminal Name	Description	Voltage (about)	Symptom
1	WHT/BLU	+B (+B Power source)	Continuous power source	Battery voltage	If open: Display picture goes out (display back light still on). NOTE: System will reboot to "enter code" screen. If short to ground: Blows No. 11 (10 A) fuse in the passenger's under-dash fuse/relay box.
2	WHT/RED	ACC (Accessory)	Power source for accessories	Battery voltage at ACC (I)	If open: Display picture goes out (display back light still on). NOTE: When re-connected the system will reboot to "enter code" screen. If short to ground: Blows No. 9 (15 A) fuse in the passenger's under-dash fuse/relay box.
4	BLK	GND (Ground)	Ground for navigation unit	0 V	If open: No effect on system. If short to ground: No effect on system.
5	GRN/BLK	BACK LT (Back light)	Reverse signal of select lever from the A/T backup light switch	In reverse, battery voltage: Otherwise 0 V	If open: Navigation never sees the reverse signal and back-up camera does not come on when in reverse. Diagnostic screen "Car Status", "Back"=0. If short to ground: Blows No. 9 (10 A) fuse in the driver's under-dash fuse/relay box.
6	BLU/WHT	VSP (Vehicle speed pulse)	Vehicle speed pulse signal from PCM	Pulses 0—5 V: Average 2.5 V, when moving	If open: No vehicle speed signal pulse. Diagnostic screen "Car Status", VSP Navi=0. If short to ground: No vehicle speed pulses. Diagnostic screen "Car Status", VSP Navi=0.
7	GRN/RED	DIAG+ (Diagnostic positive)	Service check signal for navigation system	5—6 V	If open: No effect on system. If short to ground: System goes into diagnostic mode at ignition switch ON (I or II). NOTE: Also see symptom troubleshooting for "an inline diag" screen appears everytime the vehicle is started.
8	BLU/GRN	DIAG— (Diagnostic negative)	Ground for service check signal	0 V	If open: No effect on system. If short to ground: No effect on system.



Navigation Unit Inputs and Outputs for Connector D (7P)



Wire side of female terminals

Terminal Number	Wire Color	Terminal Name	Description	Voltage (about)	Symptom
1	PNK	CAMERA VCC (VCC supply)	Power source for rearview camera	7 V	If open: No rearview camera image. If short to ground: When put into reverse, the navigation screen goes black (backlight still operative).
2	BLK	CAM GND (Ground)	Ground for rearview camera	0 V	If open: No change to rearview camera image. If short to ground: No change to rearview camera image.
5	BLU	CAMERA V (Video camera)	Video signal for rearview camera	0.3 V	If open: No rearview camera image. If short to ground: When put into reverse, the navigation screen goes black (backlight still operative).
6	GRY	CAMERA SHIELD (Shield camera)	Shield for terminal No. 1 to No. 7	0 V	If open: No change to rearview camera image. If short to ground: No change to rearview camera image.
7	WHT	CAMERA ADPT (Adaptive camera)	Control signal for rearview camera	0 V	If open: No change to rearview camera image. If short to ground: No change to rearview camera image.

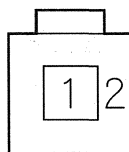
* : The shielded wires have a heat-shrunk tube insulating the outside of the wire. The color of the insulating tube, typically black or dark gray, may not match the color of the wire listed on the schematic.

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Navigation System

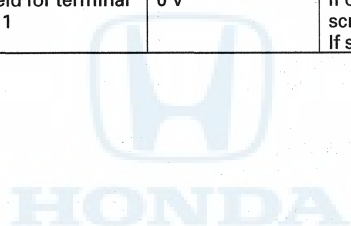
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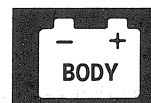
Navigation Unit Inputs and Outputs for Connector E (2P)



Wire side of female terminals

Terminal Number	Wire Color	Terminal Name	Description	Voltage (about)	Symptom
1		GPS	GPS signal (5 V in, GPS signal out)	5 V	If open: GPS icon on screen is white, system links screen ANT shows "NG." If short to ground: Same as open.
2		SH GPS	Shield for terminal No. 1	0 V	If open: GPS icon on screen is white, system links screen ANT shows "NG." If short to ground: No effect on system.





Navigation Display Unit Inputs and Outputs for the 20P Connector

NAVIGATION DISPLAY UNIT 20P CONNECTOR

1	2			5	6		8	9	10
11	12		14	15	16	17	18	19	20

Wire side of female terminals

Terminal Number	Wire Color	Terminal Name	Description	Voltage (about)	Symptom
1	WHT/BLU	+B (+B power source)	Continuous power source	Battery voltage	If open: Screen completely off (no backlight visible). If short to ground: Blows No. 11 (10 A) fuse in the passenger's under-dash fuse/relay box.
2	WHT/RED	ACC (Accessory)	Power source for accessory	Battery voltage at ACC (I)	If open: Display and buttons do not work. If short to ground: Blows No. 9 (15 A) fuse in the passenger's under-dash fuse/relay box.
5	RED/BLU	GA-NET BUS (+) (Display bus positive)	Data bus (+) GA-Net	0—5 V pulses average 2.5 V depends on bus traffic	If open: XM radio, Navigation buttons, audio accessories, and touch screen do not work. If short to ground: XM radio, audio accessories, Navigation buttons and touch screen do not work.
6	BLU	SCTY DISP	Security signal from MPX CU PASS SIDE rear screen	0 V	If open: If security system set, it will not trip when screen is removed. If short to ground: The security system set, it will not trip when screen is removed.
8	WHT	R SIG (Red signal)	Red color signal	0—1 V AC	If open: Red color missing (see "RGB Color" diagnostic). If short to ground: Red color missing (see "RGB Color" diagnostic).
9	RED	G SIG (Green signal)	Green color signal	0—1 V AC	If open: Green color missing (see "RGB Color" diagnostic). If short to ground: Green color missing (see "RGB Color" diagnostic).
10	BLK	GND (Ground)	Ground for display unit	0 V	If open: No change to display. If short to ground: No change to display.

(cont'd)

Navigation System

System Description (cont'd)

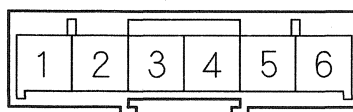
Terminal Number	Wire Color	Terminal Name	Description	Voltage (about)	Symptom
11	RED/BLK	ILL (+) (Illumination positive)	Parking light on signal from dash and console lights	Battery voltage if lights on; otherwise 0 V	If open: When brightness="Auto", night mode for the display is inoperative when lights on. If short to ground: Blows No. 10 (15 A) fuse in passenger's under-dash fuse/relay box.
12	RED	ILL (—)	Ground for illumination light	With full dash lights brightness, 0 V	If open: When brightness="Auto", night mode for the display is inoperative when lights on. If short to ground: No change to display.
14	LT BLU*	GA-NET BUS SH GND (Shield display bus)	Shield for display bus terminal No. 5, 15	0 V	If open: No change to display. If short to ground: No change to display.
15	RED/WHT	ECU BUS (—) (GA-NET) (Display bus negative)	Data bus (—) GA-Net	0—5 V pulses average 2.5 V depends on bus traffic	If open: XM radio, Navigation buttons, audio accessories, and touch screen do not work. If short to ground: XM radio, audio accessories, and the navigation hard and touch buttons work OK.
16	GRN/WHT	SCTY AUDIO	Security pass thru signal to audio unit	0 V	If open: The security system set, it will not trip when screen is removed. If short to ground: If security system set, it will not trip when screen is removed.
17	BLU	GND SIG (Ground signal)	Ground for color signal	0 V	If open: No change to display. If short to ground: No change to display.
18	YEL	B SIG (Blue signal)	Blue color signal	0—1 V AC	If open: Blue color missing (see "RGB Color" diagnostic). If short to ground: Blue color missing (see "RGB Color" diagnostic).
19	BRN	C SIG (Composite signal)	Composite video (vertical/horizontal) synchronizing signal	0.3 V AC	If open: Picture rolls horizontally, colors still visible. If short to ground: Picture rolls horizontally, colors still visible.
20	BRN/BLK*	SIG 1 SH GND (Shield signal)	Shield for terminal No. 8, 9, 17, 18, 19	0 V	If open: No change to display. If short to ground: No change to display.

* : The shielded wires have a heat-shrunk tube insulating the outside of the wire. The color of the insulating tube, typically black or dark gray, may not match the color of the wire listed on the schematic.

HONDA



Rearview Camera Inputs and Outputs for 6P Connector



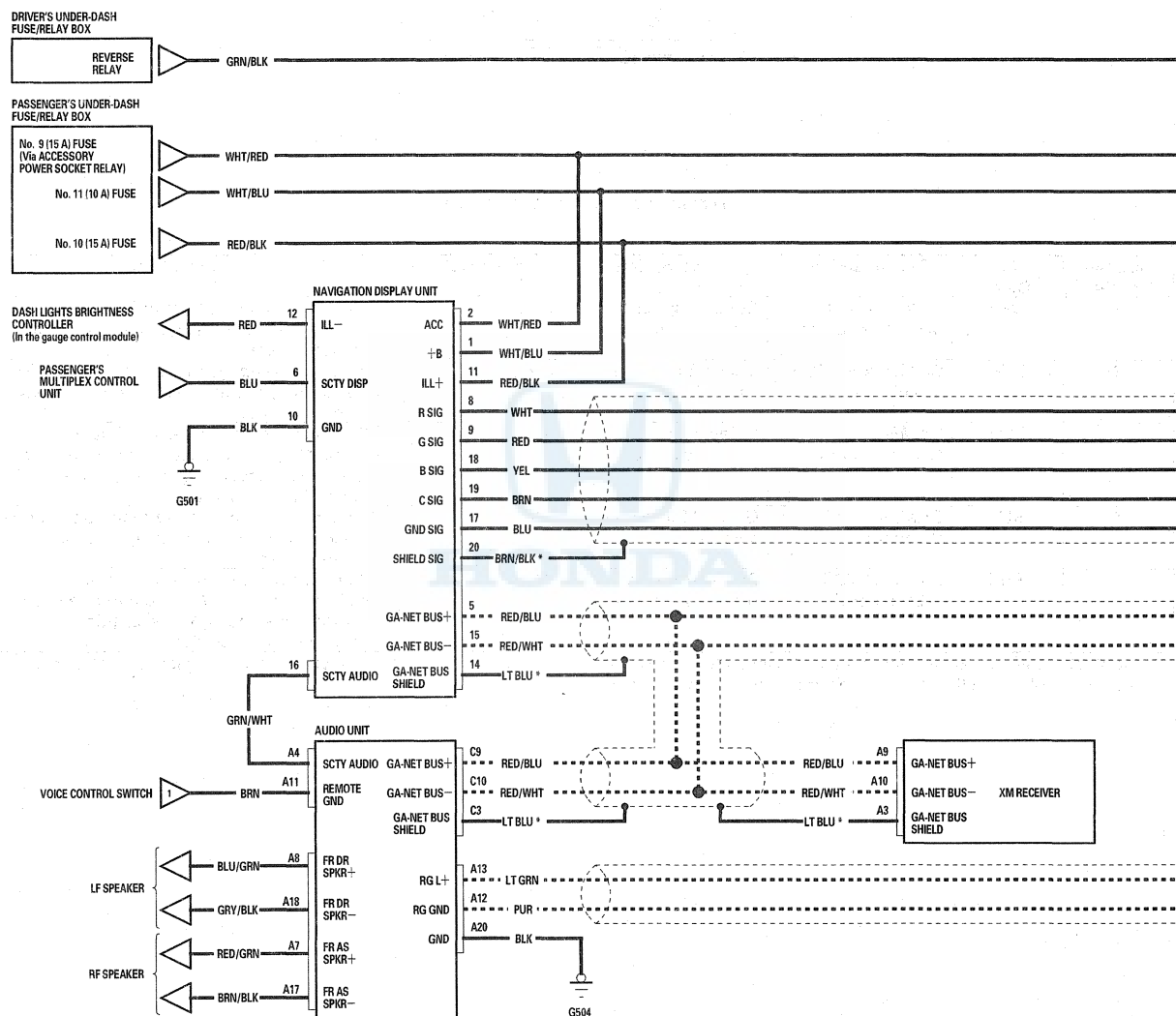
Terminal side of male terminals

Terminal Number	Wire Color	Terminal Name	Description	Voltage (about)	Symptom
1	WHT	CAMERA ADPT (Adaptive camera)	Console signal for rearview camera	0 V	If open: No change to rearview camera image. If short to ground: No change to rearview camera image.
2	GRY	CAMERA SHIELD (Shield camera)	Shield for terminal No. 5	0 V	If open: No change to rearview camera image. If short to ground: No change to rearview camera image.
3	BLU	CAMERA V (Video camera)	Video signal for rearview camera	0.3 V	If open: No rearview camera image. If short to ground: When put into reverse, navigation screen goes black (display backlight still operative).
4	BLK	CAMERA GND (Ground)	Ground for rearview camera	0 V	If open: No change to rearview camera image. If short to ground: No change to rearview camera image.
5					
6	PNK	CAMERA VCC (VCC supply)	Power source for rearview camera	8 V	If open: No rearview camera image. If short to ground: When put into reverse, navigation screen goes black (display backlight still operative).

* : The shielded wires have a heat-shrunk tube insulating the outside of the wire. The color of the insulating tube, typically black or dark gray, may not match the color of the wire listed on the schematic.

Navigation System

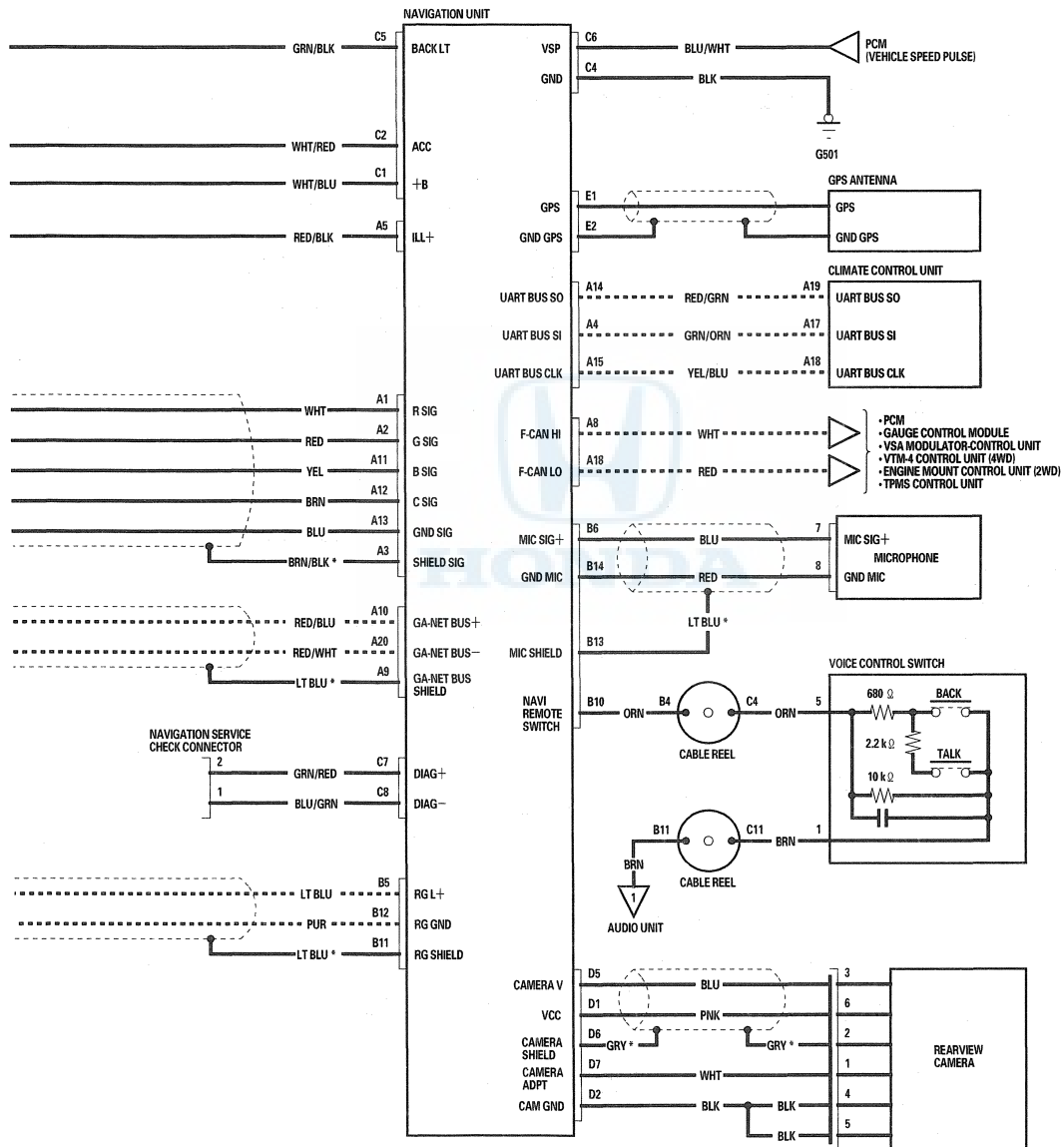
Circuit Diagram





*: The shielded wires have a heat-shrunk tube insulating the outside of the wire. The color of the insulating tube, typically black or dark gray, may not match color of the wire listed on the schematic.

-----: Shielding
-----: Communication line

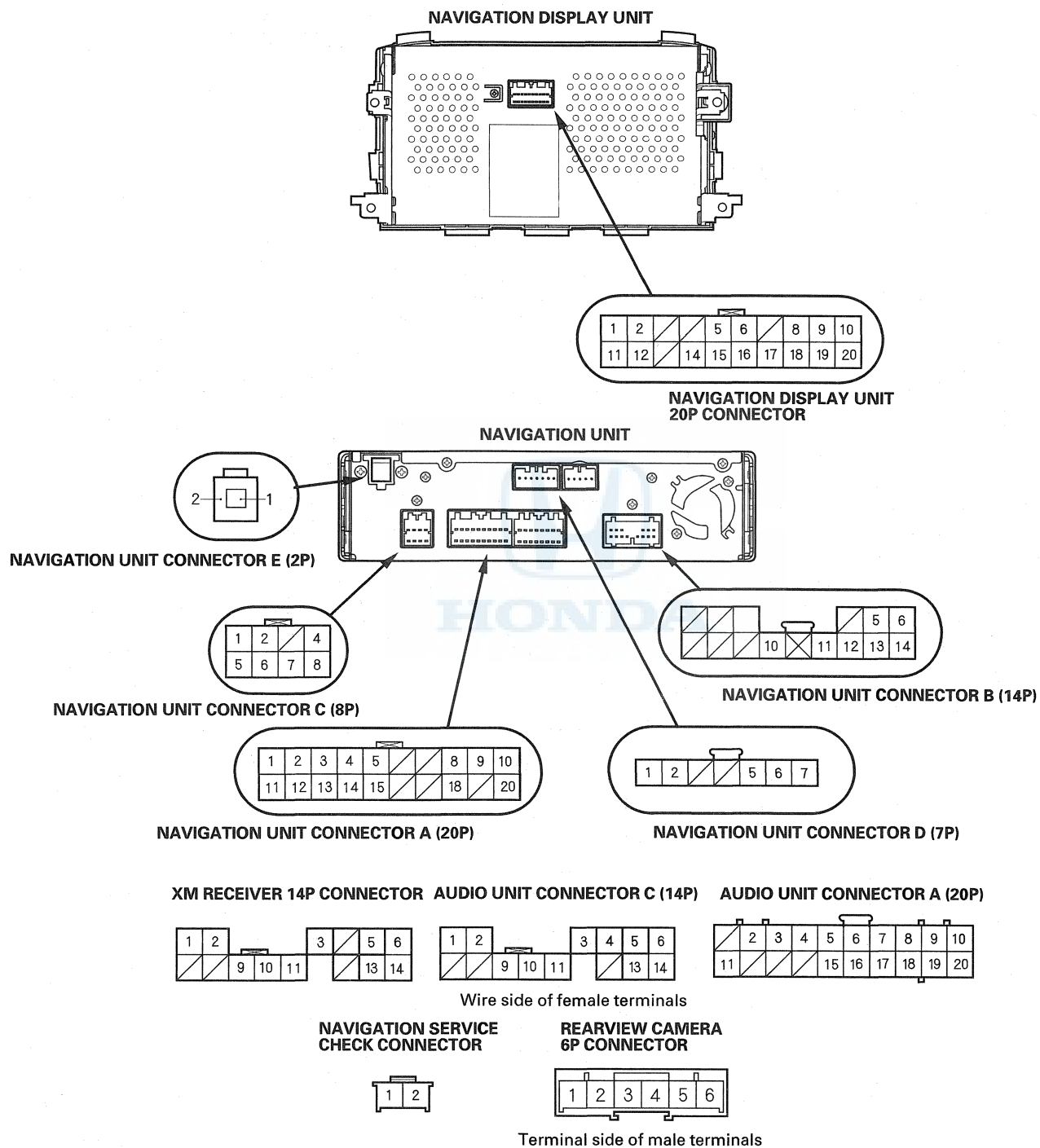


(cont'd)

Navigation System

Circuit Diagram (cont'd)

Navigation System Connector Location





Symptom Troubleshooting

Voice control does not work/respond

NOTE:

- Always check the connectors for poor connections or loose terminals.
- Before troubleshooting, make sure you have the audio and navigation system anti-theft codes.
- After troubleshooting, enter the audio and navigation system anti-theft codes, and the audio presets.

Before assuming that a voice complaint is hardware related, ensure that the voice control system is being operated correctly.

- Make sure you are on the correct screen when trying to issue a voice command. For instance, the command "Find the nearest Italian Restaurant" only works on a Map screen.
(See the Navigation System Manual for a complete list of allowed voice commands for the information being displayed.)
- Close the windows and moonroof.
- Set the fan speed to low (1 or 2).
- Adjust the air flow from the air conditioning vents so that they do not blow against the microphone on the ceiling.
- Pause after pressing the TALK button, then give a voice command clearly in a natural speaking voice. If the system cannot recognize your command, speak louder.
- If the microphone picks up voices other than yours, the system may not interpret your voice commands correctly.
- If you speak a command with something in your mouth, or your voice is too husky, the system may misunderstand your command.
- Determine if the problem only happens to one person, or everyone who uses the system.
- If the system only has a problem with one person's voice, this should be considered a system limitation.
- Make sure the DVD is not scratched or damaged.
- Make sure the correct DVD color and version is installed.
- Check on-line for service bulletins or any other service information for the navigation system.

1. Turn the ignition switch ON (II).

2. Go into the Diagnostic Menu and use the Mic Level test the under Functional Setup (see page 22-500) to check the operation of the TALK and BACK buttons.

Are the TALK and BACK buttons operational?

YES—Go to step 3.

NO—Check for an open or short to ground on navigation unit connector B (14P) terminal No. 10. ■

3. Use the Mic Level diagnostic under Functional Setup (see page 22-500) to check the operation of the microphone.

Is the microphone operational?

YES—Check the operation of the voice control system (see the Navigation System Manual). ■

NO—Check for a loose front map light (microphone) assembly. If OK, check for an open or short to ground on navigation unit connector B (14P) terminals No. 6 and No. 14. ■

Navigation System

Symptom Troubleshooting (cont'd)

No picture is displayed

NOTE:

- Make sure the DVD is not scratched or damaged.
- Make sure the correct DVD color and version is installed.
- Always check the connectors for poor connections or loose terminals.
- Inspect the system for Non-OEM accessories like gaming consoles or TV tuners.

1. Turn the ignition switch ON (II).
2. Turn on the audio unit and check for sound in each mode (AM, FM, XM, and disc).

Can you hear the audio?

YES—Go to step 4.

NO—Go to step 3.

3. Turn the ignition switch OFF.
4. Check the No. 11 (10 A) fuse in the under-hood fuse/relay box and No. 9 (15 A) fuse in the passenger's under-dash fuse/relay box, and reinstall the fuse if it is OK.

Is the fuse OK?

YES—Go to step 5.

NO—Replace the fuse, and recheck. ■

5. Turn the ignition switch ON (II).
6. Shield the navigation display unit from the sun with your hand, and check that the display is back lit (only back light is ON).

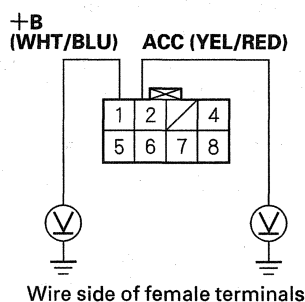
Can you see the back light?

YES—Go to step 7.

NO—Go to step 10.

7. Measure the voltage between body ground and navigation unit connector C (8P) terminals No. 1 and No. 2 individually.

NAVIGATION UNIT CONNECTOR C (8P)



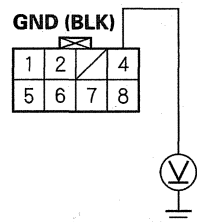
Is there battery voltage?

YES—Go to step 8.

NO—If the +B or ACC wire(s) do not have voltage, repair open in the wire(s) between the under-hood fuse/relay box and passenger's under-dash fuse/relay box and the navigation unit. ■

8. Measure the voltage between navigation unit connector C (8P) terminal No. 4 and the body ground.

NAVIGATION UNIT CONNECTOR C (8P)



Is there 0.2 V or less?

YES—Go to step 9.

NO—Repair open or high resistance in the wire between the navigation unit and body ground (G501). ■



9. Do the forced starting of display (see page 22-507).

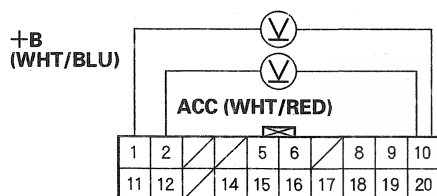
Is the Navi System Link image displayed?

YES—Check all pinfits at the navigation unit A and C connectors and recheck operation. If connections are OK, substitute a known-good navigation unit. If the symptom/indication is still present, replace the navigation display unit (see page 22-509). ■

NO—Go to step 10.

10. Measure the voltage between terminal No. 10 and the navigation display unit 20P connector terminal No. 1 and No. 2 individually.

NAVIGATION DISPLAY UNIT 20P CONNECTOR



Wire side of female terminals

Is there battery voltage?

YES—Replace the navigation display unit (see page 22-509). ■

NO—If both terminals No. 1 and No. 2 have no voltage to terminal No. 10, repair open in the wire between terminal No. 10 and G501. If only one of either terminal No. 1 or No. 2 have no voltage to terminal No. 10, repair the open in the affected terminal wire. ■

Picture is missing a color or tone or is an odd color

NOTE:

- Always check the display settings in "set up".
- Always check the connectors for poor connections or loose terminals.
- Inspect the system for Non-OEM accessories like gaming consoles or TV tuners.
- Before troubleshooting, get the navigation system anti-theft codes.
- After troubleshooting, enter the navigation system anti-theft codes.
- Make sure the DVD is not scratched or damaged.
- Make sure the correct DVD color and version is installed.

1. Turn the ignition switch ON (II).
2. Go into the Diagnostic Menu and use the "RGB Color" test under Monitor Check (see page 22-489).

Are the red, green, and blue shown?

YES—The system is OK at this time. ■

NO—Go to step 3.

3. Turn the ignition switch OFF.
4. Disconnect the navigation unit connector A (20P) and navigation display unit 20P connector.
5. Check for loose terminals at navigation unit connector A (20P) and the navigation display unit 20P connector.

Are there loose terminals?

YES—Repair the terminal. ■

NO—Go to step 6.

(cont'd)

Navigation System

Symptom Troubleshooting (cont'd)

6. Check for continuity between the appropriate terminals of navigation unit connector A (20P) to the navigation display unit 20P connector based on the missing color(s).

Missing color	Navigation unit connector A (20P)	Navigation display unit 20P connector	Wire color
Blue	A11	18	YEL
Green	A2	9	RED
Red	A1	8	WHT

NAVIGATION UNIT CONNECTOR A (20P)

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20

Wire side of female terminals

NAVIGATION DISPLAY UNIT 20P CONNECTOR

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20

Wire side of female terminals

Is there continuity?

YES—Go to step 7.

NO—There is an open in the circuit between the navigation display and the navigation unit. Check for poor connections or loose terminals at the navigation display unit and navigation units. If a poor connection or loose terminal is found, replace the affected shielded harness.■

7. Check for continuity between the appropriate terminals of navigation unit connector A (20P) and the navigation display unit 20P connector based on the missing color(s).

Missing color	Navigation unit connector A (20P)	Navigation display unit 20P connector
Blue	A11	10, 20
Green	A2	10, 20
Red	A1	10, 20

NAVIGATION UNIT CONNECTOR A (20P)

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20

Wire side of female terminals

NAVIGATION DISPLAY UNIT 20P CONNECTOR

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20

Wire side of female terminals

Is there continuity?

YES—There is a short to body ground in the circuit between the navigation display unit and the navigation unit. Replace the affected shielded harness.■

NO—Replace the navigation unit. If the problem is still unresolved, replace the navigation display unit.■



Picture has lines or rolls

NOTE:

- Always check the display settings in "setup".
- Always check the connectors for poor connections or loose terminals.
- Inspect the system for Non-OEM accessories like gaming consoles or TV tuners.
- Before troubleshooting, get the navigation system anti-theft codes.
- After troubleshooting, enter the navigation system anti-theft codes.
- Make sure the DVD is not scratched or damaged.
- Make sure the correct DVD color and version is installed.

1. Check for electronic aftermarket accessories (possibly hidden) mounted near the navigation display or the navigation unit.

Are there any electronic accessories?

YES—Disable the accessories, and recheck. ■

NO—Go to step 2.

2. Turn the ignition switch ON (II).

3. Start up the navigation picture.

Is the picture scrolling horizontally (left to right or right to left)?

YES—Go to step 7.

NO—Go to step 4.

4. Go into the Diagnostic mode, and use the "RGB Color" test under Monitor Check (see page 22-489).

Is the picture missing a red, green or blue color?

YES—Do the troubleshooting for the picture is missing a color or tone or is an odd color (see page 22-465). ■

NO—Go to step 5.

5. Turn the ignition switch OFF.

6. Substitute a known-good navigation display unit, and recheck.

Is the picture OK?

YES—Replace the navigation display unit. ■

NO—Replace the navigation unit (see page 22-508). ■

7. Turn the ignition switch OFF.

8. Disconnect the navigation unit connector A (20P) and navigation display unit 20P connector.

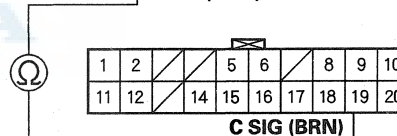
9. Check for continuity between the navigation unit connector A (20P) terminal No. 12 to navigation display unit 20P connector terminal No. 19.

NAVIGATION UNIT CONNECTOR A (20P)

Wire side of female terminals

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20

C SIG (BRN)



C SIG (BRN)

NAVIGATION DISPLAY UNIT 20P CONNECTOR

Wire side of female terminals

Is there continuity?

YES—Go to step 10.

NO—There is an open in the wire. Replace the affected shielded harness. ■

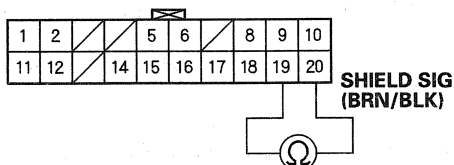
(cont'd)

Navigation System

Symptom Troubleshooting (cont'd)

10. Check for continuity between navigation display unit 20P connector terminal No. 19 and terminal No. 20.

NAVIGATION DISPLAY UNIT 20P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—There is a short to body ground in the circuit between the navigation display unit and the navigation unit. Replace the affected shielded harness. ■

NO—Replace the navigation unit. If the problem still doesn't go away, replace the navigation display unit. ■

Special Tools Required

SCS service connector 07PAZ-0010100

Navigation display buttons do not work or respond properly

NOTE:

- Always check connectors for poor contact and poor pin fits.
- Before troubleshooting, get the navigation and audio system anti-theft codes.
- Before troubleshooting, write down all the audio presets and re-enter them after repairs are complete.
- Always verify the concern and compare the system operation to a known-good vehicle with the same software loaded whenever possible. If the concern is duplicated in the known-good vehicle, then it can be considered a characteristic of the system.
- Make sure the DVD is not scratched or damaged.
- Make sure the correct DVD color and version is installed.

1. Turn the ignition switch ON (II).
2. Eject the navigation DVD (see page 22-507).

Does the DVD eject?

YES—Go to step 3.

NO—Do the troubleshooting for navigation unit will not eject or accept the navigation DVD (see page 22-472). ■

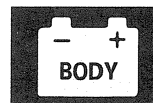
3. Check the DVD label color, version number, and the reading surface for damage, scratches or dirt.

NOTE: Refer to ISIS or Honda Service Express website for any service bulletins about navigation system DVD information.

Is the DVD the correct color (white), correct version (minimum requirement), clean, and free of scratches?

YES—Go to step 4.

NO—Replace the navigation system DVD and recheck the system. ■



4. Turn the audio system ON and test all of its functions.

Does the audio system turn on and function normally?

YES—Go to step 5.

NO—Troubleshoot the audio system. ■

5. Turn the navigation display ON.

Does the navigation display turn ON, and display the disclaimer screen?

YES—Go to step 6.

NO—Do the troubleshooting for no picture is displayed (see page 22-464). ■

6. Select "OK" on the disclaimer screen.

Can you select "OK" on the disclaimer screen?

YES—Go to step 7.

NO—Go to step 8.

7. Go into the Diagnostic Menu and use the "Touch Panel Check" (see page 22-489) and "Hard Key" (see page 22-492) to test all the possible touch locations on the screen and the hard key buttons that surround the navigation display unit.

Does the every button displayed on the screen and every hard key respond properly when touched?

YES—No problems at this time. Get further details from the customer and try to duplicate the problem under the same conditions and perform this troubleshooting again at that time. ■

NO—Substitute a known-good navigation display unit and recheck. If the problem goes away, replace the original navigation display unit. If the problem is still present, substitute a known-good navigation unit and recheck. If the problem goes away, replace the navigation unit (see page 22-508). ■

8. Do the forced starting of display (see page 22-507) and check the connection links in the "In-Line Diag" mode.

Are the connection links normal (green)?

YES—Substitute a known-good navigation display unit and recheck. If the problem goes away, replace the original navigation display unit. If the problem is still present, substitute a known-good navigation unit and recheck. If the problem goes away, replace the navigation unit (see page 22-508). ■

NO—Go to step 9.

9. Check the connection links on the "In-Line Diag" mode.

Are all the connection links red (failed response)?

YES—If the vehicle is equipped with any OEM audio accessories (audio disc changer, Music Link, etc.), go to step 12. If there are no OEM audio accessories connected to the vehicle, go to step 14.

NO—Some of the links are red, go to step 10.

10. Turn the ignition switch OFF.

11. Inspect the connections and pin fits of the following units:

- Audio unit
- XM receiver
- Navigation display unit
- Navigation unit

Are all the connections properly connected and terminal fits tight?

YES—If the vehicle is equipped with any OEM audio accessories (audio disc changer, Music Link, etc.), go to step 12. If there are no OEM audio accessories connected to the vehicle, go to step 14.

NO—Repair the connection(s) and/or tighten the terminals and retest. ■

(cont'd)

Navigation System

Symptom Troubleshooting (cont'd)

12. Turn the ignition switch OFF.
13. Completely disconnect all cables that connect an OEM audio accessory to the vehicles GA-NET II communication bus, then turn the ignition switch ON (II) and recheck the navigation system.

Does the navigation display now respond to touch?

YES—Replace the defective OEM audio accessory or cable. ■

NO—Go to step 14.

14. Turn the ignition switch OFF.
15. Disconnect the XM receiver connector A (14P), then turn the ignition switch ON (II) and recheck the navigation system.

Does the navigation display now respond to touch?

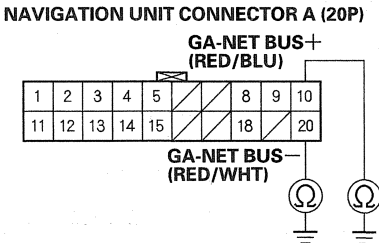
YES—Replace the defective XM receiver. ■

NO—Go to step 16.

16. Turn the ignition switch OFF.
17. Remove the audio unit (see page 22-372), and disconnect the audio unit connector C (14P).
- NOTE: Eject all the discs before removing the audio unit to prevent damaging the CD player's load mechanism.

18. Disconnect the navigation display unit 20P connector.
19. Disconnect the navigation unit connector A (20P).

20. Check for continuity between body ground and the navigation unit connector A (20P) terminals No. 10 and No. 20 individually.



Wire side of female terminals

Is there continuity?

YES—Short to body ground in the wire(s) between the navigation unit connector A (20P), navigation display unit 20P connector, XM receiver connector A (14P) and the audio unit connector C (14P). Replace the affected shielded harness. ■

NO—Go to step 21.

21. Check for continuity between the navigation unit connector A (20P) as shown.

From terminal	To terminals
A9	A10, A20
A10	A20

NAVIGATION UNIT CONNECTOR A (20P)

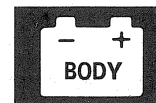


Wire side of female terminals

Is there continuity between any of the terminals?

YES—Short in the wire(s) between the navigation unit connector A (20P), navigation display unit 20P connector, XM receiver connector A (14P) and the audio unit connector C (14P). Replace the affected shielded harness. ■

NO—Go to step 22.

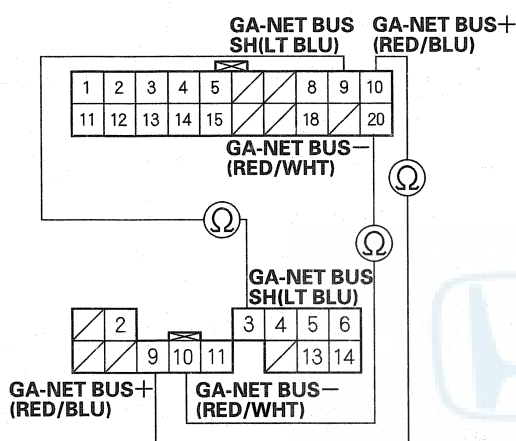


22. Check for continuity between the navigation unit connector A (20P) and the audio unit connector C (14P) according to the table.

Navigation unit connector	Audio unit connector
A9	C3
A10	C9
A20	C10

NAVIGATION UNIT CONNECTOR A (20P)

Wire side of female terminals



AUDIO UNIT CONNECTOR C(14P)

Wire side of female terminals

Is there continuity?

YES—Go to step 23.

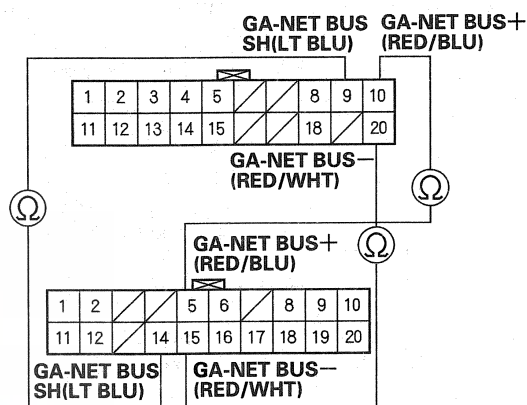
NO—Open in the wire(s) between the navigation unit connector A (20P) and the audio unit connector C (14P). Replace the affected shielded harness. ■

23. Check for continuity between the navigation unit connector A (20P) and the navigation display unit 20P connector according to the table.

Navigation unit connector	Navigation display unit connector
A9	14
A10	5
A20	15

NAVIGATION UNIT CONNECTOR A (20P)

Wire side of female terminals



NAVIGATION DISPLAY UNIT 20P CONNECTOR

Wire side of female terminals

Is there continuity?

YES—Go to step 24.

NO—Open in the wire(s) between the navigation unit connector A (20P) and the navigation display unit 20P connector. Replace the affected shielded harness. ■

(cont'd)

Navigation System

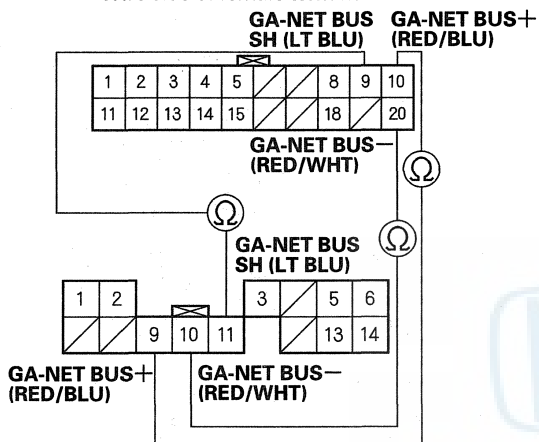
Symptom Troubleshooting (cont'd)

24. Check for continuity between the navigation unit connector A (20P) and the XM receiver connector A (14P) according to the table.

Navigation unit connector	XM receiver connector
A9	A3
A10	A9
A20	A10

NAVIGATION UNIT CONNECTOR A (20P)

Wire side of female terminals



XM RECEIVER CONNECTOR A (14P)

Wire side of female terminals

Is there continuity?

YES—Substitute the following units with known-good units, one at a time in the following order listed and recheck the navigation system operation after each unit substitution:

- Audio unit
- XM receiver
- Navigation display unit
- Navigation unit

If the problem goes away, replace the original defective unit. ■

NO—Open in the wire(s) between the navigation unit connector A (20P) and the XM receiver connector A (14P). Replace the affected shielded harness. ■

Navigation unit will not eject or accept the navigation DVD

1. Check No. 11 (10 A) fuse in the passenger's under-dash fuse/relay box.

Are the fuses OK?

YES—Go to step 2.

NO—Replace the blown fuse(s) and recheck. ■

2. Turn the ignition switch ON (II).

3. Eject the DVD from the navigation unit (see page 22-507).

Does the navigation DVD eject?

YES—Go to step 4.

NO—Go to step 5.

4. Reinsert the navigation DVD into the navigation unit.

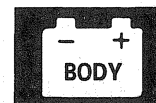
Does the navigation unit accept the navigation DVD?

YES—No problems at this time, the system is normal. Inspect for loose or poor connections at terminals No. 1, No. 2 and No. 4 of navigation unit connector C (8P). ■

NO—Replace the navigation unit (see page 22-508). ■

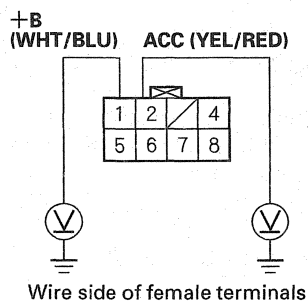
5. Turn the ignition switch OFF.

6. Slide the passenger's seat forward.



7. Turn the ignition switch ON (II).
8. Measure the voltage between body ground and navigation unit connector C (8P) terminals No. 1 and No. 2 individually.

NAVIGATION UNIT CONNECTOR C (8P)



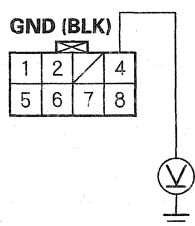
Is there battery voltage?

YES—Go to step 9.

NO—If the +B or ACC wire(s) do not have voltage, repair open in the wire(s) between the under-hood fuse/relay box and passenger's under-dash fuse/relay box and the navigation unit. ■

9. Measure the voltage between navigation unit connector C (8P) terminal No. 4 and the body ground.

NAVIGATION UNIT CONNECTOR C (8P)



Is there 0.2 V or less?

YES—Replace the navigation unit (see page 22-508). ■

NO—Repair open or high resistance in the wire between the navigation unit and body ground (G501). ■

Navigation System

Symptom Troubleshooting (cont'd)

GPS icon is white or not shown

NOTE:

- Make sure the vehicle is parked outside and away from buildings.
- Refer to GPS Information (see page 22-496) for realtime satellite reception display.
- When the reception is good, the icon should appear green.

1. Check for metallic window tint on the windshield, and electronic aftermarket accessories (possibly hidden) mounted near the GPS antenna or the navigation unit.

Is there metallic window tint or electronic accessories?

YES—Remove tint or the accessories, and recheck. ■

NO—Go to step 2.

2. Turn the ignition switch ON (II).
3. Go into the Diagnostic Menu, and use the "Navi System Link" test (see page 22-489) to check the GPS antenna.

Is the "GPS Ant" icon red?

YES—Use the "Navi ECU" test under Unit Check (see page 22-492) to check for a kinked, crushed, or disconnected GPS antenna wire. If necessary, try a known-good GPS antenna. If the icon is still red, replace the navigation unit. ■

NO—Check that nothing is blocking the GPS antenna located behind the gauge control module, and recheck. Substitute a known-good navigation unit, and recheck. ■

Voice guidance cannot be heard, is broken up, or there is static

NOTE:

- Always check that the volume setting and voice feedback are turned ON.
- Always check the connectors for poor connections or loose terminals.
- Before troubleshooting, make sure you have the audio and navigation system anti-theft codes.
- After troubleshooting, enter the audio and navigation system anti-theft codes, and the audio presets.
- Make sure the DVD is not scratched or damaged.
- Make sure the correct DVD color and version is installed.

1. Turn the ignition switch ON (II).
2. Press the display unit SET-UP button.
3. Check the volume setting for the navigation system.

Is it set to OFF?

YES—Set the volume to an audible level. ■

NO—Go to step 4.

4. Check the radio operation.

Can you hear the radio?

YES—Go to step 5.

NO—Troubleshoot the audio system. ■

5. Go into the Diagnostic Menu, and use the "Navi System Link" test (see page 22-489) to check the radio.

Is the "Radio" icon red?

YES—Check for an open in the RED/BLU or RED/WHT wires between the navigation unit connector A (20P) terminals No. 10 and No. 20 and the audio unit connector C (8P) terminals No. 9 and No. 10. If the wires are OK, substitute a known-good audio unit. If the problem doesn't go away, substitute a known-good navigation unit. Replace the audio and/or navigation unit as needed. ■

NO—Go to step 6.

6. Turn the ignition switch OFF.

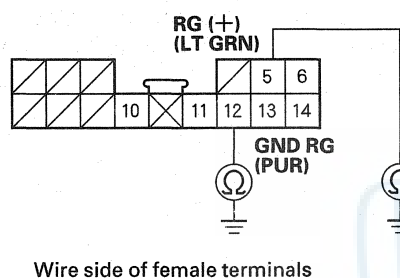


7. Remove the audio unit (see page 22-372), and disconnect the audio unit connector A (20P).

NOTE: Eject all the discs before removing the audio unit to prevent damaging the CD player's load mechanism.

8. Disconnect the navigation unit connector B (14P).
9. Check for continuity between body ground and navigation unit connector B (14P) terminals No. 5 and No. 12 individually.

NAVIGATION UNIT CONNECTOR B (14P)



Is there continuity?

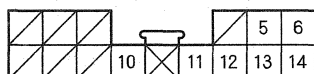
YES—Short to body ground in the wire(s) between the audio unit and the navigation unit. Replace the affected shielded harness. ■

NO—Go to step 10.

10. Check for continuity between navigation unit connector B (14P) according to the table.

From terminal	To terminals
B5	B11, B12
B11	B12

NAVIGATION UNIT CONNECTOR B (14P)



Is there continuity between any of the terminals?

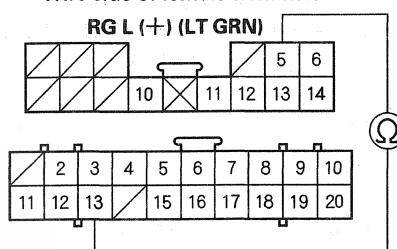
YES—Short in the wire(s) between the navigation unit connector A (20P), navigation display unit 20P connector, XM receiver connector A (14P). Replace the affected shielded harness. ■

NO—Go to step 11.

11. Check for continuity between navigation unit connector B (14P) terminal No. 5 and the audio unit connector A (20P) terminal No. 13.

NAVIGATION UNIT CONNECTOR B (14P)

Wire side of female terminals



AUDIO UNIT CONNECTOR A (20P)

Wire side of female terminals

Is there continuity?

YES—Go to step 12.

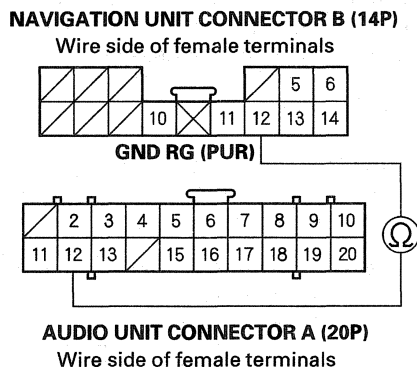
NO—Open in the wire between the navigation unit and audio unit. Check for poor connections or loose terminals at the audio and navigation units. If no poor connection or loose terminal is found, replace the affected shielded harness. ■

(cont'd)

Navigation System

Symptom Troubleshooting (cont'd)

12. Check for continuity between navigation unit connector B (14P) terminal No. 12 and the audio unit connector A (20P) terminal No. 12.



Is there continuity?

YES—Go to step 13.

NO—Open in the wire between the navigation unit and the audio unit. Check for poor connections or loose terminals at the audio and the navigation units. If no poor connection or loose terminal is found, replace the affected shielded harness. ■

13. Substitute a known-good navigation unit, and recheck.

Is the system OK?

YES—Replace the navigation unit (see page 22-508). ■

NO—Replace the audio unit (see page 22-372). ■

Vehicle position icon constantly leaves road, moves erratically, or is very far from actual position

NOTE:

- Make sure the DVD is not scratched or damaged.
- Make sure the correct DVD color and version is installed.

1. Turn the ignition switch ON (II).

2. Check the GPS icon on the navigation picture.

Is the GPS icon on the map screen?

YES—Do the troubleshooting for the GPS icon is white or not shown (see page 22-474). ■

NO—Go to step 3.

3. Go into the Diagnostic Menu, and use the "Yaw Rate" test (see page 22-498) to check the yaw rate sensor.

4. Go into the Diagnostic Menu, and use the "Car Status" test (see page 22-494) to check the vehicle speed pulse.

Are the yaw rate sensor and vehicle speed pulse OK?

YES—The problem may be normal. Check to see if the problem occurs in the same place. If it does, the problem could be in the database. Go to step 5.

NO—If the problem is the yaw rate sensor, replace the navigation unit (see page 22-508). If the problem is the vehicle speed pulse, troubleshoot the vehicle speed signal circuit. ■

5. Substitute a known-good navigation unit, and check to see if the problem occurs in the same place.

Does the problem occur in the same place?

YES—The problem is in the database. Report the problem according to the Navigation System Manual under "Reporting Errors". ■

NO—Replace the navigation unit (see page 22-508). ■



DVD screen error messages

NOTE:

- Check the Navigation System Manual for a list of common DVD screen error messages, and the probable causes.
- Go into the Diagnostic Menu, and use the "Car Status" test (see page 22-494) to check the status of the DVD lid.
- Make sure the DVD is not scratched or damaged.
- Make sure the correct DVD color and version is installed.
- The following troubleshooting is for the error messages shown on the error message table (see page 22-506).

1. Check the DVD-ROM reading surface for scratches.

Are there scratches?

YES—Replace the DVD-ROM (see page 22-507). ■

NO—If the problem occurs occasionally when the system is cold, this is normal. If the problem occurs frequently when driving, replace the navigation unit (see page 22-508). ■

Navigation cannot control XM radio

NOTE:

- Make sure the DVD is not scratched or damaged.
- Make sure the correct DVD color and version is installed.

1. Turn the ignition switch ON (II).
2. Go into the Diagnostic Menu, and use the "Navi System Link" test (see page 22-489).

Is the "XM" icon red?

YES—Check the connector at the XM receiver and the navigation unit (20P connector). ■

NO—Go to step 3.

3. Turn the ignition switch OFF.
4. Substitute a known-good navigation unit (see page 22-508), and recheck.

Can the navigation control the XM radio?

YES—Replace the navigation unit (see page 22-508). ■

NO—Do the audio system troubleshooting. ■

Navigation System

Symptom Troubleshooting (cont'd)

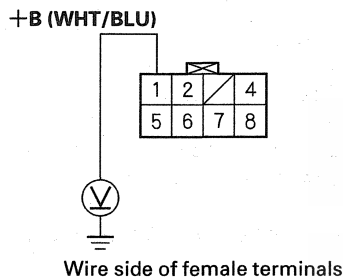
Navigation frequently asks for anti-theft code and needs GPS initialization

NOTE:

- Check for low battery.
- This is often caused by losing battery power or a poor ground.
- Make sure the DVD is not scratched or damaged.
- Make sure the correct DVD color and version is installed.

1. Measure the voltage between body ground and navigation unit connector C (8P) terminal No. 1.

NAVIGATION UNIT CONNECTOR C (8P)



Is there battery voltage?

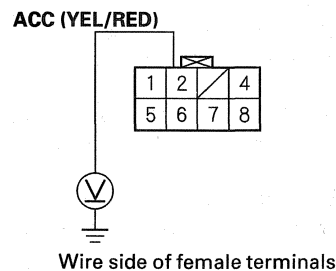
YES—Go to step 2.

NO—Repair open or short in the wire between passenger's under-dash fuse/relay box and the navigation unit. ■

2. Turn the ignition switch ON (II).

3. Measure the voltage between body ground and navigation unit connector C (8P) terminal No. 2.

NAVIGATION UNIT CONNECTOR C (8P)



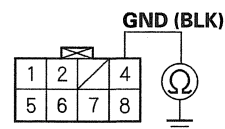
Is there battery voltage?

YES—Go to step 4.

NO—Repair open or short in the wire between passenger's under-dash fuse/relay box and the navigation unit. ■

4. Turn the ignition switch OFF.
5. Disconnect the navigation unit connector C (8P).
6. Check for continuity between navigation unit connector C (8P) terminal No. 4 and body ground.

NAVIGATION UNIT CONNECTOR C (8P)

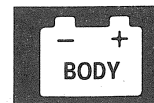


Wire side of female terminals

Is there continuity?

YES—Replace the navigation unit (see page 22-508). ■

NO—Repair open in the wire between navigation unit and body ground (G501). ■



Navigation cannot control HVAC by voice command

NOTE:

- Always check the connectors for poor connections or loose terminals.
- Before troubleshooting, get the navigation system anti-theft codes.
- After troubleshooting, enter the navigation system anti-theft codes.
- Verify that the correct navigation unit is installed for this model. Go into the Diagnostic Menu, and use "Version" (see page 22-502).
- Always check for and resolve all CAN DTCs before troubleshooting the navigation system.
- Make sure the DVD is not scratched or damaged.
- Make sure the correct DVD color and version is installed.

1. Turn the ignition switch ON (II).
2. Check the navigation system function.

Does the navigation system function normally all other aspects of operation?

YES—Go to step 3.

NO—Refer to the navigation system symptom troubleshooting. Resolve any other problems and then recheck the system function. ■

3. Check the HVAC function.

Does the HVAC system function normally all other aspects of operation?

YES—Go to step 4.

NO—Refer to the HVAC system symptom troubleshooting. Resolve any other problems and then recheck the system function. ■

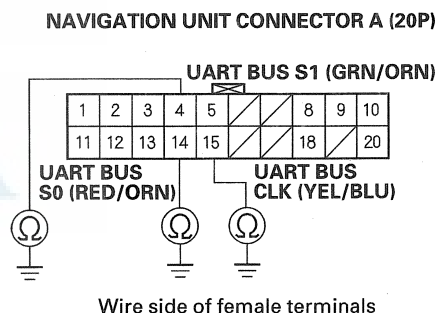
4. Go into the Diagnostic mode and use the Navi System Link diagnostic (see page 22-489).

Is the Air-con icon red?

YES—Go to step 5.

NO—Substitute a known-good climate control units and navigation unit one at a time, in this order. Recheck the system operation after each unit substitution until the problem is resolved, then replace the malfunction unit. ■

5. Turn the ignition switch OFF.
6. Disconnect climate control unit connector A (20P) and navigation unit connector A (20P).
7. Check for continuity between body ground and the navigation unit connector A (20P) terminals No. 4, No. 14, and No. 15 individually.



Is there continuity?

YES—Repair short to body ground in the wire(s) between the navigation unit connector A (20P) and climate control unit connector A (20P). ■

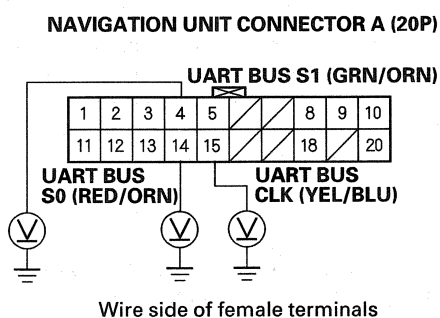
NO—Go to step 8.

(cont'd)

Navigation System

Symptom Troubleshooting (cont'd)

8. Turn the ignition switch ON (II).
9. Measure the voltage between body ground and the navigation unit connector A (20P) terminals No. 4, No. 14, and No. 15 individually.



Is there 0.2V or more?

YES—Repair short to power in the wire(s) between the navigation unit connector A (20P) and climate control unit connector A (20P). ■

NO—Go to step 10.

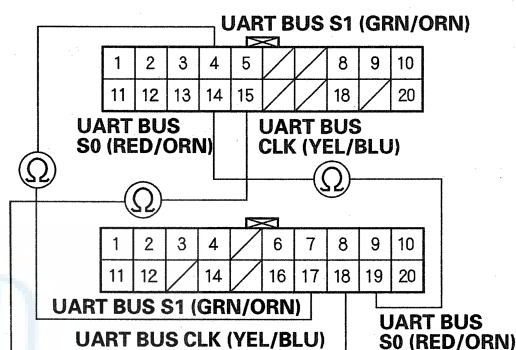
10. Turn the ignition switch OFF.

11. Check for continuity between the navigation unit connector A (20P) and the climate control unit connector A (20P) according to the table.

Navigation unit connector	Climate control unit connector
A4	A17
A14	A19
A15	A18

NAVIGATION UNIT CONNECTOR A (20P)

Wire side of female terminals



CLIMATE CONTROL UNIT CONNECTOR A (A20P)

Wire side of female terminals

Is there continuity?

YES—Go to step 12.

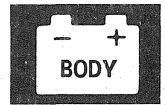
NO—Repair open in the wire(s) between the navigation unit connector A (20P) and the climate control unit connector A (20P). ■

12. Substitute a known-good climate control unit (see page 21-123), and recheck.

Does the problem goes away?

YES—Replace the original climate control unit. ■

NO—Replace the navigation unit (see page 22-508). ■



Display day/night mode does not work

NOTE:

- Check the display setting.
- Always check the connectors for poor connections or loose terminals.
- Before troubleshooting, make sure you have the navigation system anti-theft codes.
- After troubleshooting, enter the navigation system anti-theft codes.
- Full brightness on the instrument panel brightness control causes the system to stay in the day mode, even when the lights are on.

1. Turn the ignition switch ON (II).
2. Make sure the instrument panel brightness control is not on full brightness. Turn the headlights on, and adjust the dash brightness to the middle range.
3. Change the day/night mode under Set-up to "Auto" and recheck.

Does the display change to day and night modes when turning the headlight on and off?

YES—The system is OK at this time. ■

NO—Go to step 4.

4. Go into the Diagnostic Menu, and use the "Car Status" test to check for an ILL signal (see page 22-494).

Is the "ILL" signal OK?

YES—The system is OK. ■

NO—Check the ILL+ circuit between the navigation unit and No. 10 (15 A) fuse in the passenger's under-dash fuse/relay box. If OK, substitute a known-good navigation unit and navigation display unit one at a time, in this order. Recheck the system operation after each unit substitution until the problem is resolved, then replace the malfunction unit. ■

System locks up or freezes constantly

NOTE:

- Check the DVD for damage.
- Check the DVD color.
- Check the GPS and VSP signals in the GPS information and car status tests.

1. Start the engine.
2. Turn the ignition switch OFF, then back ON (II).

Does the system reboot?

YES—The system is OK at this time. ■

NO—Check the DVD for scratches or damage, and the navigation unit for water damage. If OK, go into the Diagnostic Menu, and do all of the "Unit Check" tests (see page 22-492). ■

Navigation System

Symptom Troubleshooting (cont'd)

Vehicle icon moves by itself when parked

NOTE:

- Always check the connectors for poor connections or loose terminals.
- Before troubleshooting, make sure you have navigation system anti-theft code.
- After troubleshooting, re-enter the anti-theft code, and re-initialize the navigation system.

1. Start the engine.
2. From the main menu, select places, then select any destination, and begin the trip.
3. With the vehicle parked, watch the vehicle icon on the display.

Does the vehicle position icon move by itself?

YES—Go to step 4.

NO—The system is OK at this time. ■

4. Go into the Diagnostic Menu and select "DEMO MODE" test (see page 22-500) under Functional Setup.

Is the "DEMO MODE" set to "YES"?

YES—Set the Demonstration mode to "NO". ■

NO—Replace the navigation unit (see page 22-508). ■

Navigation display stays on with ignition switch OFF

NOTE:

- Always check the connectors for poor connections or loose terminals.
- Before troubleshooting, make sure you have navigation system anti-theft code.
- After troubleshooting, re-enter the anti-theft code, and re-initialize the navigation system.
- Check for Non-OEM accessories using the ACC circuit.

1. Remove the key from the ignition.

Does the navigation screen stay on?

YES—Go to step 2.

NO—The system is OK at this time. ■

2. The vehicle may have been used as a demonstration vehicle at an event like an auto show. In these events, power is often jumpered to the navigation system so that the ignition key is not needed in the vehicle. At the end of the show, the jumper wire may not have been removed. Check the navigation unit "C" connector (8P) for a "non-factory" jumper wire in series with the factory cable.

Is there a jumper wire?

YES—Remove the jumper wire, and re-test. ■

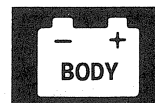
NO—Go to step 3.

3. The navigation display or the navigation unit may have been jumpered to allow the navigation system to run without the ignition key.

Does the system function with the ignition switch off?

YES—Go to step 4.

NO—Go to step 5.



4. Remove the navigation display, and check to see if the navigation display unit 20P connector has a non-factory jumper wire in series with the factory connector.

Is there a jumper wire?

YES—Remove the jumper wire, and re-test. ■

NO—Go to step 5.

5. Check the interior lights with the ignition switch off.

Can you turn on the interior lights with the ignition switch off?

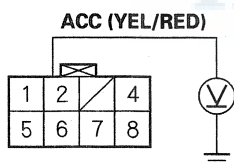
YES—Go to step 6.

NO—Replace the navigation unit (see page 22-508). ■

6. Disconnect Navigation unit connector C (8P).

7. Measure the voltage between navigation unit connector C (8P) terminal No. 2 and body ground.

NAVIGATION UNIT CONNECTOR C (8P)



Wire side of female terminals

Is there battery voltage?

YES—Repair short to power in the wire. ■

NO—Replace the navigation unit (see page 22-508). ■

Navigation cannot control audio system

NOTE:

- Check the vehicle battery condition first.
- Check for and resolve any audio unit concerns first.

1. Turn the ignition switch ON (II).

2. Make sure the anti-theft code for the audio system is entered.

3. Go into the Diagnostic Menu, and use the "Navi System Link" test (see page 22-489).

Is the "Radio" icon red?

YES—Do the troubleshooting for the voice guidance cannot be heard is broken up or there is static (see page 22-474). ■

NO—Go to step 4.

4. Turn the ignition switch OFF.

5. Substitute a known-good navigation unit (see page 22-508), and recheck.

Can the navigation unit control the audio?

YES—Replace the original navigation unit (see page 22-508). ■

NO—Do the audio system troubleshooting. ■

Navigation System

Symptom Troubleshooting (cont'd)

Rearview camera image does not come on or work properly

NOTE:

- Check the vehicle battery condition first.
- Check for the correct color DVD (white) and software version. The wrong DVD or software version may affect the rearview camera function.
- A short in the wiring to the rearview camera can permanently damage the navigation unit.

1. Set the parking brake.
2. Turn the ignition switch ON (II).
3. Go into the system diagnostic menu and check the reverse signal in the car status test.

Does the back-up signal go from OFF (0) to ON (I) when the shift lever is moved from the park to the reverse positions?

YES—Go to step 7.

NO—Go to step 4.

4. Turn the ignition switch OFF.
5. Disconnect the navigation unit connector C (8P).
6. Measure the voltage on the navigation unit connector C (8P) terminal No. 5 to body ground with the shifter in the reverse position.

Is there battery voltage?

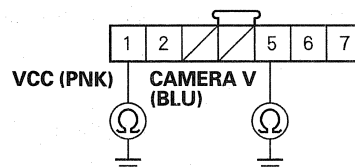
YES—Place the shifter back into the park position and go to step 8.

NO—There is no back-up signal voltage from the reverse relay. Place the shifter back into the park position and troubleshoot the open or short in the back-up light circuit. ■

7. Turn the ignition switch OFF.
8. Disconnect the navigation unit connector D (7P).
9. Disconnect the rearview camera 6P connector.

10. Check for continuity between body ground and navigation unit connector D (7P) terminal No. 1 and No. 5 individually.

NAVIGATION UNIT CONNECTOR D (7P)



Wire side of female terminals

Is there continuity?

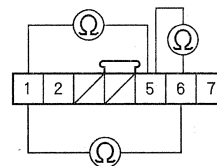
YES—Short to body ground in the wire(s) between the navigation unit and the rearview camera. Replace the appropriate shielded harness. ■

NO—Go to step 11.

11. Check for continuity between the terminals of navigation unit connector D (7P) according to the table.

From terminal	To terminals
D6 (GRY)	D1 (PNK), D5 (BLU)
D1 (PNK)	D5 (BLU)

NAVIGATION UNIT CONNECTOR D (7P)

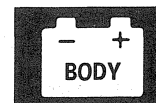


Wire side of female terminals

Is there continuity between any of the terminals?

YES—Short in the wire(s) between the navigation unit and the rearview camera. Replace the affected shielded harness. ■

NO—Go to step 12.

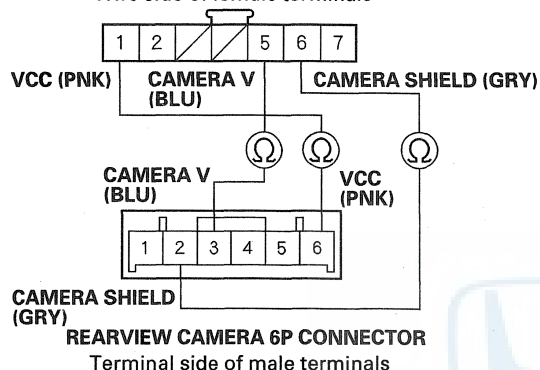


12. Check for continuity between navigation unit connector D (7P) and rearview camera 6P connector according to the table.

Navigation unit connector	Rearview camera connector
D1	6
D5	3
D6	2

NAVIGATION UNIT CONNECTOR D (7P)

Wire side of female terminals



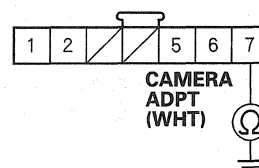
Is there continuity?

YES—Go to step 13.

NO—Open in the wire(s) between the navigation unit and the rearview camera. Replace the affected shielded harness. ■

13. Check for continuity between the navigation connector D (7P) terminal No. 7 and body ground.

NAVIGATION UNIT CONNECTOR D (7P)



Wire side of female terminals

Is there continuity?

YES—Repair short to body ground in the wire between the navigation unit and the rearview camera. ■

NO—Go to step 14.

(cont'd)

Navigation System

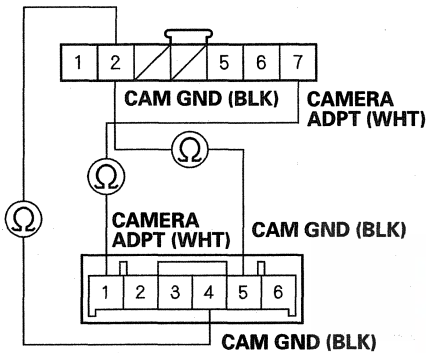
Symptom Troubleshooting (cont'd)

14. Check for continuity between navigation unit connector D (7P) and reaview camera 6P connector according to the table.

Navigation unit connector	Rearview camera connector
D2	4 and 5
D7	1

NAVIGATION UNIT CONNECTOR D (7P)

Wire side of female terminals



REARVIEW CAMERA 6P CONNECTOR

Terminal side of male terminals

Is there continuity?

YES—Substitute and known-good rearview camera then retest. If the problem is resolved, replace the original rearview camera. If the problem is not resolved, replace the navigation unit (see page 22-508). ■

NO—Repair open in the wire(s) between the navigation unit and the rearview camera. ■



System Diagnostic Mode

Diagnostic Function Diagram

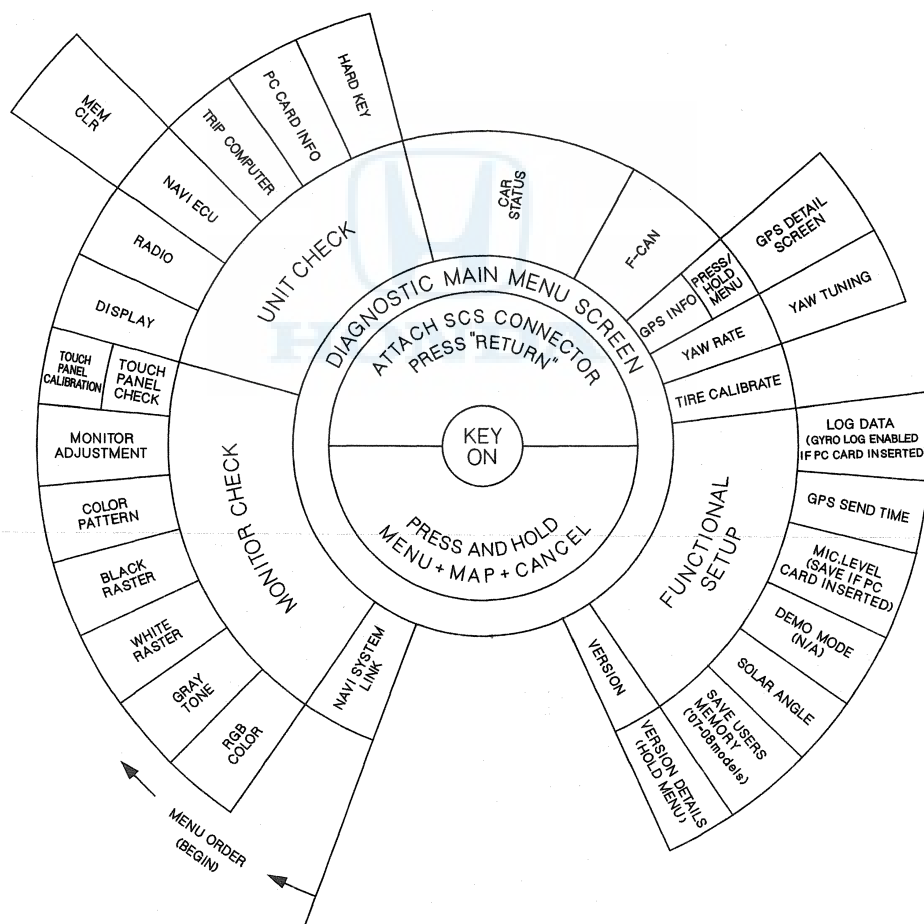
This diagram shows the diagnostic slice of the System Function Diagram. It has the diagnostic features of the navigation system starting at the center and working outward in layers. The diagnostic starts at "Key ON," and then displays the Diagnostic Main Menu (Select Diagnosis items) after:

The diagram shows the available menu choices starting at the bottom left and moving clockwise.

You will find a detailed explanation of each feature on the given page numbers.

In most cases, do not clear or change settings in any diagnostic screen unless instructed to do so in the explanation or by the factory. If the factory supplies you with a PCMCIA card to place in the PC slot, then the features specified in the diagram with "Card" are available.

- Starting the vehicle with the SCS service connector plugged in to the navigation service check connector (see page 22-507) to get to the System Links screen, then selecting Return.
- Simultaneously pressing and holding the MENU, MAP/GUIDE, and CANCEL buttons.



(cont'd)

Navigation System

System Diagnostic Mode (cont'd)

Factory diagnostic screen In Line Diag

NOTE: Check the SCS service connector for a shorting connector.

1. When a navigation unit is powered up for the first time at the factory, the "factory diagnosis" screen (In Line Diag) appears. Normally the factory performs the steps necessary to verify proper operation and terminate the "factory diagnostic". Until the proper confirmation sequence is performed, the screen will appear every time the vehicle is started.

In Line Diag		Start Diag	Exit Diag	
Navi ECU		XXXX Correct PIN		
GPS Antenna		1	2	3
Display		4	5	6
A/C		7	8	9
Radio		Delete	0	Done
XM				
F-CAN				
Rear Camera				

2. Follow the steps to prevent the screen from showing up in the future:
 - Hold down the buttons (Menu+Map/Guide+Cancel) for about 5 seconds (the "Select Diagnosis Items" screen will appear).
 - Hold down the Map/Guide button for 5—10 seconds (A screen with a "Complete" button, will appear).
 - Touch "Complete", and then the "Return" button (the system may re-boot).
 - Wait 10 seconds, and then restart the vehicle, and confirm normal operation by completing the "PDI of the navigation system" Service Bulletin.

Start-up procedure and Diagnosis Menu

1. Turn the ignition switch to the ON (II) position.

Press and hold the Menu, the Map/Guide, and the Cancel buttons. Keep them pressed for approximately 5 seconds or jumper the 2-pin SCS service connector. The display screen then goes directly to the Diagnostic Menu.

NOTE:

- This only allows access to the diagnostic screens. All other Navigation functions are disabled.
- When you finish troubleshooting, make sure you remove the SCS service connector.

DIAGNOSTIC MENU SCREEN

Select Diagnosis Items		Return
Navi System	DPS Information	
Monitor Check	Yaw Rate	
Unit Check	Tire Calibrate	
Car Status	Functional Set up	
F-CAN	Version	

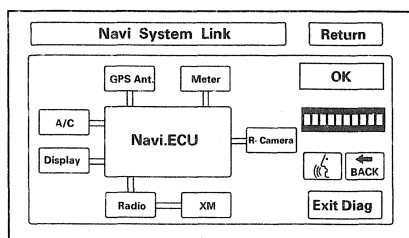
2. After the display changes to the Diagnostic Menu, select the item you want to check, and the test will start. To return to the previous screen, select "Return".
 - Navi System (Link)
 - Monitor Check
 - Unit Check
 - Car Status
 - F-CAN
 - GPS Information
 - Yaw Rate
 - Tire Calibrate
 - Functional Setup
 - Version



Navi System Link

- This diagnostic tests the cables connecting the navigation components. Ensure that the ignition switch is in the ON (II) position. When the diagnostic begins, you hear a “bong” sound. The system is in a “Detecting” mode, and is waiting for all items in white to be tested. This includes the voice control switch (TALK/BACK buttons), and microphone.
 - Press the TALK button on the steering wheel, and in a normal voice, say “testing”. The Talk indicator on the screen should turn green, and the voice level indicator should move to at least the 6th bar to pass. Next, press the BACK button. The “back” indicator should turn green.
 - If all of the communication lines connecting the system components, and the TALK/BACK buttons/microphone check out OK (all block diagram items are green), then the “OK” indicator turns green.
 - If there is a problem with the system, the faulty system component item turns red, and the screen will show “NG” in red. Use the troubleshooting index, and other diagnostic screens to help locate the problem.
 - The indication on the screen will not change until you cycle the ignition switch. After repairing the affected cable or system, repeat this diagnostic.
- NOTE: Green boxes and green “OK” indicate that the communications lines (cables) are intact. This diagnostic does not necessarily imply that the individual components are functioning properly. For instance, the GPS antenna wire may be crushed, but still show as “green”. A road test, or other diagnostic may be necessary to find the problem. Additionally the rear camera is optional. If the vehicle has the rear view camera installed, the indication will be green, otherwise the indication is a yellow color-this is normal.
- Select “Return” to return to the Diagnostic Menu or the “Exit Diag” button to exit.

NOTE: The Mic Level indicator must reach the 6th bar or greater to pass the test.



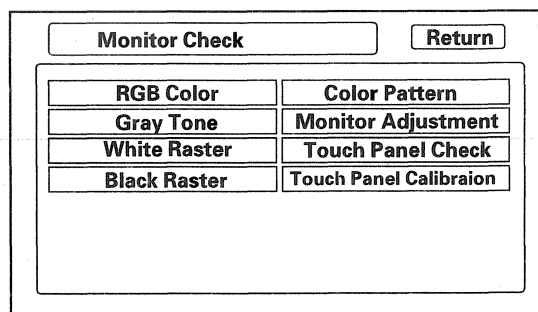
Monitor Check

Overview of the navigation display

- The navigation display communicates with the navigation unit over its own GA-Net bus. Information is sent to the navigation unit whenever the user activates the touch screen or buttons. Information sent by the navigation unit to the navigation display includes commands to control the LCD back light.
- This security system protects the navigation display by daisy-chaining the security signal through it, and then passing the signal to the audio unit.
- The illumination input from the gauge brightness control provides back lighting for the buttons surrounding the screen.

These screens allow you to troubleshoot the navigation display. Select the item you want to troubleshoot, and follow the diagnostic instructions.

- RGB Color
- Gray Tone
- White Raster
- Black Raster
- Color Pattern
- Monitor Adjustment
- Touch Panel Check
- Touch Panel Calibration



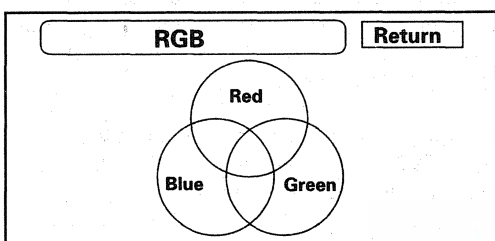
(cont'd)

Navigation System

System Diagnostic Mode (cont'd)

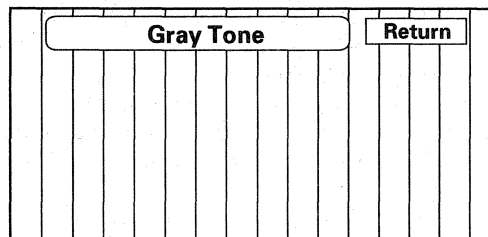
RGB Color

This screen verifies that the navigation display is receiving the video (R, G, B and Composite sync) signals properly. The three primary colors should all be shown without distortion. The combination of all three should produce a central white section. If any of the colors are missing, troubleshoot for the color signal (see page 22-465). If the picture has lines in it, or scrolls horizontally or vertically, troubleshoot for a Composite sync problem (see page 22-467).



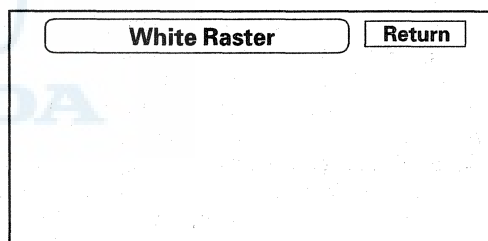
Gray Tone

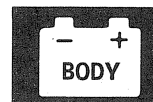
This screen looks for problems with contrast. You should be able to see the changes from bar to bar across the scale. It is normal for the 2 bars on either side to appear the same.



White Raster

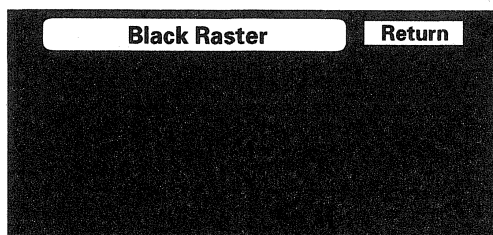
The entire display must be white.





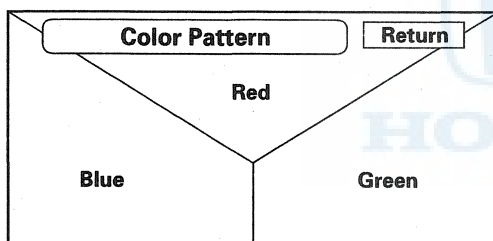
Black Raster

The entire display must be black.



Color Pattern

The chart below shows the colors being used for the Map and Menu screens. This is for factory use only. To check the color signal use the "RGB" test.



Monitor Adjustment

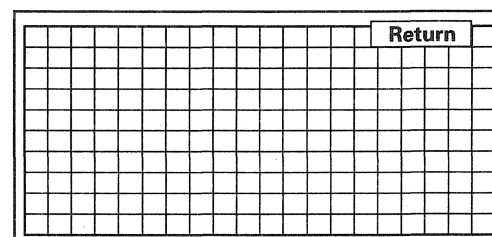
This allows you to center the navigation display. Use the joystick to move the picture up/down or left/right. It is unlikely that you will ever need to adjust the monitor position. The "Default" button will reset the display position to factory specifications. The factory default is 0, 0.

Monitor Adjustment		Return	
Setting	(0 , 0)		
Default	(0 , 0)		
		Default	Tuning

Touch Panel Check

The panel touch sensing system consists of a touch sensitive resistive membrane covering the display. Contrary to other systems using infrared beams, the screen has to be physically touched to make it work. The display has the capability of an almost infinite number of touch locations. However, to be compatible with earlier systems, the software only senses the locations shown on the diagnostic screen below. Every possible touch button position is shown on this diagnostic screen. Touching one of these areas should cause its color to reverse, and the sound a "beep". If the touch locations are off slightly (by less than one touch location), use the "Touch Panel Calibration" diagnosis to re-align the touch "zones" with the screen image. If any areas of the screen either don't respond, or respond at some other location when touched, then replace the navigation display.

NOTE: Unlike earlier screens that used infrared sensors, direct sunlight will not affect this test.



(cont'd)

Navigation System

System Diagnostic Mode (cont'd)

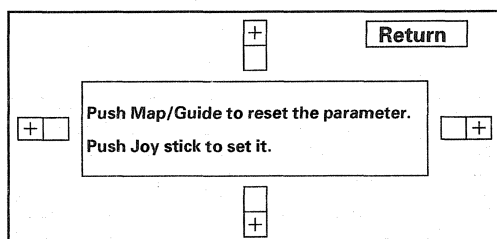
Touch Panel Calibration

The display screen uses a touch sensitive membrane instead of fixed infrared "beams". This means that every location of the entire surface of the display is touch sensitive.

For the display to be compatible with earlier navi systems, the system software creates "touch zones" emulating the touch "switches" created by the intersections of 20 vertical and 10 horizontal infrared beams. This diagnostic allows alignment of these artificially created "zones" with the location of the buttons images on the screen.

Normally this should never need adjustment, and it is used only to adjust the touch locations for parallax (the touch locations appear different when viewed at an angle). However if an adjustment is necessary, follow this procedure:

- The screen consists of four test areas consisting of a "+" button and an adjacent box with a black border. Touch the four "+" buttons to verify alignment. If you touch a "+" button, and the adjacent box becomes yellow, then do the following. Continue to hold the "+" button, and simultaneously move the joystick to shift the screen slightly from side to side, or up and down. The adjustment is complete when you can touch all four "+" boxes and none of the adjacent boxes turns yellow.
- To store any changes you make, push in the joystick.
- To reset the touch zones to the factory default, touch the Map/Guide button.
- Press Return to exit the diagnostic.

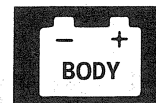


Unit Check

To start the test, select the item you want to check.

- Display
- Radio
- Navi ECU
- PC Card Info
- Hard Key

Select Check Units		Return
Display	PC Card Info.	
Radio	Hard Key	
Navi ECU		



Display

This performs additional checks on the communication bus between the navigation unit and the navigation display unit. In addition, the internal electronics and touch screen functionality are confirmed.

- When the connection is NG, first check for loose terminals at the navigation unit, the navigation display unit and the audio unit connections. Next, check for an open or short in the communication line between the navigation unit, the navigation display unit and the audio unit. If you find the line has an open or short, replace the affected shielded harness.
- If the ROM or RAM is NG, replace the navigation display unit.
- The version represents the software version in the display.

Display		Return
Connection	OK	OK
ROM	OK	
RAM	OK	
Version	040423	

Radio

This diagnostic checks the audio connections. If not OK, do the troubleshooting for the audio system.

Radio		Return
Connection	OK	OK

Navi ECU

This screen looks for problems with the navigation unit. When you initiate this diagnostic the navigation unit may delay up to a minute while the diagnostic runs.

- If the "V-RAM" or "D-RAM" is NG, then replace the navigation unit.
- If the "GPS" indicates "NG (ANT)", then check the entire GPS antenna wire from the navigation unit to the antenna. If the wire is crushed or damaged, try a known good antenna. If this diagnostic reads OK, then order a new GPS antenna. If the diagnostic still reads NG (ANT), then replace the navigation unit.
- "DVD ROM" represents the database version on the DVD. You can also find this information in setup by selecting System Information.
- "Serial No." should be the same as the serial number found on the underside of the navigation unit. You need this number to obtain the security code from the Interactive Network (iN) system.
- "Mem Clear" is for factory use, and should never be used unless instructed by the factory. Accidental selection will erase the customer's personal data, PINS, and settings. If selected, a popup box is appears asking if you want to clear the memory. If so, select "Yes".

Navi ECU		Return
V-RAM	OK	OK
D-RAM	OK	
GPS	OK	
DVD-ROM	-	
Serial No.	ABC011234567	
		Mem Clear

(cont'd)

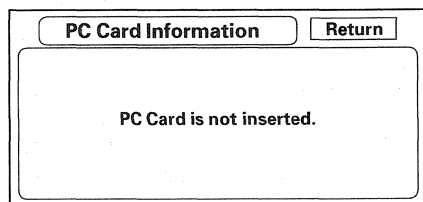
Navigation System

System Diagnostic Mode (cont'd)

PC Card info

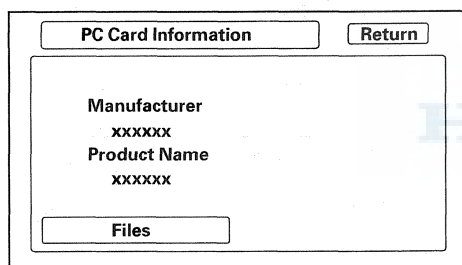
There is no PC Card in the PC slot, and the screen should say, "PC Card is not inserted".

NOTE: Do not insert any card or object into the slot.



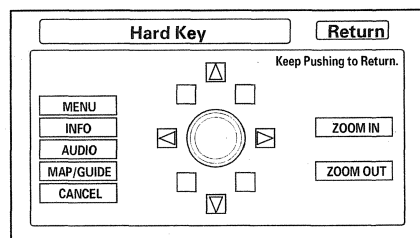
If the factory provides a PC card, and instructs you to insert a card, then the screen displays the Manufacturer, and Product Name as shown in the following screen.

NOTE: the "FILES" is for factory use only.



Hard Key

This diagnostic checks the status of each hard button surrounding the navigation display. When each hard button is pressed, the corresponding item on the screen should flash "blue". Touch the return key, or press and hold the joystick to exit.



Car Status

Use this screen to confirm that the navigation unit is properly receiving input signals. Signals equal to (0) are OFF, and signals equal to (1) are ON. If the value on the display does not match the actual vehicle status, then check the wire carrying the signal.

- VSP-Vehicle Speed Pulse from PCM (Pin 6 of 8-Pin C-connector)
 - a) OFF (0) when vehicle is not moving
 - b) ON (1) when vehicle is moving

The VSP comes from the PCM as a dedicated signal. Internally, the navigation unit compares the actual VP on the map against street data to adjust the pulse to speed scaling factor. As this scaling factor becomes more accurate, the "Level" gradually increases from 0 to 10.

- BACK-Reverse indication from the taillight relay (Pin 5 of 8-Pin C-connector)
 - a) OFF (0) when the shift lever is in any position other than reverse
 - b) ON (1) when the shift lever is in reverse

The Back signal is used by the navigation unit to allow the map screen to show the VP moving backwards when in reverse, and to trigger the optional rear view camera. This signal is needed because the Speed Pulse does not provide any directional information to the system.

- ILL CANCEL
 - a) OFF (0) when the gauge control module brightness control is not set to maximum brightness.
 - b) ON (1) when the gauge control module brightness knob is at full bright.

The illumination cancel feature comes from the meter message in F-CAN.



- ILL-Illumination Indication
(Pin 5 of the navigation unit 20-Pin A-connector)
 - a) OFF (0) when the parking lights, or headlights are off
 - b) ON (1) when the parking lights, or headlights are on

The navigation unit uses the signal to determine whether to put the navigation screen into the Day or Night brightness mode. (Setup screen 1)

- DVD Lid-senses if the DVD door is open
 - a) (Close) when the door is closed
 - b) (Open) when the door is open

The navigation unit has a microswitch to detect this. If open is indicated when the door is closed, replace the navigation unit.

Car Status		Return	
VSP	[0]	ILL	[0]
BACK	[0]	DVD Lid	[Close]
ILL CANCEL	[0]		

F-CAN System Link

F-CAN (Fast Controller Area Network) passes information between processors on the network. For example, the F-CAN network is used to pass charging system or "illumination cancel" signals. The F-CAN network uses a communication protocol that transmits data at 500 Kbps.

- If the diagnostic screen below reads NG with the ignition switch ON (II), you can use the HDS (HONDA Diagnostic System) to retrieve the diagnostic trouble codes (DTCs) from the F-CAN. The data displayed in the ID boxes is irrelevant.
- For more details on troubleshooting the F-CAN, refer to the multiplex system.

NOTE: If this is red "IF4", then the F-CAN link to the gauge control module may be malfunctioning. Troubleshoot in the F-CAN selection of the service manual.

F- CAN System Link		Return
F- CAN	ERROR ACTIVE	OK
UNIT	ID	
METER	1F4	

(cont'd)

Navigation System

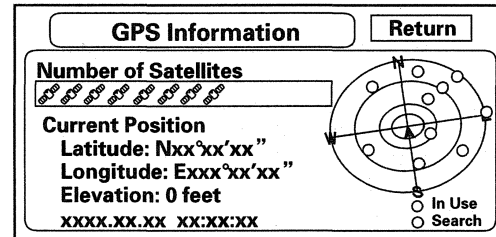
System Diagnostic Mode (cont'd)

GPS Information

This screen shows the current status of GPS reception. The circular diagram shows the current location of the GPS satellites (yellow numbers) as they would appear in the sky. The outer circle represents the horizon (0 degrees elevation). The middle and inner circles represent 30 and 60 degrees respectively. The very center of the diagram (90 degrees elevation) is directly overhead. Nearby obstructions, like tall buildings, will block satellites in that direction. That is why it is necessary to troubleshoot GPS reception issues in an open area. The satellites shown on the diagram correspond to the "PRN" number in the "GPS Details" screen. There are always 24 "active" GPS satellites in orbit. Because satellites fail, and have to be removed from service, spares are always parked in orbit, ready to be activated. This is why the PRN (satellite ID number) can be greater than 24.

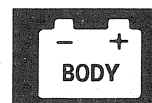
NOTE:

- To use this screen for troubleshooting, the vehicle should be outside, away from buildings, tall trees, and high-tension wires for at least 10 minutes with the engine running.
- Metallic window tinting on the front window or aftermarket electronic accessories mounted near the navigation unit, GPS antenna or navigation display can interfere with GPS acquisition.
- The "Number of Satellites" box shows the number of acquired satellites (maximum of 12). It should contain 3 or more icons. If not, troubleshoot for "GPS icon is white or not shown" (see page 22-474).
- The "Current Position" shows latitude, longitude, and elevation (in meters). If there are less than 4 satellites, the elevation can be grossly inaccurate.
- The Date/Time field shows the current date, and also a time that includes daylight savings and other offsets entered by the customer in Setup function "Adjust Time Zone/Clock".



NOTE:

Push and hold the "Map/Guide" button, and the "dots" on the diagram are replaced with the "PRN" # (satellite numbers). These numbers correspond to the numbers in the "PRN" column on the "GPS details" screen.



GPS Detail

By pressing and holding the MENU button for 10 seconds, a GPS Detail screen appears. This screen displays real time incoming satellite positional data. Most of the information shown on this screen is for factory use, however, some of the data can indicate partial GPS signal interference.

GPS Detail							Return
TS:xx AS:xx		HDop:xx.x VDop:xx.x		Speed: x.xMi/h Direction: x °		Date :xxxx.xx.xx Time:xx:xx:xx	
3D	PRN	ST	AZI	EL	C/N	ACC	
○	xx	xx	xxx	xx	xxx	xx	1/2
○	xx	xx	xxx	xx	xxx	xx	
○	xx	xx	xxx	xx	xxx	xx	
○	xx	xx	xxx	xx	xxx	xx	
○	xx	xx	xxx	xx	xxx	xx	

- The box TS/AS and HDop/VDop is for factory use.
- The Speed and Direction information is updated in real time when driving, and can be used to detect intermittent speed sensor problems.
- The Date/Time Information is the same as in Setup screen 2 "Adjust Time Zone/Clock".
- If the "3D" icon is shown above the yellow dots, this implies that at least 4 satellites are available for map positioning, and the "GPS" indicator on the map screen will be green. See the Global Positioning System detailed explanation in the "System Description" (see page 22-445).
- If the row of data in the table below begins with a "yellow dot", the AZI and EL fields can be used to locate each satellite "PRN" # on the circular GPS diagram (see prior screen).

NOTE: The data shown in the GPS Detail screen is an example only.

Column	Description	Problem indication
Active	Active satellites (Yellow Dot)	If "3D" is missing do the GPS icon is white or not shown troubleshooting (see page 22-474).
PRN	The satellite ID number	
ST	The status: 0 = cannot view or searching, 2 = acquiring	If all 0, then, do the GPS icon is white or not shown troubleshooting (see page 22-474).
AZI	Azimuth, the angle (0—360) clockwise from north	
EL	Elevation from the horizon (90 deg is overhead)	
C/N	N/A	Healthy signal is 49—52, no signal: 27—33
ACC	N/A	

(cont'd)

Navigation System

System Diagnostic Mode (cont'd)

Yaw Rate

This diagnostic checks the yaw rate sensor in the control unit. This device detects when the vehicle turns, and repositions the vehicle position icon on the map screen. For more detailed information, see the yaw rate sensor theory of operation under "System Description" (see page 22-444).

- "Sensor" indicates the voltage output from the yaw rate sensor. It should indicate about 2.500 V when stopped.
- "Offset" is the reference voltage or standard within the yaw rate sensor. It also should indicate about 2.500 V when stopped.
- A "sensor" output voltage LOWER than the "Offset" voltage indicates that the vehicle is turning to the right.
A "sensor" output voltage HIGHER than the "Offset" voltage indicates that the vehicle is turning to the left.
- The yaw rate offset and sensor should both indicate about 2.500 V when stopped. If either reads zero or 5.000 V, replace the navigation unit.

- The yaw rate offset and sensor should be within ± 0.01 V of each other when stopped. The sensor value should change relative to the offset as the car is turned while driving. If not, replace the navigation unit.

Example: Vehicle stopped

Normal		Abnormal	
Offset	2.526 V	Offset	2.526 V
Sensor	2.516—2.536 V	Sensor	2.623 V

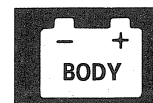
Example: Vehicle turning

Normal		Abnormal	
Offset	2.526 V	Offset	2.526 V
Sensor	2.678 V (left turn) 2.478 V (right turn)	Sensor	2.623 V (no change on turns)

The settings "CCW Cal Factor", "CW Cal Factor", and "Set" are for factory use only. This function should never be used.

NOTE: Do not try to adjust the yaw rate sensor without instructions from American Honda. See the Yaw Rate Tuning sub section to tune the sensor.

Yaw Rate		Return
Sensor	x.xxxV	
Offset	x.xxxV	
CCW Factor	0.0%	▲ ▼
CW Factor	0.0%	▲ ▼
		Tuning Set



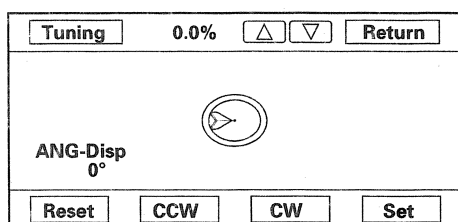
Yaw Rate Tuning

This diagnostic allows you to graphically display problems with the yaw rate sensor.

- The "ANG-Disp" value accumulates any differences between the "offset", and "sensor" voltages (see Yaw Rate diagnostic). When the sensor is working, the random changes in these two voltages generally cancels out, so the value is 0. However, if one voltage is consistently higher than the other, then the "ANG-Disp" value accumulates the constant change.
- The "Reset" button temporarily clears the angular accumulation (ANG-Disp), and clears the display dots.
- Do not touch the "CCW" or "CW", or "Set" buttons. These are used for factory setup only.

For gross problems with the sensor, the stationary test usually confirms whether the sensor is defective. For yaw rate issues related to driving, do the road test described below.

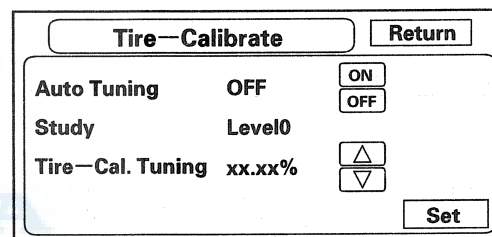
1. Stationary test: If the "VP" icon spins in place, and the "ANG-Disp" value slowly increases or decreases in value, the yaw rate sensor is defective. Replace the navigation unit.
2. Road test: Drive the vehicle on a very straight road. Enter the diagnostic mode, select "Yaw rate", and touch the "Tuning" button. While driving down a straight road, the white "dots" should trace a straight line across the screen. However, if you are driving on a straight road, and you notice the dots constantly dropping down or heading up as you drive, the navigation unit's yaw sensor is defective. You can touch "Reset" to clear "ANG-Disp", and the dotted line.
3. If either test fails, please enter "Yaw rate sensor defective" for the problem description, on the "Navigation core return form".



Tire Calibrate

As the vehicle moves, the navigation system receives speed pulses from the PCM. These pulses are converted using a conversion factor to a mph speed that moves the vehicle position (VP) on the map. The navigation system has an internal tuning function that generates, and refines this factor based on actual driving. The "Level" indicates the status of the tuning. At navigation initialization, it begins at 0, and increases to 10 as the navigation system is used.

- The "Auto Tuning" is factory set to "ON", and should remain on.
- The "Study" indicates the tuning status. If it is less than 10, the unit is still calibrating.
- The "Tire-Cal. Tuning" and "Set" should not be used. It is for factory use only.



(cont'd)

Navigation System

System Diagnostic Mode (cont'd)

Functional Setup

Select the item you want to check.

- Lag Data
- GPS Send Time
- Demo Mode
- Mic Level
- Solar Angle
- Save Users Memory ('07-08 models)

'06 model

Functional Setup		Return
Log Data	Mic Level	
GPS Send Time	Solar Angle	
Demo Mode		

'07-08 models

Functional Setup		Return
Log Data	Mic Level	
GPS Send Time	Solar Angle	
Demo Mode	Save Users Memory	

Log Data

This screen allows the factory to collect log data to troubleshoot navigation system issues.

- There is no card in the "PC Card Slot", and the PC slot door should always be closed. The screen should appear as shown.

Log Data	Return
PC Card is not inserted.	

- However, if the factory provides a PC card, insert it into the card slot (label side up), and then slide the PC Card door shut. If instructed by the factory, select "Gyro. Sensor Logs ON". Follow the factory procedure for gathering test data, and properly ending the test.

Log Data	Return
Logging VP Data OFF <input type="button" value="ON"/> <input type="button" value="OFF"/>	



GPS Send Time

This screen is for factory use only. It allows adjustment of the GPS time. This display updates in real time.

- "GPS Time" is the time as received from the GPS satellites. It is in Greenwich Mean Time (GMT).
- "System Time" is the internal time used by the navigation unit to calculate your position on the map. It is also in Greenwich Mean Time (GMT).
- "Display Time" is the time shown on Setup screen 2 "Adjust Time Zone/Clock", and reflects any changes due to daylight savings time or time adjustments entered by the customer.
- Date, Hour, Minute, and "Set" should not be used.

Send GPS Time				Return	
GPS Time	xxxx.xx.xx	xx:xx:xx	Set		
Year	xxxx	▲▼	Hour	xx	▲▼
Month	xx	▲▼	Minute	xx	▲▼
Day	xx	▲▼	Second	xx	▲▼

Demo Mode

This screen is for factory use only, and should always be set to "OFF". Occasionally this setting is turned "ON" when vehicles are being used at Auto Shows or similar events. Turning this feature on, allows the navigation system to automatically follow a route to a destination when the vehicle is stationary.

Demo Mode		Return	
Demo	ON	ON	OFF
Speed Rate	1200 ms	▼	▲

Mic Level

This diagnostic allows you to independently test the microphone, the TALK and BACK buttons. They are used to activate the voice control system. The microphone is located near the map light in the ceiling. It is directional, and works best if the voice is coming from the drivers seat.

- Press the TALK button on the steering wheel, and in a normal voice say "testing". The TALK indicator on the screen should momentarily turn green, and the text "Now Recording..." should appear yellow. If the Mic Level indicator on the screen does not briefly turn green, then check the wiring from the TALK button to the navigation unit. If there is no "Mic Level" movement when you speak, then you should check the wire running from the microphone to the control unit.
- Press the BACK button on the steering wheel. This should cause the Cancel indicator on the screen to momentarily turn green. If it does not briefly change to green, then check the wiring from the steering wheel BACK button to the navigation unit.
- The mic level should reach at least the 6th bar.

Mic Level		Return	
Mic Level	Now Recording ! !		
<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div>			
Steering Switch			
<div><div></div></div>	<div><div>BACK</div></div>		

NOTE:

If the radio is off, and there is movement in the indicator-even without speaking, then ensure that the vents are not blowing on the microphone.

This should resolve voice control complaints such as:

- Sometimes the system does not understand my commands.
- I have to shout at the navi for a command to be recognized.
- The system just says "pardon"

(cont'd)

Navigation System

System Diagnostic Mode (cont'd)

Solar angle

This screen graphically displays the sun's position as determined by GPS. The climate control uses the sun's angle, along with the sunlight sensor to control the driver/passenger A/C air flow. The heat that the A/C unit removes varies, depending on the angle of the sun entering the vehicle.

This screen is for factory use only, and allows simulation of this feature for development purposes.

- The "manual tuning" button should always be "OFF"
- The "Angle" is the angle that the sun (shown with the red "dot") is above the horizon.
- The "vehicle" value represents the angle, clockwise from North, to the direction that the vehicle position (VP) icon is pointing (always points straight up).
- The "direction" value is the angle, measured clockwise from the VP (straight up) to the sun's position.
- The reliability ranges from 1 to 3, and represents the accuracy of the Vehicle Position relative to the sun.

Solar Angle Return

Manual Tuning OFF ON

Angle 33.0 ▲ ▼ Direction 307.0 ▲ ▼

Vehicle 143.0 ▲ ▼ Reliability 3 ▲ ▼

Version

This screen displays the current version of the program, and allows the loading of a new version of the program from either a CD/DVD or from a PC card.

The Program Flash version should always be greater than or equal to the Program Disc version.

IPL, APL, DBOOT, and system uCom are for factory use only.

The Model code is S9VX, and is for factory use only. This code is stored on a chip in the navigation unit. Therefore, every model has a unique part number for the navigation unit.

NOTE: If any model number other than S9VX is displayed, replace the navigation unit with the correct part. The model code tells the navigation unit what software to load off the DVD.

Do not use Download, unless instructed to do so by the factory.

Version Return

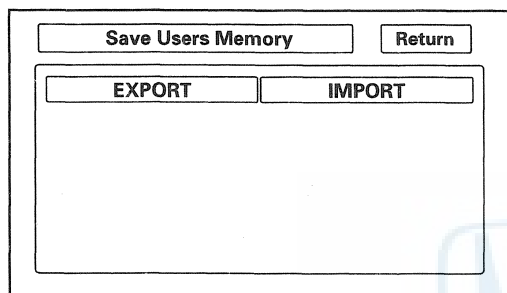
Program Flash	1.03.00.KA
Program Disc	0.99.5000
IPL	0.231.000
APL	0.310.122
DBOOT	0.310.122
System uCom	0.910.000
Model	S9VX

Download



Save Users Memory '07-08 models

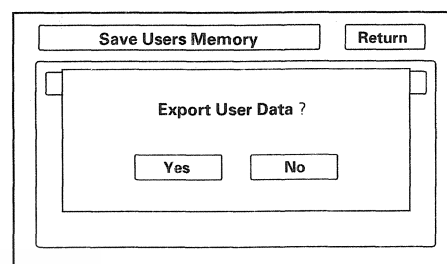
When replacing the navigation unit, this function allows the dealer to transfer the customer's personal data to the new navigation unit. The transferred information includes their Setup settings, and personal addresses. The dealer inserts a PC card to the navigation unit, and then selects the "Save Users Memory" function. The two functions in this diagnostic screen are EXPORT and IMPORT. EXPORT saves the customer's data to the PC card, and IMPORT moves the PC card files to the new navigation unit.



Before starting this function, see the PC Card FAQs for information regarding PC cards, and the use of this function.

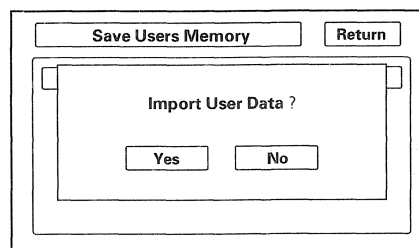
1. Select EXPORT button to move the customer's data from the original navigation unit to the PC card. Select "YES" on the "Export User Data" Confirmation screen. The process takes only a couple of seconds. The system stores two files on the card.

NOTE: If the EXPORT button is grayed out, check the PC card's edge connector, and the pins inside the navigation unit (with a flashlight) for damage.



2. After installing the customer's original DVD in the new navigation unit, allow the system to boot up. Insert the PC card in the new navigation unit and enter the "Save Users Memory" in the navigation system diagnostic mode.
3. Select IMPORT button to move the two files stored by the Export process from the PC card to the new navigation unit. Select "YES" on the "Import User Data" Confirmation screen. When the transfer is finished (a few seconds) the system will automatically reboot. After the system reboots, remove the PC card from the PC slot.

NOTE: If the IMPORT button is grayed out, check if the "Model" and the "Program Flash" shown on the "Version" screen are the same.



(cont'd)

Navigation System

System Diagnostic Mode (cont'd)

PC Card FAQs

Question	Answer
Where do we buy the flash memory or adaptors, and what do we ask for?	You need a "PCMCIA type II" adaptor and a flash memory chip. They can be purchased at a computer, or office supply store. The card will have the same size and shape as the PC card in the HDS. Adaptors that accept multiple flash types are not recommended.
What memory flash chips will work with what adaptors?	The flash memory devices that have been tested include Compact Flash (CF), and ATA style (like the card in the HDS). Other card types and flash memory chips may work, but have not been tested.
What capacity card do I need for this function?	A memory chip with capacity of 64 MB to 2 GB will work. The two files moved to the PC card during "export" are less than a Megabyte in size.
Should the dealer have a dedicated PC card for the Export and Import navigation function?	Yes, treat the PC card as a dedicated "special tool" that should be used anytime your '07 or later customer needs their navigation personal files transferred to a new navigation unit.
What device can I use to maintain the PC card, and delete files?	Any computer store sells USB style card readers that accept the PC card, and allow you to perform file maintenance on your PC card. Most laptops will also accept the PC card.
Can we move the customer's data to different models?	No, the files are model specific and will only load into a navigation unit with the same part number.
Can we move the customer's data to the same vehicle with a different software version?	The customer's files can only be transferred to a new navigation unit, if the "Model" and the "Program Flash" shown on the "Version" screen are the same. Files cannot be transferred to the different model and different versions.
Will other files on the PC card like images or music files prevent the Export/Import function from working?	No, the system simply adds two small files that are recognized by the new navigation unit when performing the import function. However, if the PC card is full, the "Export" function won't work correctly.
Do I have to delete the files on the PC card after each transfer of the customer's data?	After the transfer of customer's data to the new navigation unit, the files remain on the PC card. Since this is confidential information, we recommend that you delete these files after each use. Please note that each time you export navigation files of the same model and version, the files are overwritten. Over time the PC card will accumulate two files for each version of the 8 or so Honda navigation models.
What format should be used if the PC card needs reformatting?	It is unlikely that the PC card will ever need formatting, however the FAT file system should be used.
I can't enter the navigation diagnostic mode to do the Export/Import function. How can I transfer the customer's data?	Some internal navigation unit ECU failures may make it impossible to use the Export/Import function.



Question	Answer
<p>Why wont the Export or Import functions work? What do I check as part of troubleshooting?</p>	<ul style="list-style-type: none">• The card may not be fully inserted into the slot. Eject the PC card, and inspect for warping or damage to the edge connector. Never use excessive force to insert a PC card. This can result in damage to the pins in the rear of the slot.• The PC card may not contain files that are recognized by the new navigation unit. Navigation data can only be transferred between navigation units with the same "Model code", and with the same navi "Program flash" version.• The flash memory chip type may not be accepted by the system. Only Compact Flash and ATA cards have been tested.• The card's PCMCIA adaptor may be preventing a known-good PC card from playing. Avoid multi-slot type PCMCIA adaptors that accept several different flash memory types.• The card may be full and as a result the files are stored, but without any data. Export and import appear to function, but move nothing. Delete unused files from the PC card.• There may not be any files on the PC card. If the PC card has a "write protection" switch, make sure it is turned off before attempting to use the Export function.• Although flash memory chips are reliable, occasionally they develop bad sectors or other formatting errors that prevents them from accepting files. The PC card should be reformatted using the FAT format.• The PC card may have been formatted using the format "NTFS". Only the "FAT" format is accepted by the system.• Hard Disc Drive (HDD) cards may not work properly in the system and can overheat or quit functioning, particularly in a hot vehicle. They are not recommended.• Before performing the Import function, ensure that the customer's original DVD is loaded into the new navigation unit and working properly.

(cont'd)

Navigation System

System Diagnostic Mode (cont'd)

Error Message Table

Screen Error Message	Solution
Navigation system is unable to acquire a proper GPS signal.	Make sure there is nothing on the dashboard blocking the GPS antenna. If not, move the vehicle to an open space away from tall buildings, trees, etc. After market devices can affect the GPS reception.
Navigation unit door is open or No DVD disc installed. Please check system.	Make sure the correct white-labeled navigation DVD is installed with the label side up, and the navigation unit door is snapped fully closed (see page 22-507).
No DVD disc, please check system.	Check that the navigation DVD is installed with the label side up check the DVD color.
Display temp is too high. System will shut down until display cools down.	This message will appear briefly when the display temperature is too high, and the display will turn off until the temperature cools down. The system will turn back on when the display cools down.
Outside temperature is low, system will take a while to start up.	The temperature is below -30°C , and the navigation ECU has difficulties reading the DVD. The system will start up when the temperature warms up.
DVD disc reading error (unformatted), please consult your dealer.	Check the DVD source for deep scratches or other damage. Make sure you are using an official Honda navigation DVD (white in color). The system cannot read other mapping databases or video DVDs. If the problem persists, see your dealer check the DVD color.
Route has not been completed. Please try again from a different location.	Routing to or from a place (new area) that is not in the database. Try planning a different route to or from a different location.
No alternate route found. Original route will be guided.	No alternate route method was found. The original route will be used.
This destination cannot be found in database.	The destination was not found in the database. Try another destination nearby, or select the destination with the joystick.
Please operate climate control after starting engine.	The engine needs to be running to operate the climate control system.

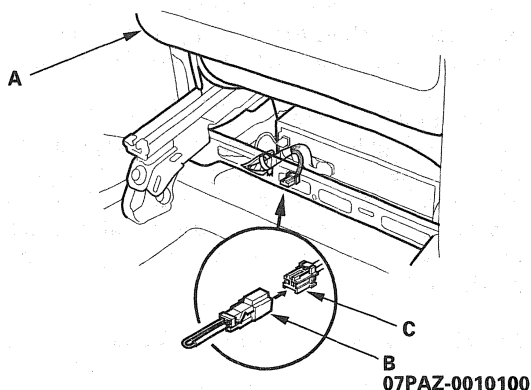


Forced Starting of Display

Special Tools Required

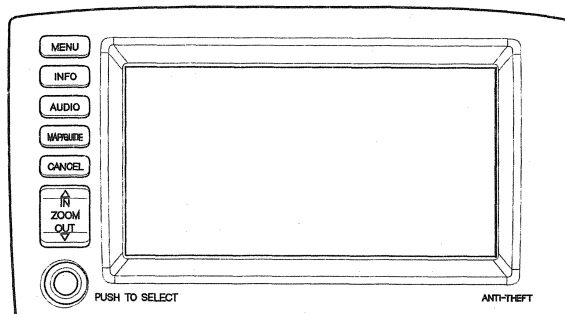
SCS service connector 07PAZ-0010100

1. Slide the passenger's seat (A) forward.



2. Remove the cover attached to the seat to gain access to the navigation unit.
3. Connect the SCS service connector (B) to the navigation service check connector (C) located behind the navigation unit.
4. Check that the diagnosis menu for the picture diagnosis starts up, and then changes to the system link menu.
5. If the display does not turn on, turn the ignition switch OFF, press and hold the SET UP button (A), press and hold the joystick (B) up, then turn ignition switch to ACC (I).

NOTE: If the display fails to light or the system link screen is not displayed, refer to no picture is displayed (see page 22-464).

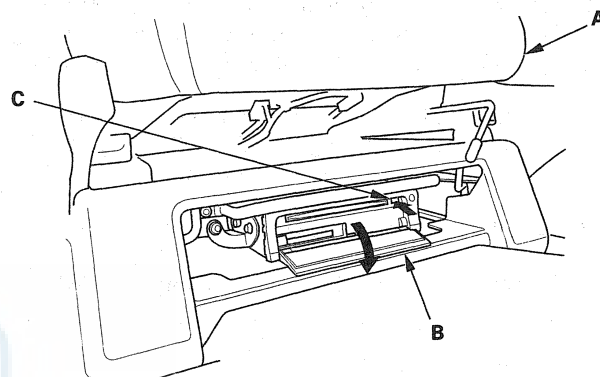


DVD-ROM Replacement

NOTE:

- When the DVD-ROM is re-inserted or replaced, a map match must be done (see page 22-433).
- Make sure that the correct color DVD is installed (white).
- Go on-line and check for any service bulletins or other service information regarding the navigation system.

1. Slide the passenger's seat (A) to the rear.



2. Turn the ignition switch ON (II).
3. Open the front cover (B) of the navigation unit.
4. Press the EJECT button (C).
5. Remove the DVD-ROM.
6. Insert the new DVD-ROM with the white label facing up.
7. Close the front cover.

- Do not turn the ignition switch OFF until data is down loaded to navigation unit.

NOTE: After servicing, the front cover must be closed. If you start up the navigation system with the front cover open, the display will indicate. "Navigation unit door is open or No DVD Disk installed. Please check system".

8. Do the Map Matching procedure after servicing (see page 22-433).

Navigation System

Navigation Unit Removal/Installation

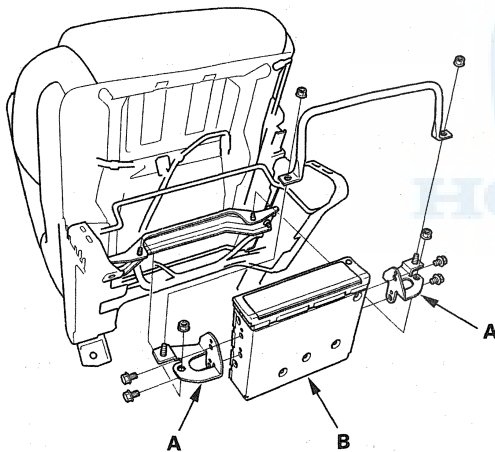
NOTE:

- Before replace the navigation unit, back-up the customer data using system diagnostic mode "save users memory" under the functional set up (see page 22-503).
- If the navigation unit is replaced or disconnected, a Map Matching must be done (see page 22-433).

1. Turn the ignition switch ON (II).
2. Eject the DVD from the original navigation unit (see page 22-507). To avoid scratching or damaging the DVD, temporarily place the DVD in a jewel case.

NOTE: If the DVD will not eject, refer to symptom troubleshooting "Navigation unit will not eject or accept the navigation DVD" (see page 22-472).

3. Turn the ignition switch OFF.
4. Remove the passenger's seat (see page 20-104).



5. Remove the navigation unit bracket (A) from the passenger's seat.
6. Remove the bracket from the navigation unit (B).
7. Install the navigation unit in the reverse order of removal.

8. Turn the ignition switch ON (II), then reinstall the original DVD, verifying that the DVD is free of scratches or smudges.
9. Check online for any service publications prescribing patches for the navigation system, and if any should be applied to the new navigation unit.

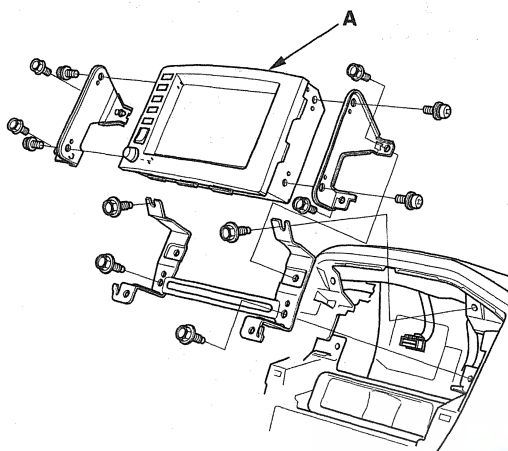
NOTE: Simply transferring the DVD from the original navigation unit to the new navigation unit does not assure the correct software for the vehicle will be loaded into the new navigation unit. Doing the DVD transfer without doing software patches may cause the new navigation unit to appear to be malfunctioning.

10. Enter the new navigation anti-theft code.
11. Park the vehicle outside, and do the GPS initialization (see page 22-432).
12. Give the new navigation anti-theft code to the customer.



Navigation Display Unit Removal/Installation

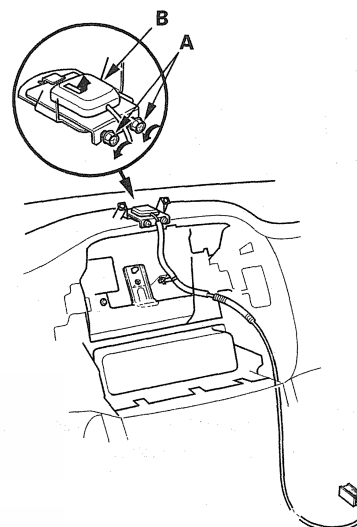
1. Remove the center panel (see page 20-93).
2. Remove the display unit (A).



3. Install the navigation display unit in the reverse order of removal.

GPS Antenna Removal/Installation

1. Remove the center panel (see page 20-93).
2. Remove the navigation display unit (see page 22-509).
3. Loosen the two screw-bolts (A).



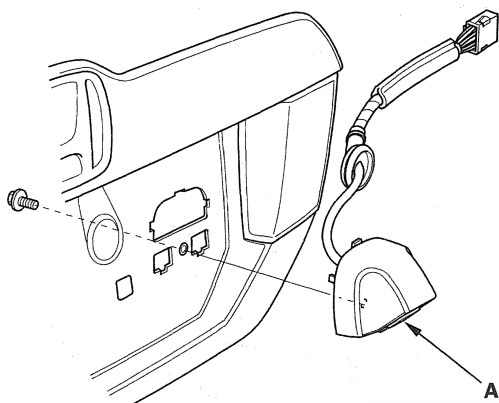
4. Pull, and pry up the GPS antenna (B), then remove the GPS antenna.
5. Install the GPS antenna in the reverse order of removal.

NOTE: Be careful when routing the GPS antenna wire so that it does not become pinched, especially near the front passenger's seat and center console.

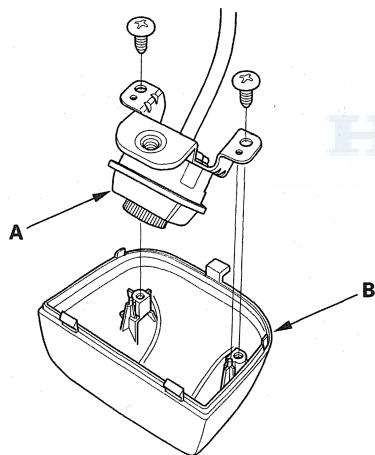
Navigation System

Rearview Camera Removal/Installation

1. Remove the rear license trim (see page 20-158).
2. Remove the screw, and the rearview camera (A).



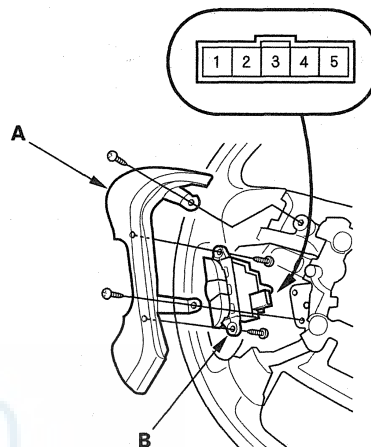
3. Remove the screws and the rearview camera (A) from the rearview camera cover (B).



4. Install the rearview camera in the reverse order of removal.

Voice Control Switch Test/Replacement

1. Remove the driver's airbag assembly (see page 23-201).
2. Remove the two screws and cover (A) from the steering wheel.



3. Remove the two screws from the audio remote/voice control switch (B).
4. Disconnect the 4P connector from the audio remote/voice control switch.
5. Measure the resistance between the No. 1 and No. 5 terminals in each switch position according to the table.

Position	Resistance
OFF	About 10 k Ω
TALK	About 2.2 k Ω
BACK	About 630 Ω

6. If the resistance is not as specified, replace the voice control switch.

Restraints

Restraints

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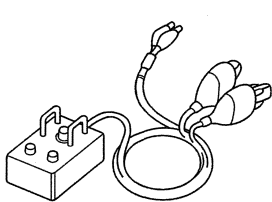


Restraints

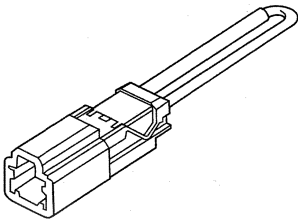
Special Tools

Ref. No.	Tool Number	Description	Qty
①	07HAZ-SG00500	Deployment Tool	1
②	07PAZ-001010A	SCS Service Connector	1
③	07SAZ-TB4011A	SRS Inflator Simulator	1
④	07TAZ-SZ5011A	SRS Simulator Lead C	1
⑤*	07TAZ-001020A	Backprobe Adapter, 17 mm	2
⑥	07XAZ-S1A0200	SRS Simulator Lead E	1
⑦	07XAZ-SZ30100	SRS Simulator Lead F	1
⑧	07YAZ-S3AA100	SRS Simulator Lead H	1
⑨	070AZ-SAA0100	SRS Short Cancellor	2

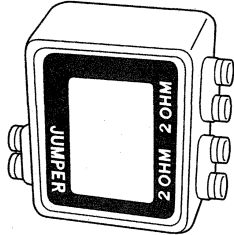
* : Use with the stacking patch cords from T/N 07SAZ-001000A, Backprobe Set.



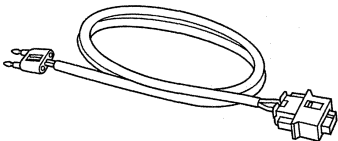
①



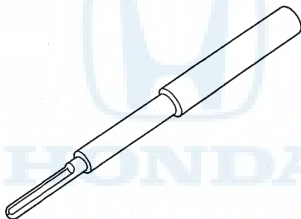
②



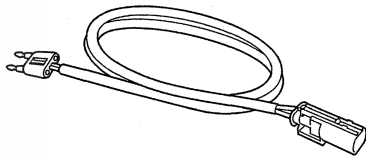
③



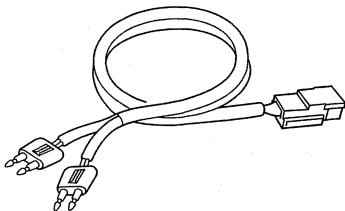
④



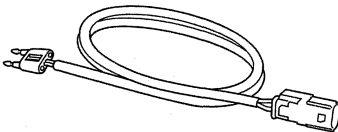
⑤



⑥



⑦



⑧

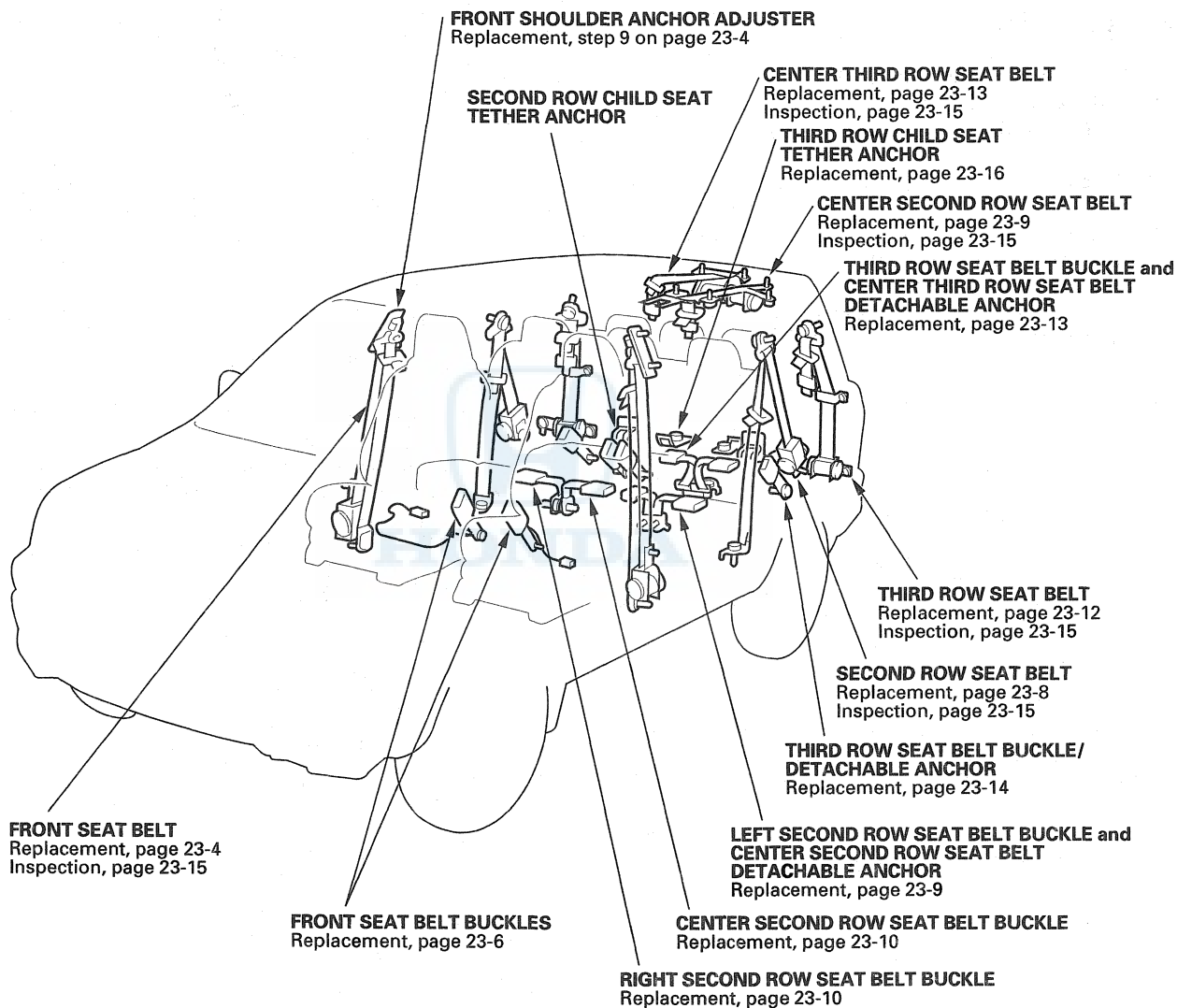


⑨

Seat Belts



Component Location Index



Seat Belts

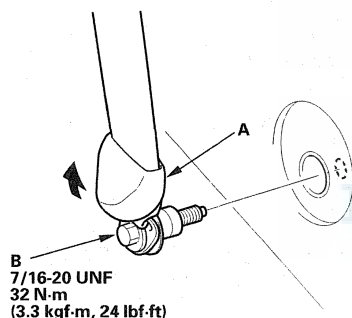
Front Seat Belt Replacement

SRS components are located in this area. Review the SRS component locations (see page 23-17) and the precautions and procedures (see page 23-19) before doing repairs or service.

NOTE: Check the front seat belts for damage, and replace them if necessary.

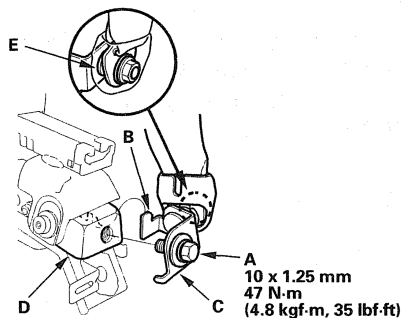
Front Seat Belt

1. Make sure you have the anti-theft codes for the audio and the navigation system (if equipped), then write down the audio presets.
2. Slide the front seat forward fully.
3. Disconnect the negative cable from the battery, and wait at least 3 minutes before beginning work.
4. Driver's seat belt: Pull the lower anchor cover (A) up, and remove the lower anchor bolt (B).

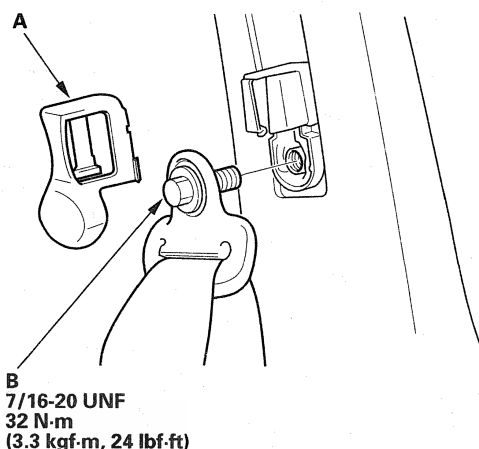


5. Passenger's seat belt: Remove the rear riser cover (see step 3 on page 20-104). Remove the bolt (A), and release the hook (B), then remove the lower anchor bracket (C) from the outer weight sensor (D).

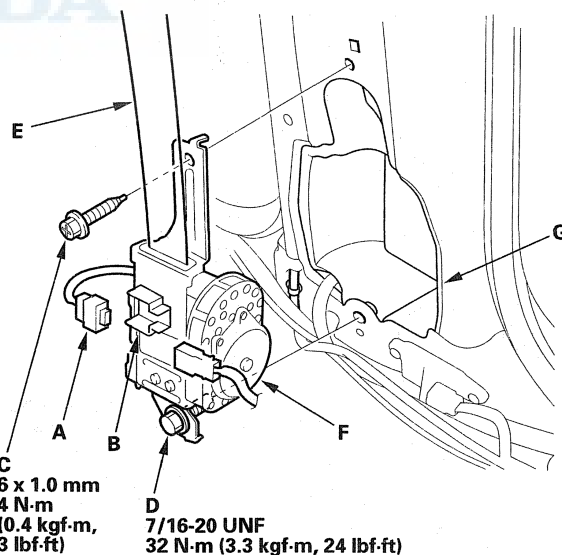
NOTE: Do not remove the seat belt anchor bolt (E) from the lower anchor bracket.



6. Remove the B-pillar lower trim panel (see page 20-70).
7. Remove the upper anchor cover (A), and remove the upper anchor bolt (B).



8. Release the seat belt tensioner connector (A) from the connector holder (B), and disconnect it. Remove the retractor mounting ET screw (C), and retractor bolt (D), and remove the front seat belt (E) and retractor (F).

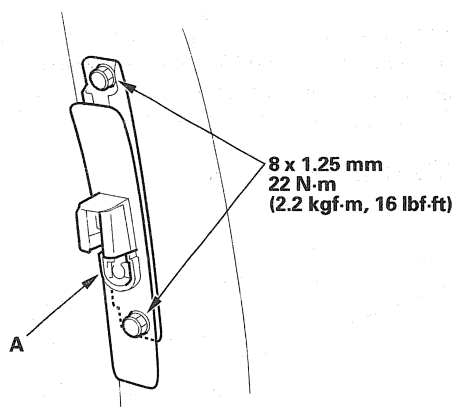


9. If necessary, remove the front seat belt protector (G).



10. Remove the B-pillar upper trim (see page 20-70).

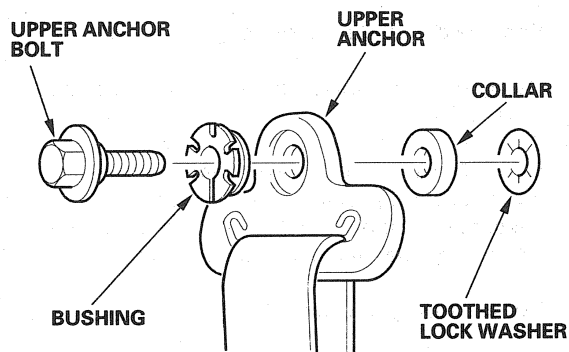
11. Remove the shoulder anchor adjuster (A).



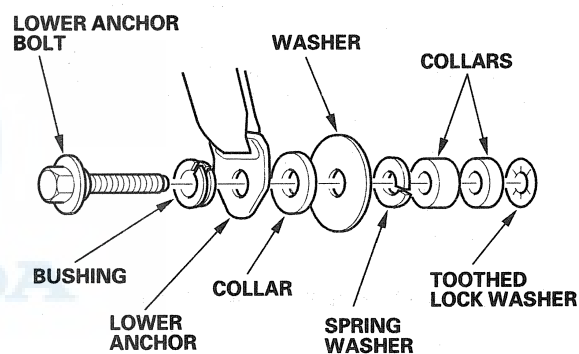
12. Install the front seat belt and retractor in the reverse order of removal, and note these items:

- Apply medium strength type liquid thread lock to the anchor bolts before reinstallation.
- Check that the retractor locking mechanism functions (see page 23-15).
- Assemble the washers, collars, and bushings on the upper and lower anchor bolts as shown.
- Before installing the anchor bolts, make sure there are no twists or kinks in the seat belt.
- Make sure the seat belt tensioner connector is plugged in properly.
- Reconnect the negative cable to the battery.
- Enter the anti-theft codes for the audio and the navigation system (if equipped), then enter the audio presets.
- Reset the clock.
- Do the power window control unit reset procedure (see page 22-255).

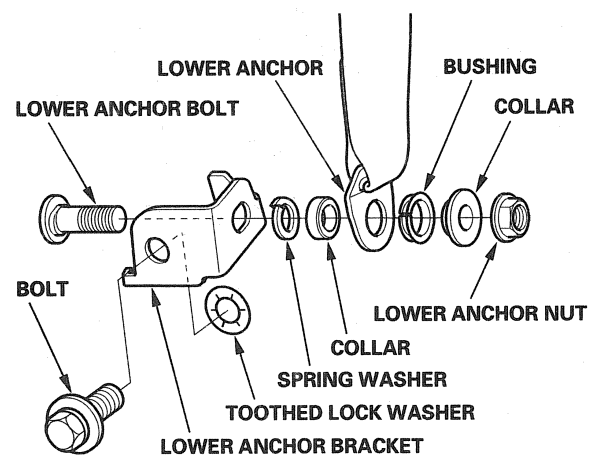
Upper anchor bolt construction



Lower anchor bolt construction



Lower anchor bolt construction (passenger's seat belt)



(cont'd)

Seat Belts

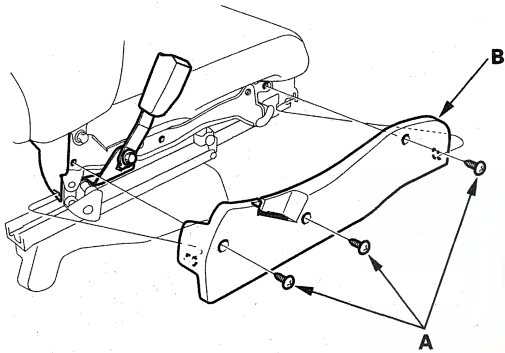
Front Seat Belt Replacement (cont'd)

Seat Belt Buckle

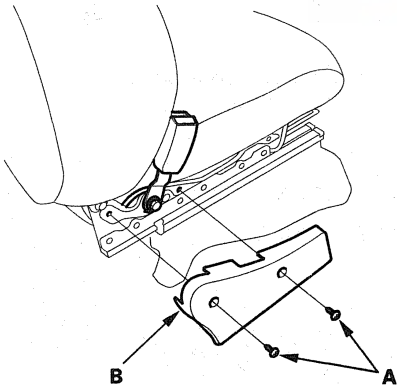
1. Remove the front seat (see page 20-104).
2. Remove the screws (A), then remove the center cover (B).

NOTE: Driver's 8-way power seat and driver's manual height adjustable seat are shown. Passenger's manual seat is symmetrical to the driver's manual height adjustable seat.

Driver's 8-way power seat



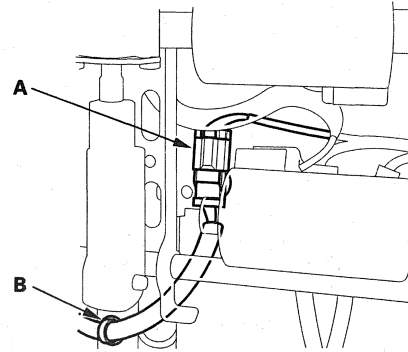
Driver's manual height adjustable seat



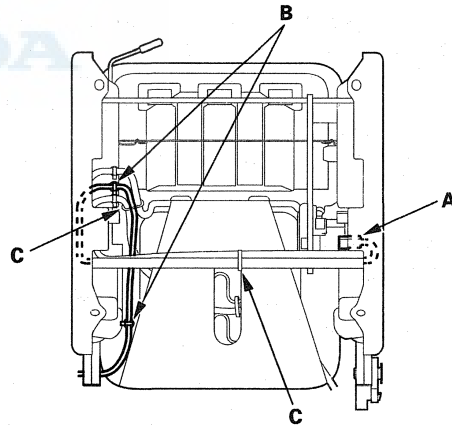
3. Disconnect the seat belt switch connector (A) (8-way power seat). Detach the seat belt switch connector, harness clips (B), and wire tie (C).

NOTE: Driver's 8-way power seat and driver's manual height adjustable seat are shown. Passenger's manual seat is symmetrical to the driver's manual height adjustable seat.

Driver's 8-way power seat

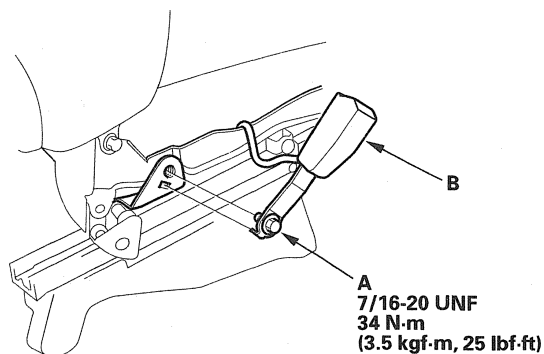


Driver's manual height adjustable seat



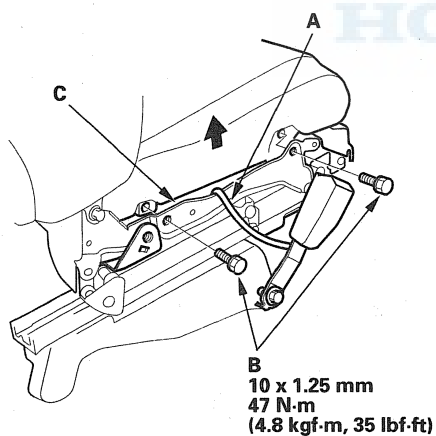


4. Remove the center anchor bolt (A), then remove the seat belt buckle (B) from the inner seat track.



5. Remove the seat belt switch harness (A):

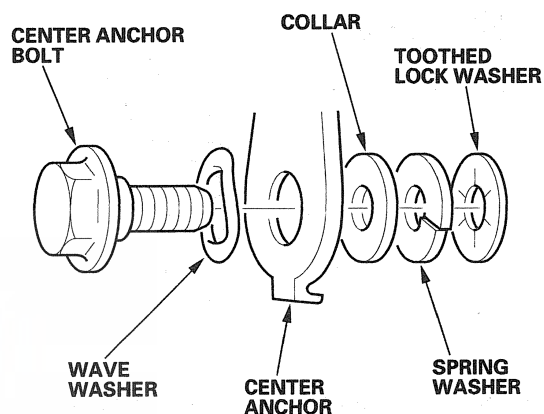
- Driver's manual height adjustable seat: Adjust the seat cushion to its maximum height, and remove the harness.
- Driver's 8-way power seat and passenger's manual seat: Remove the seat cushion mounting bolts (B) from the seat linkage (C), then lift the seat cushion halfway from the seat linkage, and remove the harness.



6. Install the buckle in the reverse order of removal, and note these items:

- Apply medium strength type liquid thread lock to the anchor bolt before reinstallation.
- Assemble the washers and collar on the center anchor bolt as shown.
- Move the seat up and down to make sure the buckle harness is not pinched.

Center anchor bolt construction



Seat Belts

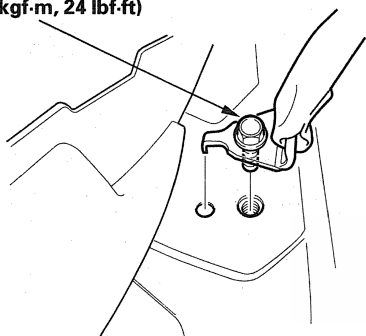
Second Row Seat Belt Replacement

NOTE: Check the second row seat belts for damage, and replace them if necessary.

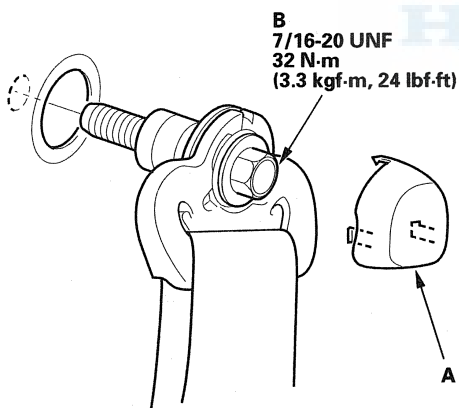
Second Row Seat Belt

1. Remove the rear side trim panel (see page 20-80).
2. Pull the carpet back as necessary, and remove the lower anchor bolt (A).

A
7/16-20 UNF
32 N·m
(3.3 kgf·m, 24 lbf·ft)

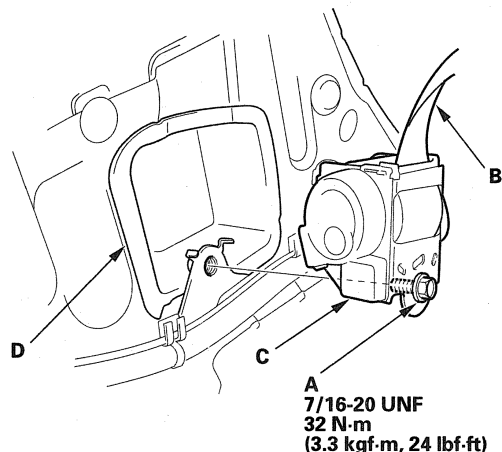


3. Remove the upper anchor cap (A), and remove the upper anchor bolt (B).



B
7/16-20 UNF
32 N·m
(3.3 kgf·m, 24 lbf·ft)

4. Remove the retractor bolt (A), then remove the second row seat belt (B) and retractor (C).

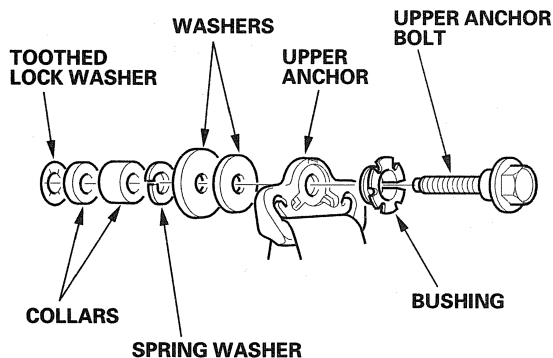


A
7/16-20 UNF
32 N·m
(3.3 kgf·m, 24 lbf·ft)

5. If necessary, remove the second row seat belt protector (D).
6. Install the second row seat belt and retractor in the reverse order of removal, and note these items:

- Apply medium strength type liquid thread lock to the anchor bolts before reinstallation.
- Tighten the bolts by hand first, then tighten to specification with a torque wrench.
- Check that the retractor locking mechanism functions (see page 23-15).
- Assemble the washers, collars, and bushing on the upper anchor bolt as shown.
- Before installing the anchor bolts, make sure there are no twists or kinks in the second row seat belt.

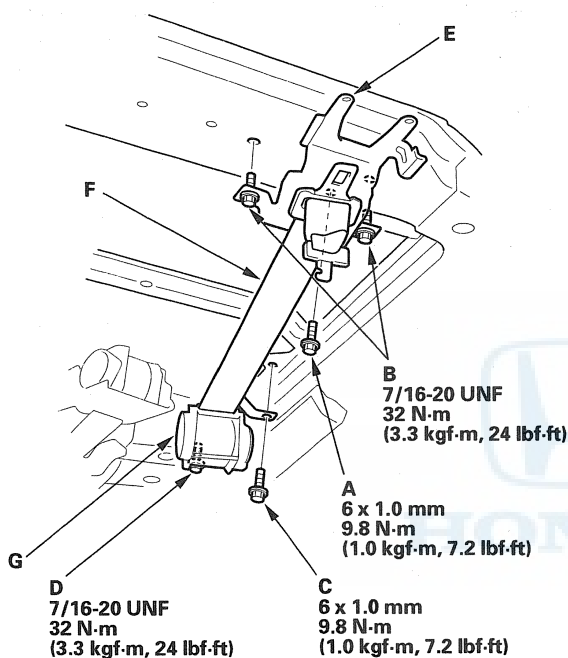
Upper anchor bolt construction





Center Second Row Seat Belt

1. Remove the headliner (see page 20-83).
2. Remove the upper anchor mounting bolt (A), the upper anchor bolts (B), the retractor mounting bolt (C), and the retractor bolt (D), then remove the upper anchor (E), center seat belt (F), and retractor (G).



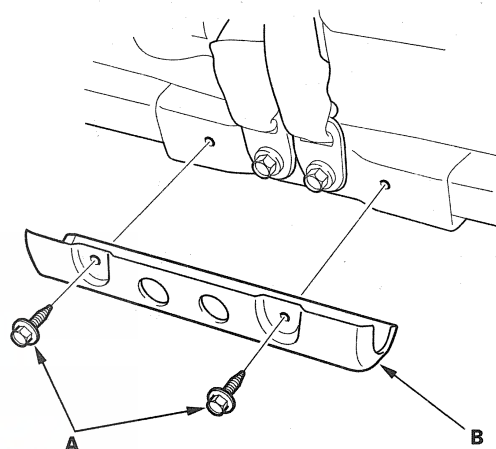
3. Install the center second row seat belt and retractor in the reverse order of removal, and note these items:

- Apply medium strength type liquid thread lock to the anchor bolts before reinstallation.
- Tighten the bolts by hand first, then tighten to specification with a torque wrench.
- Check that the retractor locking mechanism functions (see page 23-15).
- Before installing the upper anchor bolt, make sure there are no twists or kinks in the center seat belt.

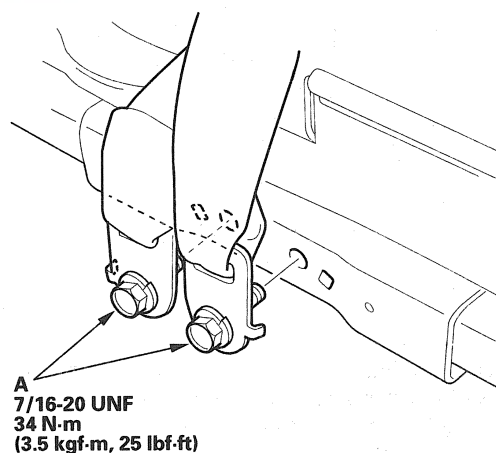
Left Second Row Seat Belt Buckle and Center Second Row Seat Belt Detachable Anchor

NOTE: Take care not to tear the seams or damage the seat covers.

1. Remove the left second row seat (see page 20-115).
2. From the back of the seat, remove the screws (A), then remove the anchor cover (B).



3. Remove the center anchor bolts (A).

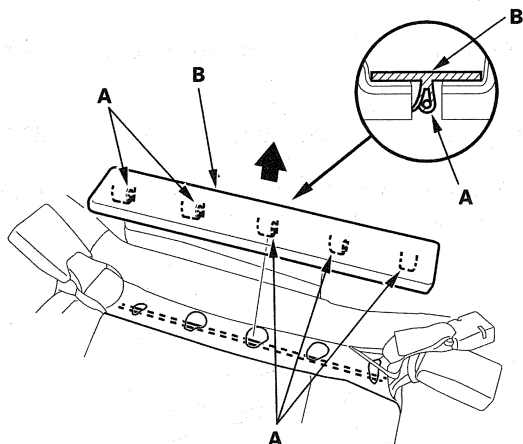


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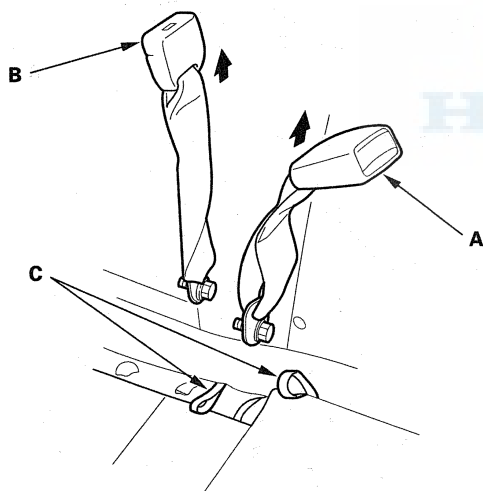
Seat Belts

Second Row Seat Belt Replacement (cont'd)

4. Release the hooks (A), then remove the seat belt buckle pocket (B).



5. Remove the left second row seat belt buckle (A) and center second row seat belt detachable anchor (B) from the elastic straps (C), and remove them from the seat cushion.



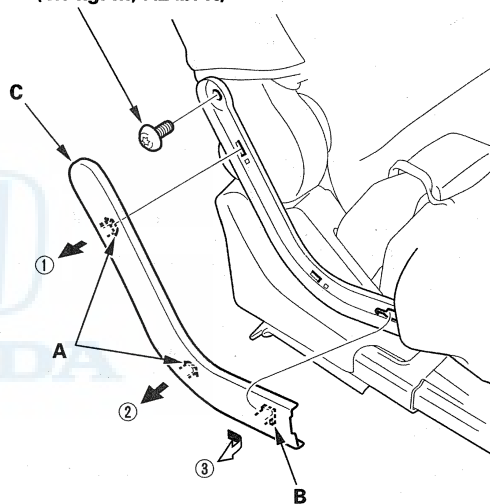
6. Install the buckle and the detachable anchor in the reverse order of removal, and apply medium strength type liquid thread lock to the anchor bolts before reinstallation.

Center Seat Belt Buckle/Right Seat Belt Buckle

NOTE: The center seat belt buckle is shown, and the right seat belt buckle is similar.

1. Remove the second row seat (see page 20-115).
2. From both sides of the seat, release the hooks (A, B) in the sequence shown, then remove the pivot bolt cover (C). Using a TORX T30 bit, remove the pivot bolt (D).

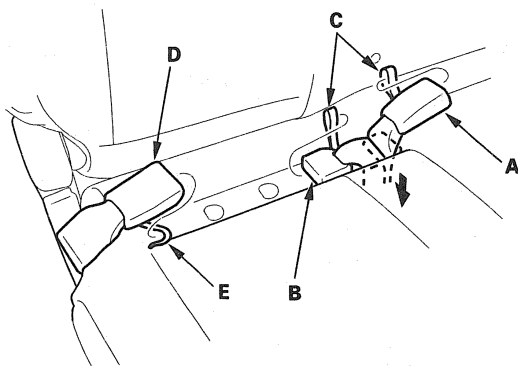
D
6 x 1.0 mm
9.8 N·m
(1.0 kgf·m, 7.2 lbf·ft)



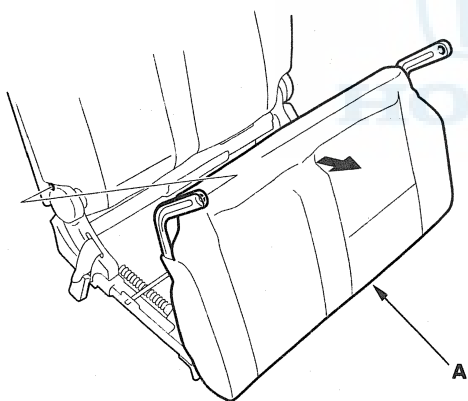
3. On the left second row seat: Remove the seat belt buckle pocket.



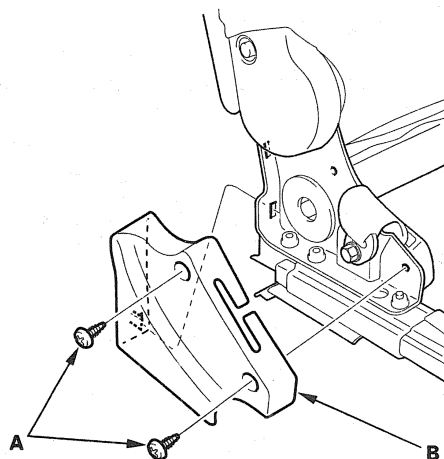
4. On the left second row seat: Remove the left second row seat belt buckle (A) and center second row seat belt detachable anchor (B) from the elastic straps (C), then remove the buckle and detachable anchor under the seat cushion.



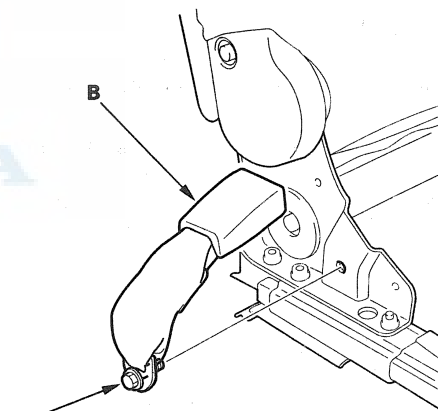
5. Remove the center seat belt buckle (D) or right seat belt buckle from the elastic strap (E).
6. Lift the seat cushion (A) up.



7. Remove the screws (A), then remove the center cover (B).



8. Remove the center anchor bolt (A), and remove the seat belt buckle (B).



A
7/16-20 UNF
34 N·m
(3.5 kgf·m, 25 lbf·ft)

9. Install the buckle in the reverse order of removal, and apply medium strength type liquid thread lock to the anchor bolt before reinstallation.

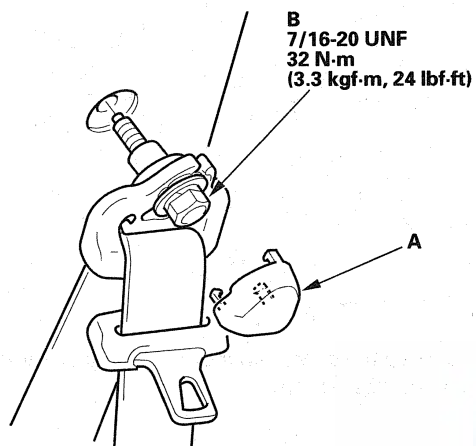
Seat Belts

Third Row Seat Belt Replacement

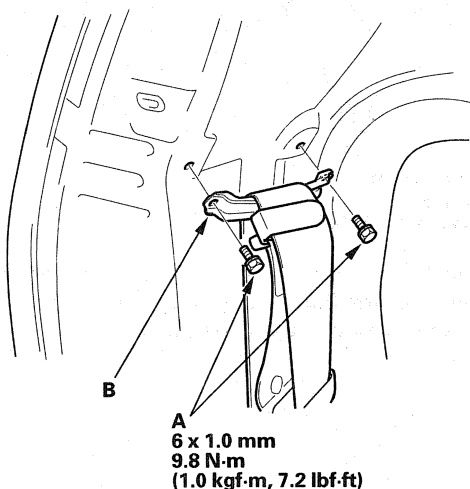
NOTE: Check the third row seat belts for damage, and replace them if necessary.

Third Row Seat Belt

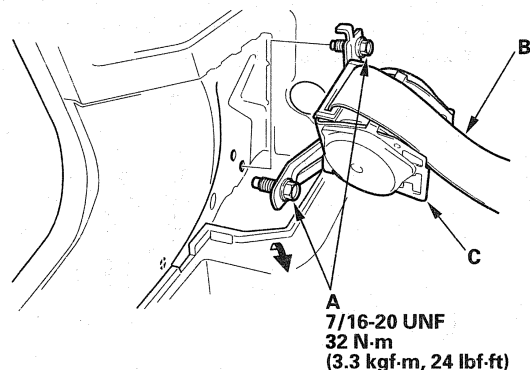
1. Remove the upper anchor cap (A) and the upper anchor bolt (B).



2. Remove the D-pillar trim (see page 20-77).
3. Remove the rear side trim panel (see page 20-80).
4. Remove the bolts (A), and remove the seat belt guide (B).



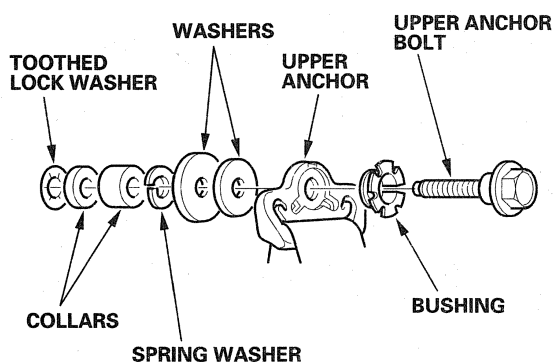
5. Remove the retractor bolts (A), then remove the third row seat belt (B) and retractor (C).



6. Install the third row seat belt and retractor in the reverse order of removal, and note these items:

- Apply medium strength type liquid thread lock to the anchor bolt before reinstallation.
- Tighten the bolts by hand first, then tighten to specification with a torque wrench.
- Check that the retractor locking mechanism functions (see page 23-15).
- Assemble the washers, collars, and bushing on the upper anchor bolt as shown.
- Before installing the anchor bolts, make sure there are no twists or kinks in the third row seat belt.

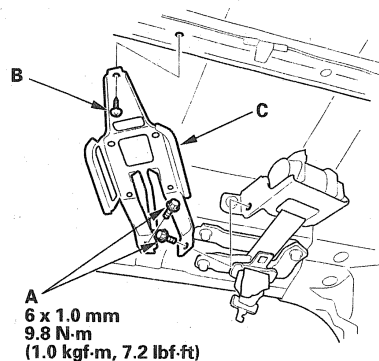
Upper anchor bolt construction



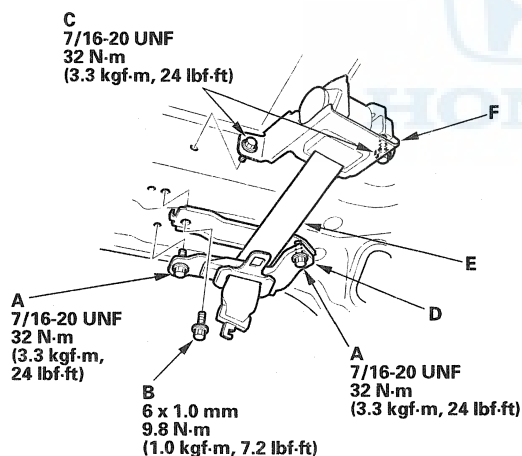


Center Third Row Seat Belt

1. Remove the headliner (see page 20-83).
2. Remove the bolts (A) and screw (B), then remove the third row seat belt cover bracket (C).



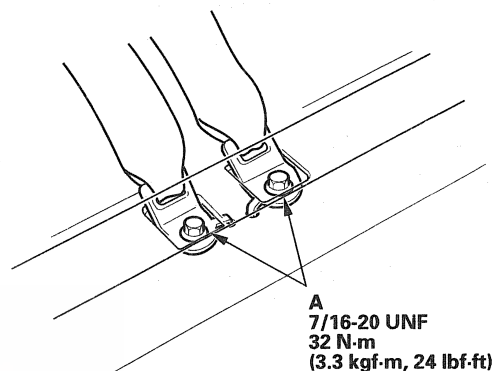
3. Remove the upper anchor bolts (A), support bracket bolt (B), and the retractor bolts (C), then remove the upper anchor (D), center seat belt (E), and retractor (F).



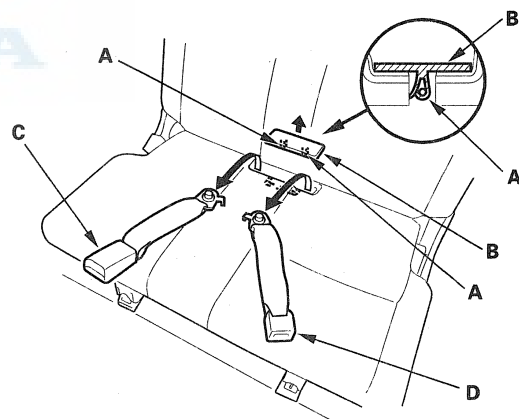
4. Install the center seat belt and retractor in the reverse order of removal, and note these items:
 - Apply medium strength type liquid thread lock to the anchor bolts before reinstallation.
 - Tighten the bolts by hand first, then tighten to specification with a torque wrench.
 - Check that the retractor locking mechanism functions (see page 23-15).
 - Before installing the upper anchor bolt, make sure there are no twists or kinks in the center seat belt.

Seat Belt Buckle/Center Seat Belt Detachable Anchor

1. Fold the left third row seat down.
2. Remove the cargo floor lid.
3. From the gap between the third seat-back and cargo floor bin, remove the center anchor bolts (A).



4. Release the hooks (A), then remove the seat belt buckle pocket (B).



5. Remove the left third row seat belt buckle (C) and center third row seat belt detachable anchor (D) from the seat cushion.
6. Install the buckle and detachable anchor in the reverse order of removal, and apply medium strength type liquid thread lock to the anchor bolts before reinstallation.

(cont'd)

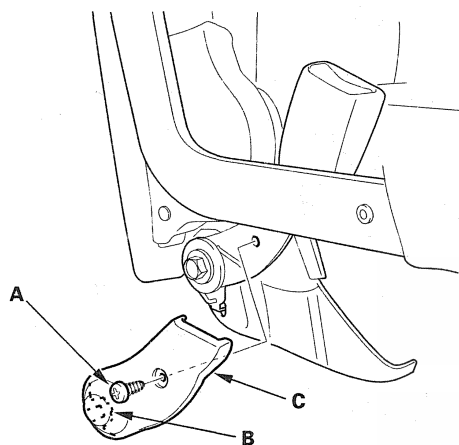
Seat Belts

Third Row Seat Belt Replacement (cont'd)

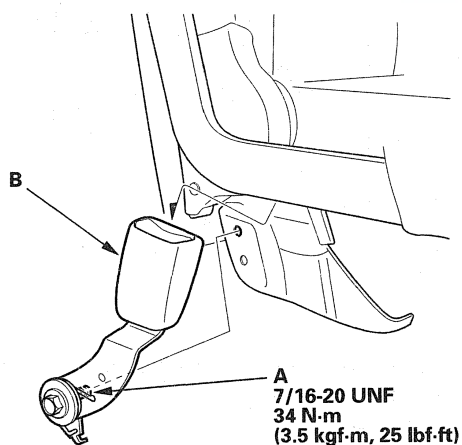
Seat Belt Buckle/Seat Belt Detachable Anchor

NOTE: The seat belt buckle is shown, and the seat belt detachable anchor is similar.

1. Remove the third row seat (see page 20-128).
2. Remove the screw (A), and release the hook (B), then remove the bracket cover (C).

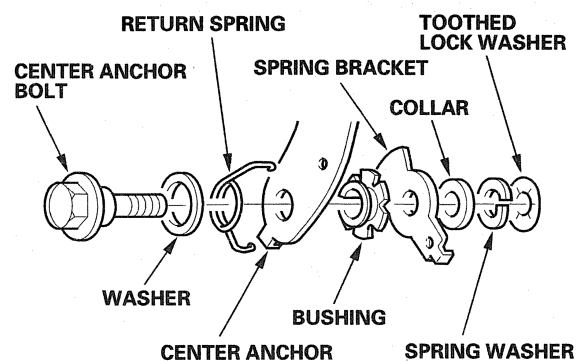


3. Remove the center anchor bolt (A), then remove the seat belt buckle (B).



4. Install the buckle in the reverse order of removal. Assemble the washers, spring, bushing, bracket, and collar on the center anchor bolt as shown.

Center anchor bolt construction





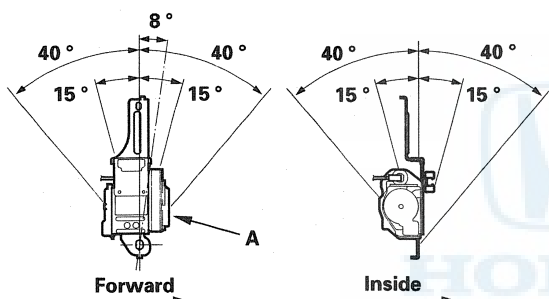
Inspection

For front seat belt retractors with seat belt tensioners, review the SRS component locations (see page 23-17) and the precautions and procedures (see page 23-19) before doing repairs or service.

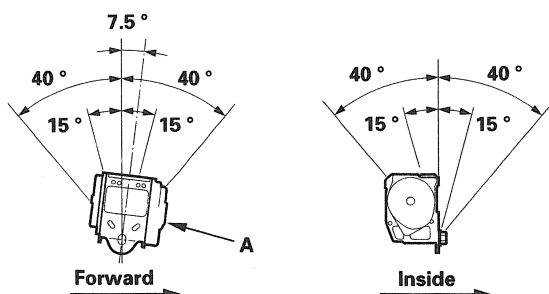
Retractor

1. Before installing the retractor, check that the seat belt can be pulled out freely.
2. Make sure that the seat belt does not lock when the retractor (A) is leaned slowly up to 15° from the mounted position. The seat belt should lock when the retractor is leaned over 40° . Do not attempt to disassemble the retractor.

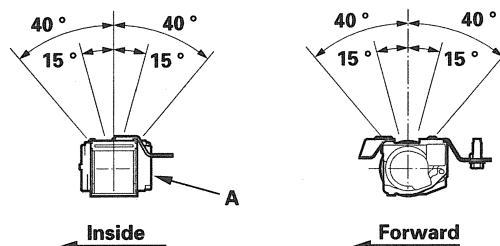
Front



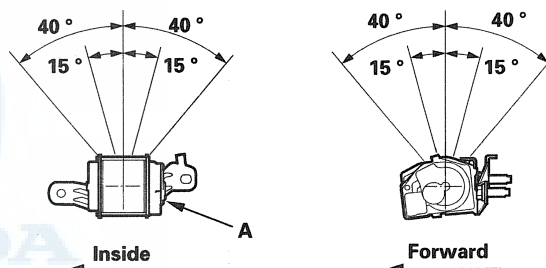
Second row



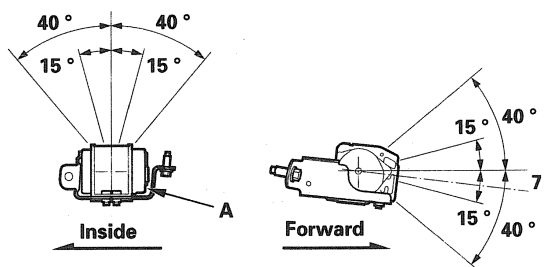
Center second row



Third row



Center third row



3. Replace the seat belt with a new assembly if there is any abnormality. Do not disassemble any part of the seat belt for any reason.

(cont'd)

Seat Belts

Inspection (cont'd)

In-vehicle

1. Check that the seat belt is not twisted or caught on anything.
2. After installing the anchors, check for free movement on the anchor bolts. If necessary, remove the anchor bolts and check that the washers and other parts are not damaged or improperly installed.

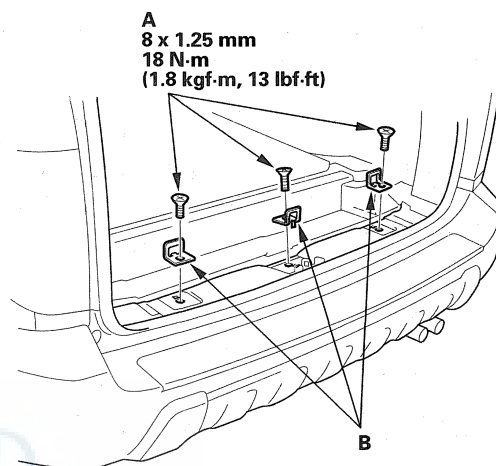
3. Check the seat belts for damage or discoloration. Clean with a shop towel if necessary. Use only soap and water to clean.

NOTE: Dirt build up in the loops of the upper anchors can cause the seat belts to retract slowly. Wipe the inside of the loops with a clean cloth dampened in isopropyl alcohol.

4. Check that the seat belt does not lock when pulled out slowly. The seat belt is designed to lock only during a sudden stop or impact.
5. Make sure that the seat belt will retract automatically when released.
6. For each passenger's seat belt, check the seat belt retractor locking mechanism ALR (automatic locking retractor). This function is for securing child seats.
 - 1 Pull the seat belt all the way out to engage the ALR. The seat belt should retract, but not extend. This is normal.
 - 2 To disengage the ALR, release the seat belt and allow it to fully retract, then pull the seat belt out part-way. The seat belt should retract and extend normally.
7. Replace the seat belt with a new assembly if there is any abnormality. Do not disassemble any part of the seat belt for any reason.

Third Row Child Seat Tether Anchor Replacement

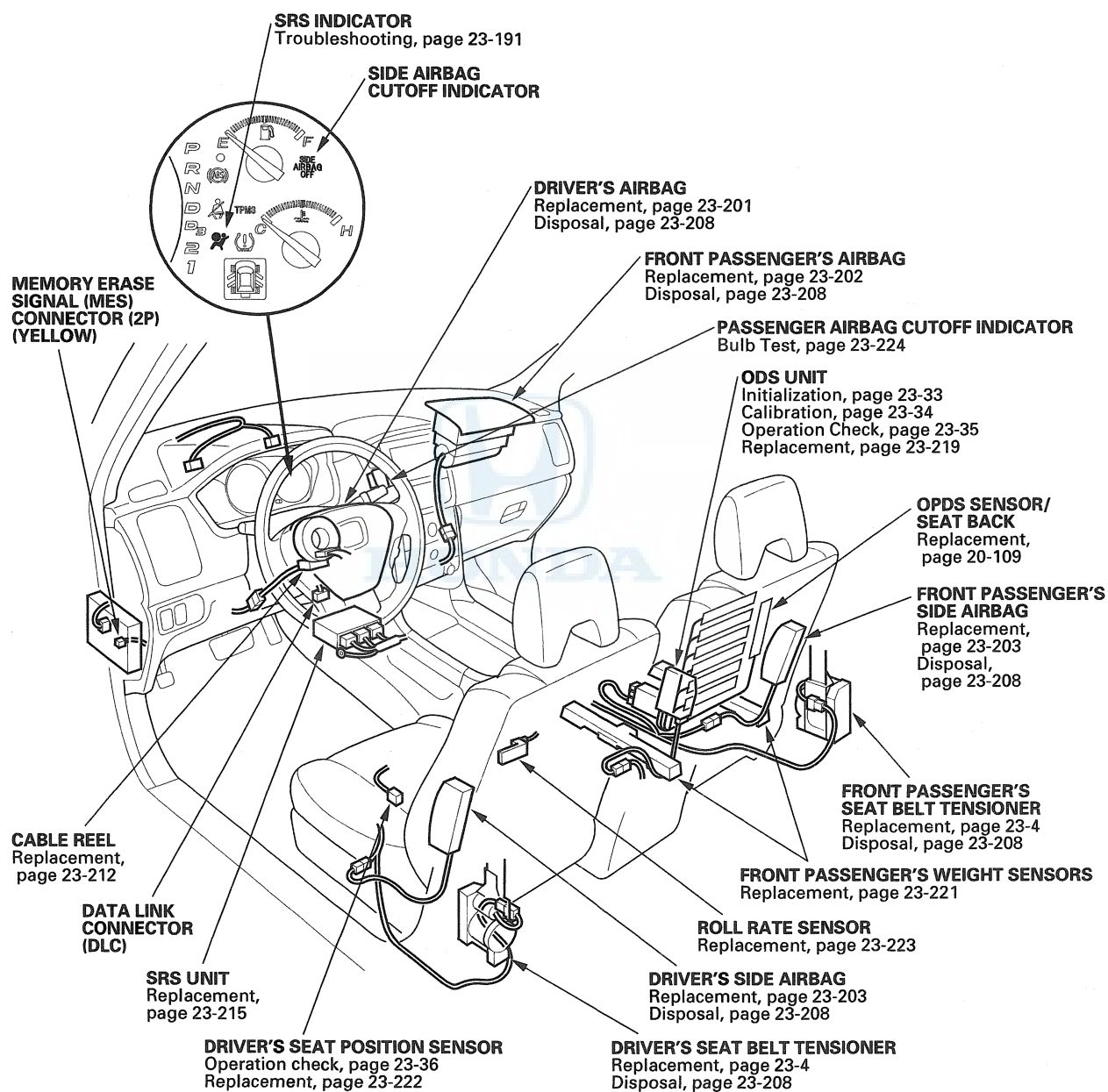
1. Remove the rear trim panel (see page 20-81).
2. Remove the screws (A), and remove the third row child seat tether anchors (B).



3. Install the anchor in the reverse order of removal, and apply medium strength type liquid thread lock to the threads of the child seat tether anchor screws.

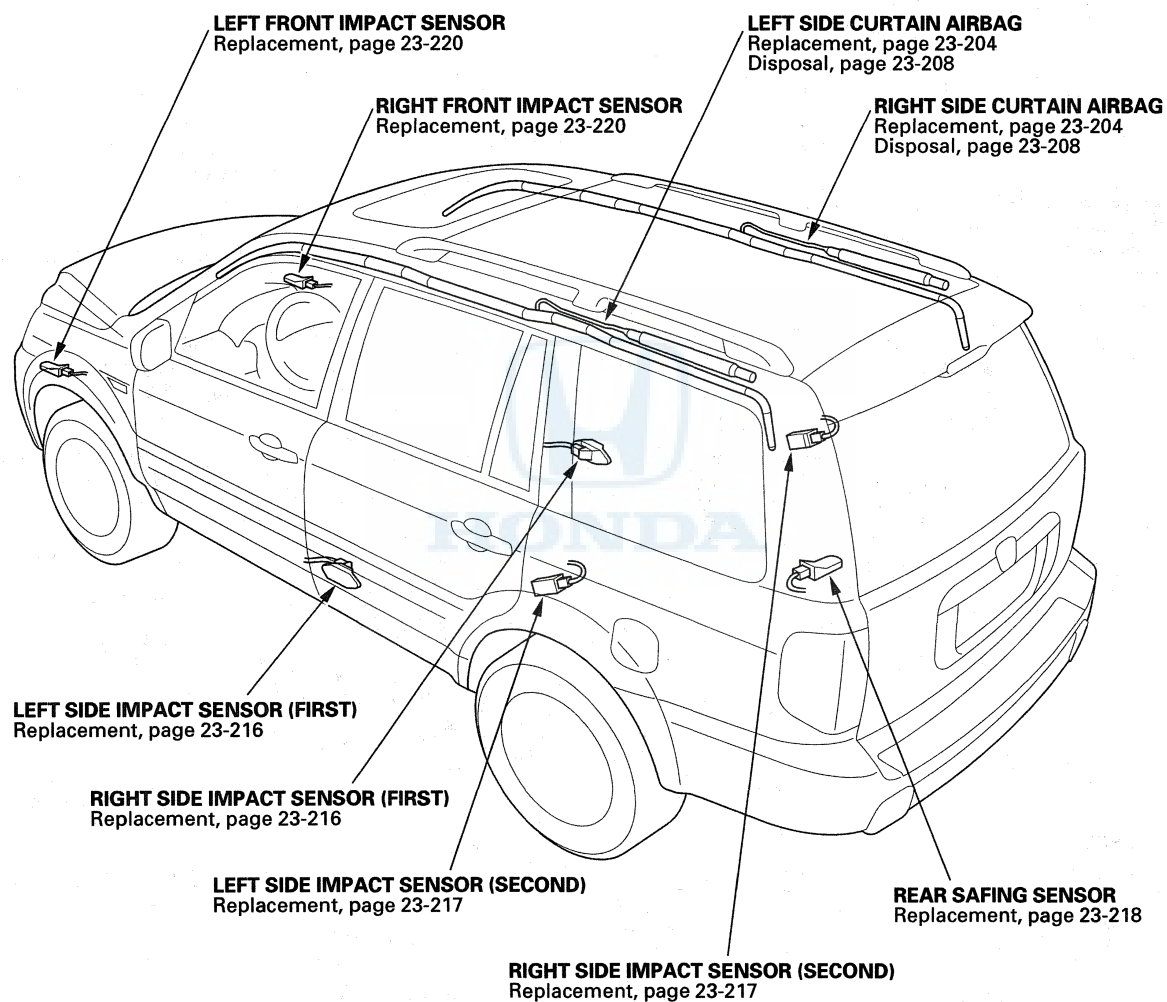


Component Location Index



(cont'd)

Component Location Index (cont'd)





Precautions and Procedures

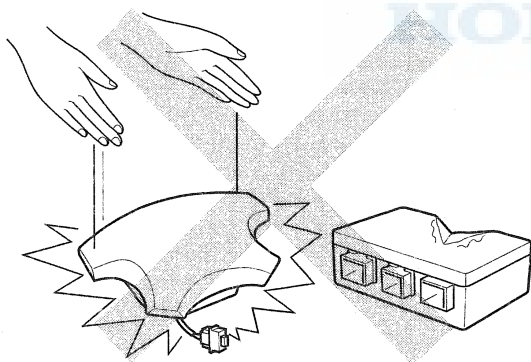
General Precautions

Please read the following precautions carefully before performing airbag system service. If the instructions described in this manual are not properly followed, or the airbags could accidentally deploy and cause damage or injuries.

- Except when performing electrical inspections, always turn the ignition switch OFF, ground the SCS line with the HDS to take the PCM out of active status, disconnect the negative cable from the battery, and wait at least 3 minutes before beginning work.

NOTE: The SRS memory of codes is not cleared even if the ignition switch is turned OFF or the battery cables are disconnected from the battery.

- Use replacement parts which are manufactured to the same standards and quality as the original parts. Do not install used SRS parts. Use only new parts when making SRS repairs.
- Carefully inspect any SRS part before you install it. Do not install any part that shows signs of being dropped or improperly handled, such as dents, cracks or deformation.



- Before removing any SRS parts (including disconnection of connectors), always disconnect the SRS connector.
- Use only a digital multimeter to check the system. If it is not a Honda multimeter, make sure its output is 10 mA (0.01 A) or less when switched to the lowest value in the ohmmeter range. A tester with a higher output could cause accidental deployment and possible injury.
- Do not put objects on the front passenger's airbag.

- The original audio system has a coded theft protection circuit. Make sure you have the anti-theft codes for the audio system and navigation system (if equipped), then write down the audio presets before disconnecting the negative cable from the battery.
- Before returning the vehicle to the customer, enter the anti-theft codes for the audio system and navigation system (if equipped), then enter the audio presets; set the clock.
- After disconnecting the negative cable from the battery, do the power window control unit reset procedure (see page 22-255).

Steering-related Precautions

Cable Reel Alignment

- Misalignment of the cable reel could cause an open in the wiring, making the SRS system, and the horn inoperative. Center the cable reel whenever the following is performed (see step 6 on page 23-214).
 - Installation of the steering wheel
 - Installation of the cable reel
 - Installation of the steering column
 - Other steering-related adjustment or installation
- Do not disassemble the cable reel.
- Do not apply grease to the cable reel.
- If the cable reel shows any signs of damage, replace it with a new one. For example, if it does not rotate smoothly, replace the cable reel.

(cont'd)

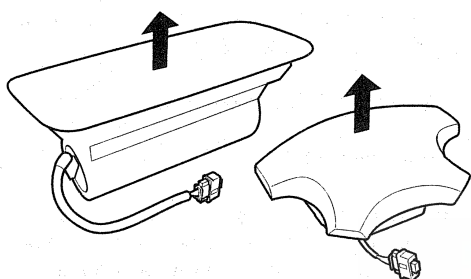
Precautions and Procedures (cont'd)

Airbag Handling and Storage

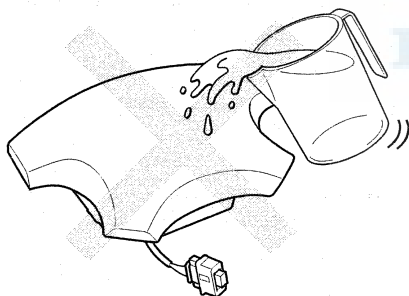
Do not disassemble an airbag. It has no serviceable parts. Once an airbag has been deployed, it cannot be repaired or reused.

For temporary storage of an airbag during service, observe the following precautions.

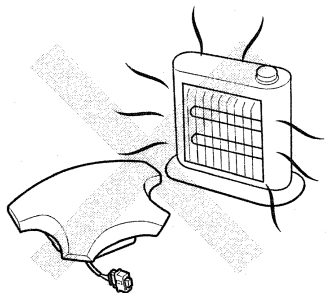
- Store the removed airbag with the pad surface up. Never put anything on the airbag.



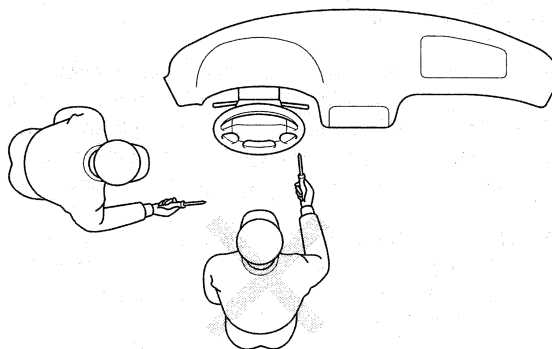
- To prevent damage to the airbag, keep it away from any oil, grease, detergent, or water.



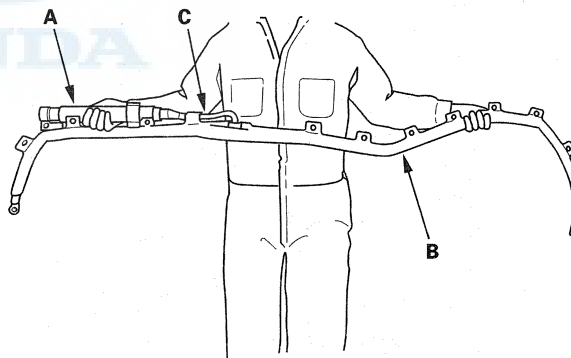
- Store the removed airbag on a secure, flat surface away from any high heat source (exceeding 200 °F/ 93 °C).



- Never perform electrical inspections to the airbags, such as measuring resistance.
- Do not position yourself in front of the airbag during removal, inspection, or replacement.



- For proper disposal of a damaged airbag, refer to airbag disposal (see page 23-208).
- The side curtain airbag inflator assembly is a long, jointed part containing an inflator (A), a flexible bag (B), and an adapter pipe (C).

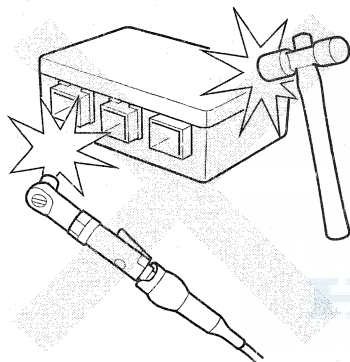


- When removing or installing the side curtain airbag inflator assembly, never handle the adapter pipe.

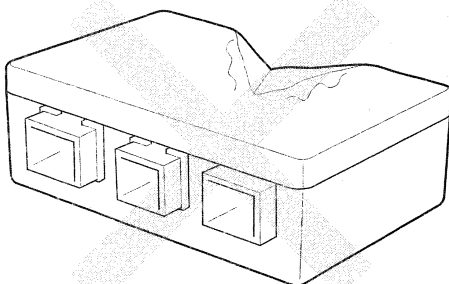


SRS Unit, Impact Sensors, Driver's Seat Position Sensor, Front Passenger's Weight Sensors, Rear Safing Sensor, and Roll Rate Sensor

- Be careful not to bump or impact the SRS unit, front impact sensors, side impact sensors, rear safing sensor, or roll rate sensor whenever the ignition switch is ON (II), or for at least 3 minutes after the ignition switch is turned OFF.
- During installation or replacement, be careful not to bump (by impact wrench, hammer, etc.) the area around the SRS unit, front impact sensors, the side impact sensors, rear safing sensor, or roll rate sensor. The airbags could accidentally deploy and cause damage or injury.



- After a collision where a front airbag, a side airbag, a side curtain airbag, or a seat belt tensioner deployed, go to Component Replacement/Inspection after Deployment (see page 23-198). After a collision where the airbags or the side airbags did not deploy, inspect for any damage or any deformation on the SRS unit, front impact sensors, side impact sensors, rear safing sensor, and roll rate sensor. Replace all damaged parts.



- Do not disassemble the SRS unit, front impact sensors, side impact sensors, driver's seat position sensor, front passenger's weight sensors, rear safing sensor, or roll rate sensor.
- Turn the ignition switch OFF, disconnect the negative cable from the battery and wait at least 3 minutes before beginning installation or replacement of the SRS unit, or disconnecting the connectors from the SRS unit.
- Be sure the SRS unit, front impact sensors, side impact sensors, rear safing sensor and roll rate sensor are installed securely with the mounting bolts torqued to 9.8 N·m (1.0 kgf·m, 7.2 lbf·ft).
- Do not spill water or oil on the SRS unit or the side impact sensors, or roll rate sensor, and keep them away from dust.
- Store the SRS unit, front impact sensors, side impact sensors, rear safing sensor and roll rate sensor in a cool (less than 104 °F/40 °C) and dry (less than 80 % relative humidity, no moisture) area.

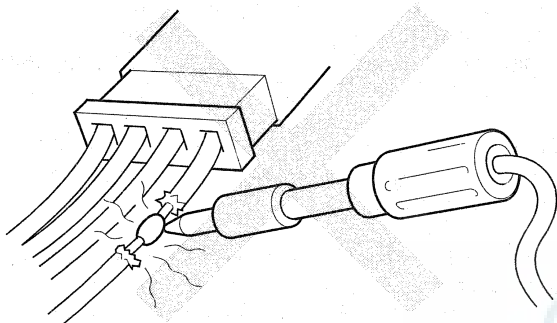
(cont'd)

Precautions and Procedures (cont'd)

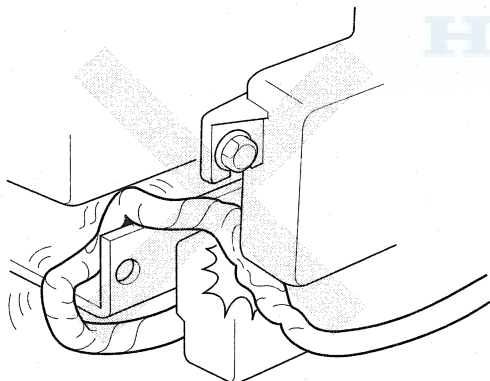
Wiring Precautions

Some of the SRS wiring can be identified by special yellow outer covering, and the SRS connectors can be identified by their yellow color. Observe the instructions.

- Never attempt to modify, splice, or repair SRS wiring. If there is an open or damage in SRS wiring, replace the harness.



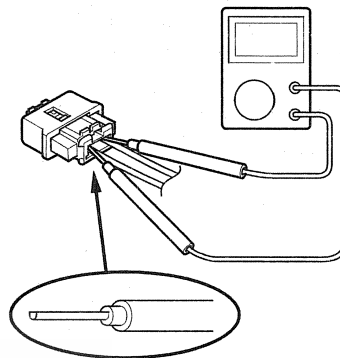
- Be sure to install the harness wires so they do not get pinched or interfere with other parts.



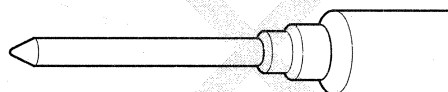
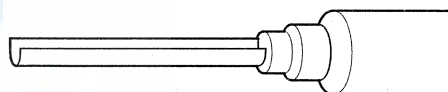
- Make sure all SRS ground locations are clean, and grounds are securely fastened for optimum metal-to-metal contact. Poor grounds can cause intermittent problems that are difficult to diagnose.

Precautions for Electrical Inspections

- When using electrical test equipment, insert the probe of the tester into the wire side of the connector. Do not insert the probe of the tester into the terminal side of the connector, and do not tamper with the connector.



- Use a U-shaped probe. Do not insert the probe forcibly.



- Use specified service connectors in troubleshooting. Using improper tools could cause an error in inspection due to poor metal-to-metal contact.



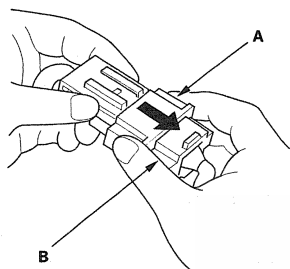
Spring-loaded Lock Connector

Some SRS system connectors have a spring-loaded lock.

Front Airbag Connectors

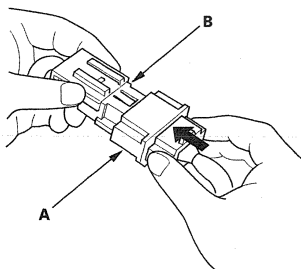
Disconnecting

To release the lock, pull the spring-loaded sleeve (A) toward the stop (B) while holding the opposite half of the connector. Then pull the connector halves apart. Be sure to pull on the sleeve and not on the connector.

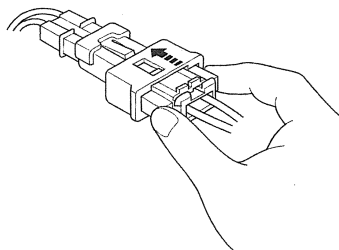


Connecting

1. To reconnect, hold the pawl-side connector, and press on the back of the sleeve-side connector in the direction shown. As the two connector halves are pressed together, the sleeve (A) is pushed back by the pawl (B). Do not touch the sleeve.



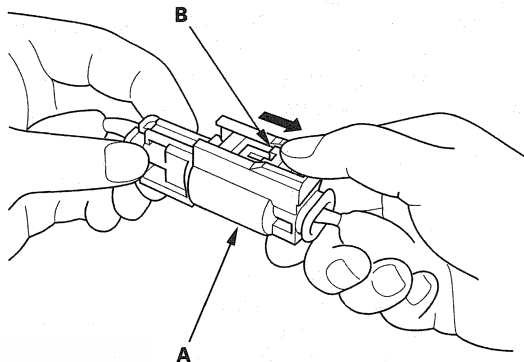
2. When the connector halves are completely connected, the pawl is released, and the spring-loaded sleeve locks the connector.



Side Airbag Connector

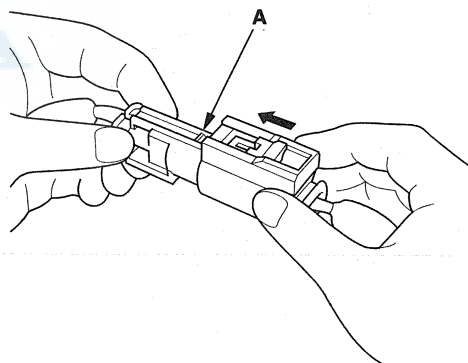
Disconnecting

To release the lock, pull the spring-loaded sleeve (A) and the slider (B) while holding the opposite half of the connector. Then pull the connector halves apart. Be sure to pull on the sleeve and not on the connector half.



Connecting

Hold both connector halves, and press them firmly together until the projection (A) of the sleeve-side connector clicks.



(cont'd)

Precautions and Procedures (cont'd)

Opening the SRS Unit Shorting Connectors For Diagnosis

Special Tools Required

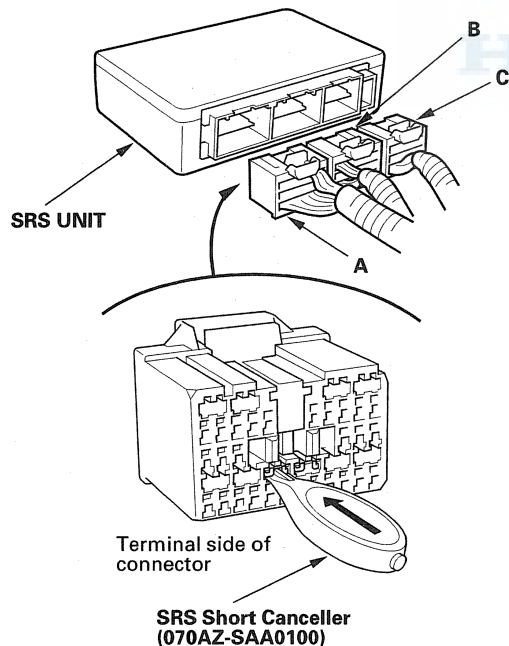
SRS short canceller 070AZ-SAA0100

NOTE:

- To prevent damaging the connector cavity, insert the SRS short canceller (070AZ-SAA0100) straight into the cavity from the terminal side.
- Before installing the short canceller, wash it with electrical contact cleaner, then dry it with compressed air.
- Do not use the short canceller if it is damaged.
- Make sure to remove the short canceller before re-connecting.

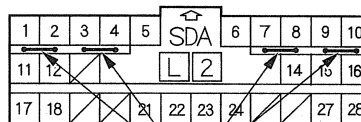
When SRS unit connector A or C is disconnected, a short circuit is created in the connector by its own function to prevent airbag deployment. The circuit may need to be opened when diagnosis is performed on the circuit.

Insert the short canceller (T/N 070AZ-SAA0100) in the specified cavities when it is necessary to keep the circuit open for diagnosis.



Terminal numbers are shown from the wire side of the female terminals. Insert the short canceller(s) into the cavities on the terminal side of the connector.

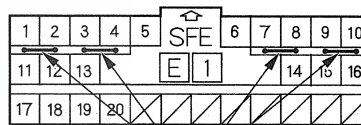
SRS UNIT CONNECTOR A (28P)



Insert short canceller(s) here

Wire side of female terminals

SRS UNIT CONNECTOR C (28P)



Insert short canceller(s) here

Wire side of female terminals

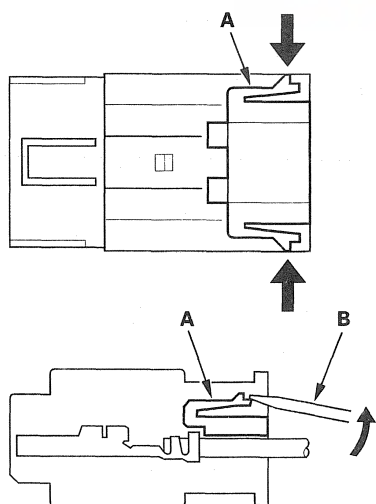
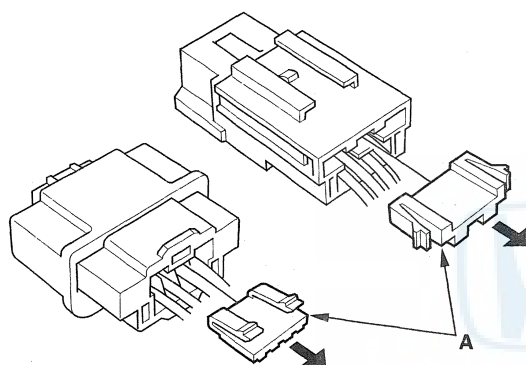


Backprobing Spring-loaded Lock Connectors

When checking voltage or resistance on this type of connector the first time, you must remove the retainer to insert the tester probe from the wire side.

NOTE: It is not necessary to reinstall the removed retainer; the terminals will stay locked in the connector housing.

To remove the retainer (A), insert a flat-tip screwdriver (B) between the connector body and the retainer, then carefully pry out the retainer. Take care not to break the connector.



Seats with Side Airbags

Seats with side airbags have a "SIDE AIRBAG" tab on the seat-back. Because the component parts (seat-back cover, cushion, etc.) of seats with and without airbags are different, make sure you install only the correct replacement parts.



- When cleaning, use a damp cloth to clean the seat. Do not soak the seat with liquid, and do not spray steam on the seat.
- Do not repair a torn or frayed seat-back cover. Replace the seat-back cover.
- After a collision where the side airbag was deployed, replace the side airbag with new parts. If the seat-back cushion is split, it must be replaced. If the seat-back frame is deformed, it must be replaced.
- Never put aftermarket accessories on the seat (covers, pads, seat heaters, lights, etc.).

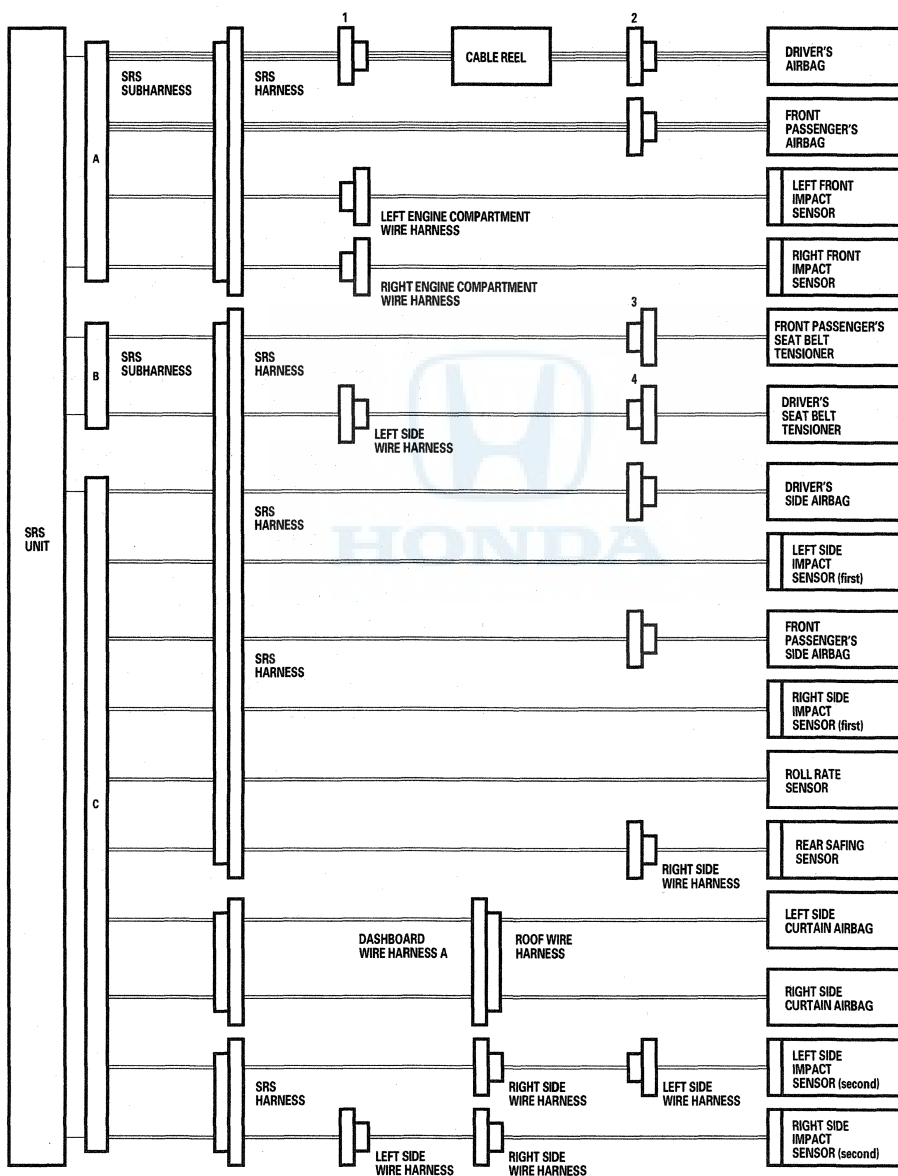
(cont'd)

Precautions and Procedures (cont'd)

Disconnecting System Connectors

Turn the ignition switch OFF, disconnect the negative cable from the battery, and wait at least 3 minutes before beginning the following procedures.

- Before disconnecting the cable reel 4P connector (1), disconnect the driver's airbag 4P connector (2).
- Before disconnecting SRS unit connector B from the SRS unit, disconnect both seat belt tensioner 2P connectors (3, 4).

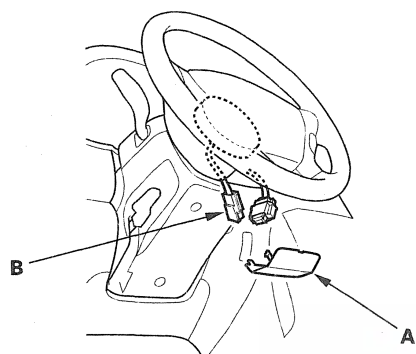




1. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait at least 3 minutes.

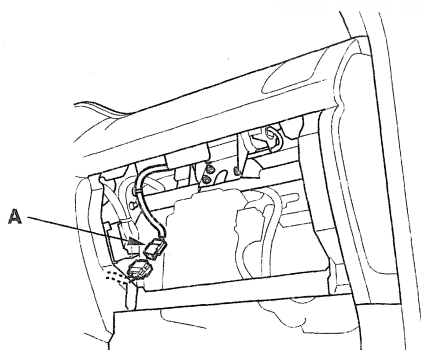
Driver's Airbag

2. Remove the access panel (A) from the steering wheel, then disconnect the driver's airbag 4P connector (B) from the cable reel.



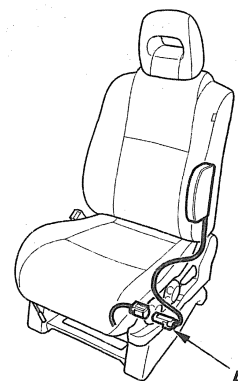
Front Passenger's Airbag

3. Remove the glove box (see page 20-95), then disconnect the front passenger's airbag 4P connector (A) from dashboard wire harness A.



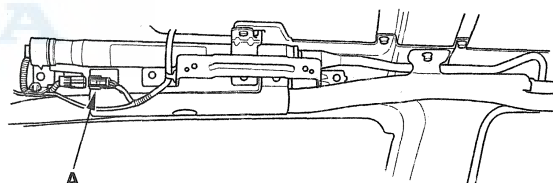
Side Airbag

4. Disconnect both side airbag 2P connectors (A) from the SRS harness.



Side Curtain Airbag

5. Remove the headliner (see page 20-83).
6. Disconnect both roof wire harness 2P connectors (A) from the side curtain airbags.

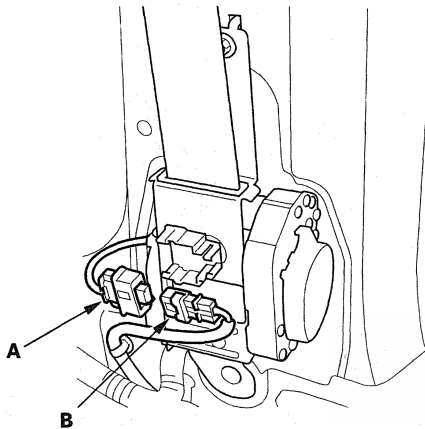


(cont'd)

Precautions and Procedures (cont'd)

Seat Belt Tensioner

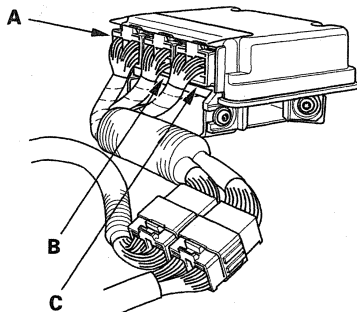
7. Remove the B-pillar lower trim panel (see page 20-70). Disconnect the seat belt tensioner 2P connector (A) from the SRS harness or left side wire harness 2P connector (B).



Driver's side shown; passenger's side is similar.

SRS Unit

8. Remove the center console side trim (see page 20-88). Disconnect SRS unit connector A (28P), SRS unit connector B (28P), SRS unit connector C (28P) from the SRS unit.



General Troubleshooting Information

DTC (Diagnostic Trouble Codes)

The self-diagnostic function of the SRS system allows it to locate the causes of system problems and then store this information in memory. For easier troubleshooting, this data can be retrieved via a data link circuit.

- When you turn the ignition switch ON (II), the SRS indicator comes on. If it goes off after 6 seconds, the system is normal.
- If there is an abnormality, the system locates and defines the problem, stores this information in memory, and turns the SRS indicator on. The data will remain in memory even when the ignition switch is turned off or if the battery is disconnected.
NOTE: The SRS indicator may go out depending on the code if the problem is intermittent, but the code will remain in memory.
 - The SRS indicator is either latchable or resettable, depending on the DTC. When latchable, the SRS indicator turns on and stays on whenever the ignition switch is in the ON position, or until the DTC is cleared. When resettable, the SRS indicator turns on when the DTC is set. It will not turn on after the ignition switch is cycled from ON to OFF if the problem is intermittent and goes away, but the DTC will remain in memory until cleared.

- The "x" at the end of each DTC denotes a numeric character (0 thru 9) or an alpha character (A thru F) that is displayed on the HDS.

- When you use the HDS, you can retrieve the DTC in the Honda Systems "SRS" menu.

- After reading and recording the DTC, proceed with the troubleshooting procedure for this code.

Precautions

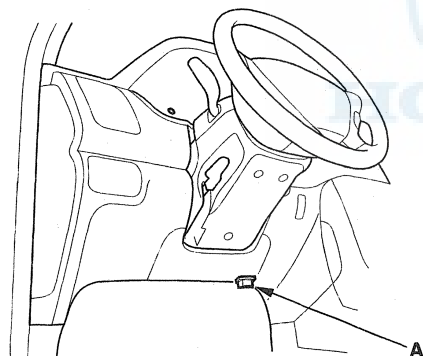
- Make sure the battery is sufficiently charged. If the battery is dead or low, measuring values may not be correct.
- Use only a digital multimeter to check the system. If it's not a Honda multimeter, make sure it's output is 10 mA (0.01 A) or less when switched to the smallest value in the ohmmeter range. A tester with a higher output could damage the airbag circuit, or cause accidental airbag deployment and possible injury.



- Whenever the ignition switch is ON (II), or has been turned OFF for less than 3 minutes, be careful not to bump the SRS unit; the airbags could accidentally deploy and cause damage or injuries.
- Before you remove the SRS harness, disconnect the driver's airbag connector, the front passenger's airbag connector, both side airbag connectors, both side curtain airbag connectors, and both seat belt tensioner connectors.
- Do not touch a tester probe to the terminals in the SRS unit or harness connectors, and do not connect the SRS unit terminals or the sensor terminals with a jumper wire. Use only the backprobe set and the multimeter. Backprobe spring-loaded lock type connectors correctly.

Reading the DTC

1. Make sure the ignition switch is OFF.
2. Connect the HDS to the data link connector (DLC) (A).



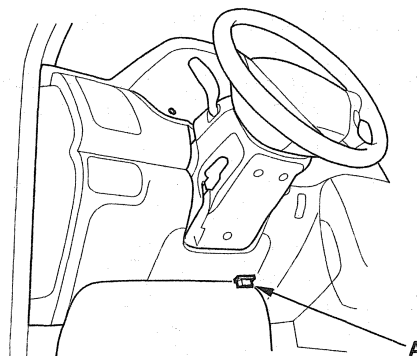
3. Turn the ignition switch ON (II).
4. Use the HDS to check for SRS DTCs.

NOTE: SWS DTC assists SRS DTC. Therefore, do troubleshoot correspond to SRS DTC.

5. Read the DTC.
6. Turn the ignition switch OFF, and wait for 10 seconds.
7. Disconnect the HDS from the DLC.
8. Do the troubleshooting procedure for the DTC.

Clear the DTC Memory with the HDS

1. Make sure the ignition switch is OFF.
2. Connect the HDS to data link connector (DLC) (A).



3. Turn the ignition switch ON (II).
4. In the TEST MODE MENU of the HDS, select DTC CLEAR. This clears the DTC(s).
5. Turn the ignition switch OFF, and wait for 10 seconds.
6. Disconnect the HDS from the DLC.

(cont'd)

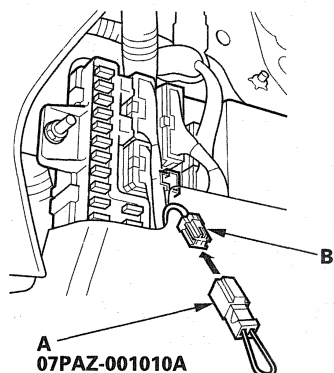
General Troubleshooting Information (cont'd)

Clear the DTC Memory Using MES Connector without the HDS

Special Tools Required

SCS service connector 07PAZ-001010A

1. Make sure the ignition switch is OFF.
2. Connect the SCS service connector (A) to the yellow MES connector (2P) (B). Do not use a jumper wire.



3. Turn the ignition switch ON (II).
4. The SRS indicator comes on for about 6 seconds, and then goes off. Remove the SCS service connector from the MES connector within 4 seconds after the indicator goes off.
5. The SRS indicator will come on again. Reconnect the SCS service connector to the MES connector within 4 seconds after the indicator comes on.
6. When the SRS indicator goes off, remove the SCS service connector from the MES connector within 4 seconds.
7. The SRS indicator blinks two times, indicating that the memory has been cleared.
8. Turn the ignition switch OFF, and wait for 10 seconds.
9. Turn the ignition switch ON (II) again. If the SRS indicator comes on for 6 seconds, and then goes off, the system is OK.



Troubleshooting Intermittent Failures

If there was a malfunction, but it does not recur, it will be stored in the memory as an intermittent failure, and the SRS indicator may come on depending on this malfunction detected.

NOTE: Check the condition of the battery (see page 22-81), cables, and the charging system (see page 4-23). Low battery voltage may cause some intermittent failures.

After checking the DTC, troubleshoot as follow:

1. Make sure the ignition switch is OFF.
2. Connect the HDS to the data link connector (DLC) (A).
3. Turn the ignition switch ON (II).
4. Read the DTC (see "Reading the DTC").
5. Clear the DTC memory (see "Clear the DTC Memory").
6. Set the parking brake, then start the engine, and let it idle.
7. The SRS indicator comes on for about 6 seconds and then goes off.

8. Shake the related wire harness and the connectors, and check for loose connections, pinfits, and poor grounds.

9. Take a test-drive (quick acceleration, quick braking, and cornering), turn the steering wheel fully left and right, and hold it there for 5 to 10 seconds. If the problem recurs, the SRS indicator will come on.

NOTE: A faulty cable reel can cause intermittent DTCs related to the driver's airbag.

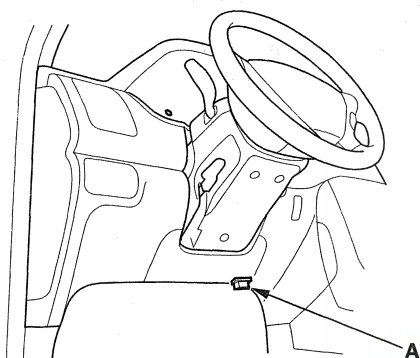
10. If you cannot duplicate the concern, ask the customer about the conditions when it occurred, or ask the customer to demonstrate the concern.
11. If you cannot duplicate the intermittent failure, the system is OK at this time.

(cont'd)

General Troubleshooting Information (cont'd)

Checking the Front Passenger's Weight Sensors after a Vehicle Collision

1. Position the front passenger's seat to the rearmost position, adjust the recliner to the forwardmost position. Do not move the seat from this position.
2. Drive the vehicle, accelerate to 20 mph (36 km/h), then stop on level ground.
3. Make sure the ignition switch is OFF.
4. Connect the HDS to the data link connector (DLC) (A).



5. Turn the ignition switch ON (II).
6. From the SRS inspection menu, select Seat Weight Sensor, then Misc Test, then "SEAT OUTPUT CHK." and follow the prompts until the ODS operation check has completed.

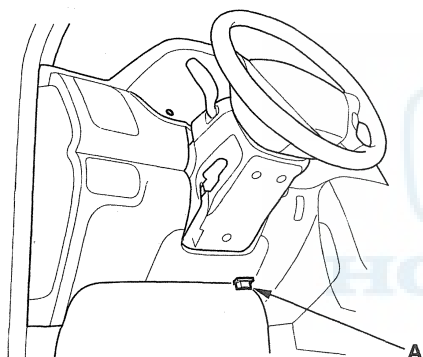


ODS Unit Initialization

When a seat-back cover, seat-back cushion, and/or ODS unit is replaced, initialize the ODS unit by following this procedure.

NOTE: A new (uninitialized) ODS unit installed with a faulty OPDS sensor can cause DTC 85-71 and 85-78.

1. Clear the DTC memory (see page 23-29).
2. Make sure the front passenger's seat is dry. Set the seat-back in a normal position, and make sure there is nothing on the seat.
3. Make sure the ignition switch is OFF and the MES connector is not shorted.
4. Connect the HDS to the data link connector (DLC) (A).



5. Turn the ignition switch ON (II).
6. From the HDS Main Menu, select SRS, then Misc Test, then Adjustments. In the Adjustment Menu, select ODS INIT. Follow the screen prompts to initialize the ODS.
7. Turn the ignition switch OFF.
8. Disconnect the HDS from the DLC.

NOTE: If the ODS fails to initialize after several attempts, replace the OPDS sensor/seat-back and retry. If the ODS continues to fail to initialize, replace the ODS unit (see page 23-219).

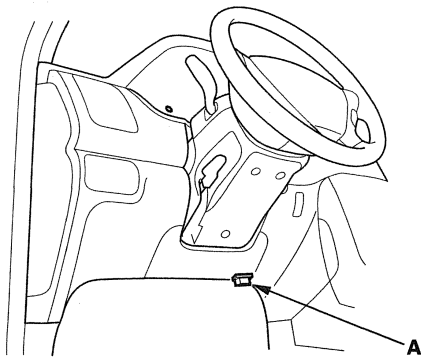
ODS Unit Calibration

When you replace the front passenger's weight sensors or ODS unit, calibrate the ODS unit.

While calibrating the front ODS unit, observe these precautions:

- Make sure all components of the front passenger's seat are correctly installed.
- Make sure nothing is on or under the front passenger's seat.
- Make sure there is nothing in the front passenger's seat-back pocket.
- Keep the windows closed.
- Perform all calibration procedures, except test-driving, in the service bay.
- Make sure the vehicle is on level ground.
- Keep the A/C and the heater off.
- Do not touch the front passenger's seat until you prompted to or when you have completed the calibration.
- Do not expose the front passenger's seat to sudden temperature changes.

1. Position the front passenger's seat to the rearmost position, and adjust the recliner to the forwardmost position. Do not move the seat from this position.
2. Make sure the ignition switch is OFF.
3. Connect the HDS to the data link connector (DLC) (A).



4. Turn the ignition switch ON (II).
5. Drive the vehicle, and accelerate to 20 mph (36 km/h), then stop on level ground.

6. From the Main Menu, select SRS, then Seat Weight Sensor, then Misc Test, then select "SWS INIT," and follow the prompts until the calibration has been completed.



ODS Unit Operation Check

Check the ODS operation after any of these actions.

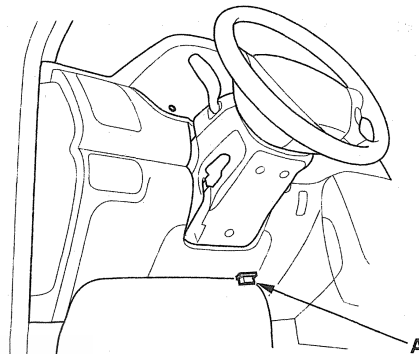
- Replacement of front passenger's seat component(s) (except ODS unit and/or front passenger's weight sensors)
- After a vehicle collision

Pre-operation Check Set-up

- Make sure all the components of the front passenger's seat are correctly installed.
- Position the front passenger's seat to the rearmost position.
- Adjust the seat recline to the forwardmost position.
- Do not move the seat from this position.
- Make sure nothing is on or under the front passenger's seat.
- Make sure there is nothing in the front passenger's seat-back pocket.
- Keep the windows closed.
- Perform all calibration procedures, except test-driving, in the service bay.
- Make sure the vehicle is on level ground.
- Keep the A/C and the heater off.
- Do not touch the front passenger's seat during the calibration.
- Do not expose the front passenger's seat to sudden temperature changes.

After Replacing Front Passenger's Seat Component(s)

1. Make sure the ignition switch is OFF.
2. Connect the HDS to the data link connector (DLC) (A).



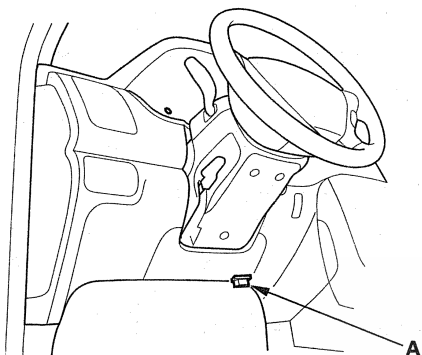
3. Turn the ignition switch ON (II).
4. Drive the vehicle, accelerate to 20 mph (36 km/h), then stop on level ground.
5. From the HDS Main Menu, select SRS, then Seat Weight Sensor, then Misc Test, then Inspection. In the HDS Inspection Menu, select "SEAT OUTPUT CHK" and follow the prompts until the ODS operation check has been completed.

Driver's Seat Position Sensor Operation Check

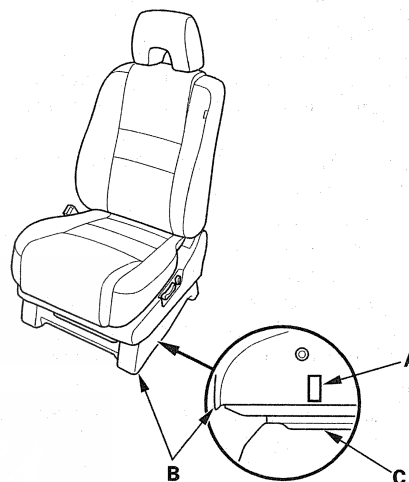
Check the driver's seat position after any of these actions.

- Driver's seat position sensor replacement
- Cover plate (front side of driver's seat slide rail) replacement

1. Make sure the ignition switch is OFF.
2. Connect the HDS to the data link connector (DLC) (A).



3. Turn the ignition switch ON (II).
4. Move the seat all the way forward.
5. From the HDS Main Menu, select SRS, then SRS, then Data List, then SPS.
6. Using a piece of tape (A), mark a line on the seat's outer cover (B), where the front riser cover meets the seat riser (C). The SPS should read "NEAR."



7. Move the seat-back in small increments (about 0.2 in., 5 mm) until the SPS reads "NOT NEAR." The seat should be about 1 in. (25 mm) from the front.

NOTE: It takes a few seconds for the HDS to display changes, so wait about 5 seconds between each move.

If the SPS data does not work as described, check the driver's seat position sensor or the cover plate for damage, and replace parts as needed.

8. Turn the ignition switch OFF, and disconnect the HDS from the DLC.



DTC Troubleshooting Index

DTC	Latch ^{*1}	Reset ^{*2}	Detection Item	Notes
11-1x		○	Open in driver's airbag first inflator	(see page 23-52)
11-3x			Short to another wire or decreased resistance in driver's airbag first inflator	(see page 23-54)
11-4x			Open in driver's airbag second inflator	(see page 23-52)
11-6x			Short to another wire or decreased resistance in driver's airbag second inflator	(see page 23-54)
11-8x	○		Short to power in driver's airbag first inflator	(see page 23-57)
11-9x			Short to ground in driver's airbag first inflator	(see page 23-59)
11-Ax			Short to power in driver's airbag second inflator	(see page 23-57)
11-Bx			Short to ground in driver's airbag second inflator	(see page 23-59)
12-1x		○	Open in front passenger's airbag first inflator	(see page 23-62)
12-3x			Short to another wire or decreased resistance in front passenger's airbag first inflator	(see page 23-64)
12-4x			Open in front passenger's airbag second inflator	(see page 23-62)
12-6x			Short to another wire or decreased resistance in front passenger's airbag second inflator	(see page 23-64)
12-8x	○		Short to power in front passenger's airbag first inflator	(see page 23-66)
12-9x			Short to ground in front passenger's airbag first inflator	(see page 23-68)
12-Ax			Short to power in front passenger's airbag second inflator	(see page 23-66)
12-Bx			Short to ground in front passenger's airbag second inflator	(see page 23-68)
21-1x		○	Open in driver's seat belt tensioner	(see page 23-70)
21-3x			Short to another wire or decreased resistance in driver's seat belt tensioner	(see page 23-72)
21-8x			Short to power in driver's seat belt tensioner	(see page 23-75)
21-9x			Short to ground in driver's seat belt tensioner	(see page 23-77)
22-1x		○	Open in front passenger's seat belt tensioner	(see page 23-80)
22-3x			Short to another wire or decreased resistance in front passenger's seat belt tensioner	(see page 23-82)
22-8x			Short to power in front passenger's seat belt tensioner	(see page 23-84)
22-9x			Short to ground in front passenger's seat belt tensioner	(see page 23-86)
31-1x		○	Open in driver's side airbag inflator	(see page 23-88)
31-3x			Short to another wire or decreased resistance in driver's side airbag inflator	(see page 23-90)
31-8x			Short to power in driver's side airbag inflator	(see page 23-92)
31-9x			Short to ground in driver's side airbag inflator	(see page 23-94)
32-1x		○	Open in front passenger's side airbag inflator	(see page 23-96)
32-3x			Short to another wire or decreased resistance in front passenger's side airbag inflator	(see page 23-98)
32-8x			Short to power in front passenger's side airbag inflator	(see page 23-100)
32-9x			Short to ground in front passenger's side airbag inflator	(see page 23-102)
33-1x		○	Open in left side curtain airbag inflator	(see page 23-104)
33-3x			Short to another wire or decreased resistance in left side curtain airbag inflator	(see page 23-106)
33-8x			Short to power in left side curtain airbag first inflator	(see page 23-109)
33-9x			Short to ground in left side curtain airbag first inflator	(see page 23-111)
34-1x		○	Open in right side curtain airbag first inflator	(see page 23-114)
34-3x			Short to another wire or decreased resistance in right side curtain airbag first inflator	(see page 23-116)
34-8x			Short to power in right side curtain airbag first inflator	(see page 23-119)
34-9x			Short to ground in right side curtain airbag first inflator	(see page 23-121)

NOTE: The "x" at the end of each DTC denotes a numeric character (0 thru 9) or an alpha character (A thru F) that you will see on the HDS display. The character is unrelated to your troubleshooting; it designates the SRS unit manufacture and other detail used for product analysis.

* 1: The SRS indicator turns on and stays on whenever the ignition switch is in the ON (II) position, or until the DTC is cleared.

* 2: The SRS indicator turns on when the DTC is set. The SRS indicator will not turn on after the ignition switch is cycled from ON (II) to OFF (0), but the DTC is stored in the SRS unit.

(cont'd)

DTC Troubleshooting Index (cont'd)

DTC	Latch ^{*1}	Reset ^{*2}	Detection Item	Notes
41-1x		○	No signal from the left front impact sensor	(see page 23-124)
41-2x			Internal failure of the left front impact sensor	(see page 23-132)
41-3x				
41-Bx	○			
42-1x		○	No signal from the right front impact sensor	(see page 23-128)
42-2x			Internal failure of the right front impact sensor	(see page 23-132)
42-3x				
42-Bx	○			
43-1x		○	No signal from the left side impact sensor (first)	(see page 23-133)
43-2x			Internal failure of the left side impact sensor (first)	(see page 23-132)
43-3x				
43-Bx	○			
44-1x		○	No signal from the right side impact sensor (first)	(see page 23-137)
44-2x			Internal failure of the right side impact sensor (first)	(see page 23-132)
44-3x				
44-Bx	○			
45-1x		○	No signal from the left side impact sensor (second)	(see page 23-141)
45-2x			Internal failure of the left side impact sensor (second)	(see page 23-145)
45-3x				
45-Bx	○			
46-1x		○	No signal from the right side impact sensor (second)	(see page 23-143)
46-2x			Internal failure of the right side impact sensor (second)	(see page 23-145)
46-3x				
46-Bx	○			





DTC	Latch ^{*1}	Reset ^{*2}	Detection Item	Notes
51-xx		○	Internal failure of the SRS unit	(see page 23-145)
52-xx	○			
53-xx		○		
54-xx				
55-xx				
56-xx	○			
61-1x		○	Open in driver's seat belt buckle switch	(see page 23-146)
61-2x			Short in driver's seat belt buckle switch	(see page 23-149)
62-1x			Open in front passenger's seat belt buckle switch	(see page 23-152)
62-2x			Short in front passenger's seat belt buckle switch	(see page 23-155)
71-1x			Open in driver's seat position sensor	(see page 23-157)
71-2x			Short in driver's seat position sensor	(see page 23-159)
81-4x			Internal failure of the ODS unit	(see page 23-166)
81-5x				
81-61			No signal from the ODS unit	(see page 23-162)
81-62			Response data error from the ODS unit	
81-63			Internal failure of the ODS unit	(see page 23-166)
81-64				
81-71				
81-78			ODS unit does not calibrate	(see page 23-167)

NOTE: The "x" at the end of each DTC denotes a numeric character (0 thru 9) or an alpha character (A thru F) that you will see on the HDS display. The character is unrelated to your troubleshooting; it designates the SRS unit manufacture and other detail used for product analysis.

* 1: The SRS indicator turns on and stays on whenever the ignition switch is in the ON (II) position, or until the DTC is cleared.

* 2: The SRS indicator turns on when the DTC is set. The SRS indicator will not turn on after the ignition switch is cycled from ON (II) to OFF (0), but the DTC is stored in the SRS unit.



(cont'd)

DTC Troubleshooting Index (cont'd)

DTC	Latch ^{*1}	Reset ^{*2}	Detection Item	Notes
81-79		○	Front passenger's weight sensors initial check failure	(see page 23-167)
82-1x			No signal from the inner side front passenger's weight sensor	(see page 23-168)
83-2x			No signal from the outer side front passenger's weight sensor	
85-4x			Internal failure of the ODS unit	(see page 23-166)
85-5x				
85-61			No signal from the ODS unit	(see page 23-162)
85-62			Response data error from the ODS unit	
85-63			Internal failure of the ODS unit	(see page 23-166)
85-64				
85-71			ODS unit not initialized	(see page 23-167)
85-78				
85-79			OPDS sensor initial check failure	(see page 23-168)
86-1x			Faulty OPDS sensor	(see page 23-169)
86-2x				
87-3x			Side airbag cutoff indicator stays on/off	(see page 23-170)
91-1x			Short to ground in the SRS indicator circuit	(see page 23-172)
92-1x			Open in the front passenger's airbag cutoff indicator	(see page 23-174)
92-2x			Open or short to ground in the passenger's airbag cutoff indicator	(see page 23-175)
A1-1x			Faulty power supply (VA line)	(see page 23-178)
A2-1x			Faulty power supply (VB line)	(see page 23-180)
B1-11			No signal from the roll rate sensor	(see page 23-182)
B1-17			Internal failure of the roll rate sensor	(see page 23-187)
B1-8x				
B1-9x				
B1-Ax				
B1-Bx				
B2-11	○	○	No signal from the rear safing sensor	(see page 23-188)
B2-17			Internal failure of the rear safing sensor	(see page 23-190)
B2-84				
B2-90				
B2-Ax				
B2-Bx				
Ex-xx		○	Control operation recorded	(see page 23-172)
Fx-xx			Airbags, and/or tensioners deployment recorded	

NOTE: The "x" at the end of each DTC denotes a numeric character (0 thru 9) or an alpha character (A thru F) that you will see on the HDS display. The character is unrelated to your troubleshooting; it designates the SRS unit manufacture and other detail used for product analysis.

* 1: The SRS indicator turns on and stays on whenever the ignition switch is in the ON (II) position, or until the DTC is cleared.

* 2: The SRS indicator turns on when the DTC is set. The SRS indicator will not turn on after the ignition switch is cycled from ON (II) to OFF (0), but the DTC is stored in the SRS unit.



Symptom Troubleshooting Index

Symptom	Diagnostic procedure	Also check for
SRS indicator does not come on	Symptom Troubleshooting (see page 23-191)	
SRS indicator stays on, but no DTCs are stored	Symptom Troubleshooting (see page 23-195)	
Side airbag cutoff indicator stays on after bulb check, and no DTCs are stored, or side airbag cutoff indicator is flashing	<ul style="list-style-type: none">• Make sure nothing is on the front passenger's seat.• If the side airbag cutoff indicator stays on after the ignition switch is turned ON (II), initialize the ODS unit (see page 23-33).<ul style="list-style-type: none">– If the side airbag cutoff indicator operates normally, the system is OK.– If the side airbag cutoff indicator stays on or flashes, replace the OPDS sensor (see page 20-109). The sensor is part of the seat-back pad.	



SRS

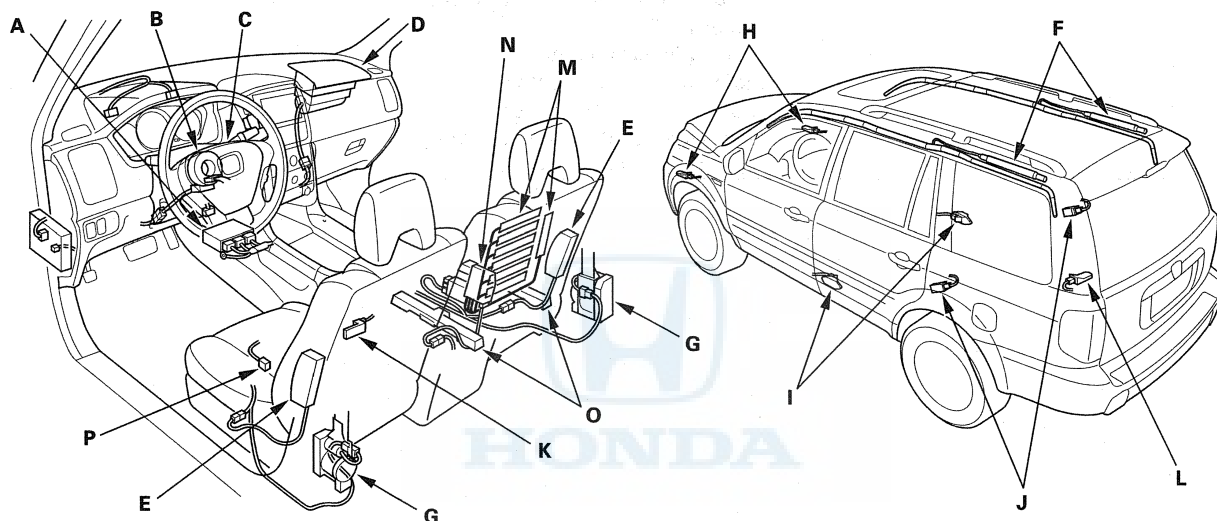
System Description

SRS Components

Airbags

The SRS is a safety device which, when used with the seat belt, is designed to help protect the driver and front passenger in a frontal impact exceeding a certain set limit. The system consists of the SRS unit, including safing sensor and impact sensor (A), the cable reel (B), the driver's airbag (C), the front passenger's airbag (D), side airbags (E), side curtain airbags (F), seat belt tensioners (G), front impact sensors (H), side impact sensors (first) (I), side impact sensors (second) (J), roll rate sensor (K), and rear safing sensor (L).

Since the driver's and front passenger's airbags use the same sensors, both normally inflate at the same time. However, it is possible for only one airbag to inflate. This can occur when the severity of a collision is at the margin, or threshold, that the SRS unit determines whether or not the airbags will deploy. In such cases, the seat belt will provide sufficient protection, and the supplemental protection offered by the airbag would be minimal.



Front Passenger's Weight Sensors

The OPDS sensor (M) and ODS unit (N) are in the front passenger's seat-back. The weight sensors (O) detect the weight on the seat, and send the information to the ODS unit. If the total weight is about 65 lbs (30 kg) or less, the ODS unit sends a signal to the SRS unit to prevent the passenger's airbag from deploying. When the passenger's airbag is disabled, the passenger airbag cutoff indicator on the center panel comes on to alert the driver that the front passenger's airbag will not deploy in a front-end collision.

Driver's Seat Position Sensor

The driver's seat position sensor (P) is under the driver's seat on the left side. When the driver's seat is moved to its full forward position, the deployment of the driver's airbag is moderated to decrease its force of impact during a front-end collision.



Roll Rate Sensor

The roll rate sensor is located under the front passenger's seat. It detects the amount of roll of the vehicle and sends the information to the SRS unit. The SRS unit uses this information to determine if a vehicle rollover is imminent. If so, it deploys both side curtain airbags and the front seat belt tensioners.

Rear Safing Sensor

The rear safing sensor is located under the third row seat. The rear safing sensor performs the same basic function as the safing sensor in the SRS unit. It measures sideways G force, such as the force the vehicle would receive in a side collision in the rear, and sends that information to the SRS unit. The SRS unit uses that information, and the information from the second side impact sensor to determine the side that is impacted and the force. If the threshold is met, the SRS unit deploys the side airbag, the side curtain airbag and the seat belt tensioner on that side.

Side Airbag Cutoff Indicator/ODS Operation

The indicator comes on if the front passenger's seat is occupied by a small adult or child who is leaning into the deployment path, or an object (grocery bag, briefcase, purse, etc.) is in the seat. This indicates the passenger's side airbag is off and will not deploy; there is no problem with the side airbag. If the passenger sits upright or moves to another seat, or you remove the object from the seat, the light should go off. There will be some delay between the occupant's repositioning, and when the indicator will turn on or off.

Passenger Airbag Cutoff Indicator

The indicator comes on if the weight of the front passenger is about 65 lbs (30 kg) or less. This indicates the passenger's front airbag is off and will not deploy. The front airbag is shut off to reduce the chance of airbag-caused injuries.

SRS Operation

The main circuit in the SRS unit senses and judges the force of impact and, if necessary, ignites the inflator charges. If battery voltage is too low or power is disconnected due to the impact, the voltage regulator and the back-up power circuit will keep voltage at a constant level.

For the SRS to operate

Seat Belt Tensioners

- (1) A front impact sensor, side impact sensor, or the roll rate sensor must activate and send electric signals to the microprocessor.
- (2) The microprocessor must compute the signals and send them to the tensioners.
- (3) The charges must ignite and deploy the tensioners.

Driver's and Front Passenger's Airbag(s)

- (1) A front impact sensor must activate and send electric signals to the microprocessor.
- (2) The microprocessor must compute the signals, and send them to the airbag inflator(s).
- (3) The inflators that receives signals must ignite and deploy the airbags.

Side Airbag(s)

- (1) A side impact sensor must activate and send electric signals to the microprocessor.
- (2) The microprocessor must compute the signals and send them to the side airbag inflator(s). However, the microprocessor cuts off the signals to the front passenger's side airbag if the SRS unit determines that the front passenger's head is in the deployment path of the side airbag.
- (3) The inflator that receives the signal must ignite and deploy the side airbag.

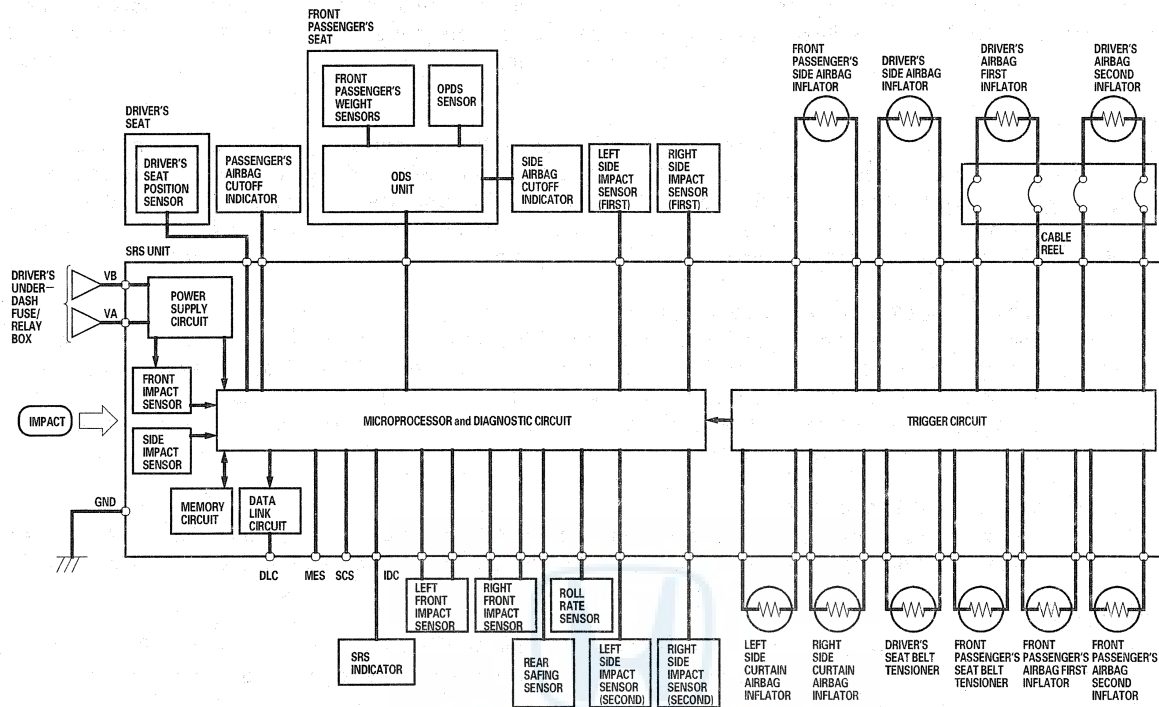
Side Curtain Airbag(s)

- (1) Side impact sensor or the roll rate sensor must activate and send electrical signals to the microprocessor.
- (2) The microprocessor must compute the signals and send them to the side curtain airbag and side airbag inflator(s).
- (3) The inflator that receives the signals must ignite and deploy the side curtain airbag and side airbag at the same time.

(cont'd)

SRS

System Description (cont'd)



Self-Diagnostic System

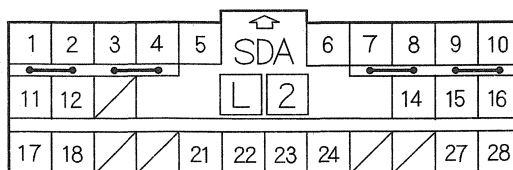
A self-diagnostic circuit is built into the SRS unit; when the ignition switch is turned ON (II), the SRS indicator comes on and goes off after about 6 seconds if the system is operating normally. If the indicator does not come on, or does not go off after 6 seconds, or if it comes on while driving, it indicates an abnormality in the system. The system must be inspected and repaired as soon as possible. For better serviceability, the SRS unit memory stores a DTC that relates to the cause of the malfunction, and the unit is connected to the data link connector circuit. This information can be read with the HDS when it is connected to the DLC (see page 23-29).

NOTE: If the negative cable from the battery is disconnected during troubleshooting, do the following.

Before you disconnect the battery make sure you have the anti-theft code for the audio and the navigation system (if equipped).



SRS Unit Inputs and Outputs at Connector A (28P)



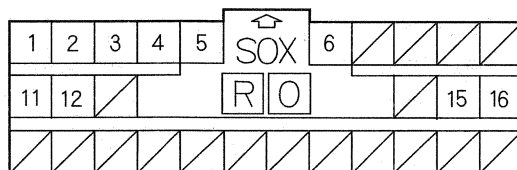
Wire side of female terminals

Terminal Number	Wire Color	Terminal Name	Description
1	GRN/YEL	LA2+	Power source for driver's airbag second inflator
2	GRN/WHT	LA2—	Ground for driver's airbag second inflator
3	BLU/BLK	RA2+	Power source for passenger's airbag second inflator
4	BLU/RED	RA2—	Ground for passenger's airbag second inflator
5	LT GRN/ BLK	MES	Memory erase signal input
6	BRN	SCS	Service check signal input
7	GRN/BLK	LA1+	Power source for driver's airbag first inflator
8	GRN/RED	LA1—	Ground for driver's airbag first inflator
9	YEL	RA1+	Power source for passenger's airbag first inflator
10	BLU/YEL	RA1—	Ground for passenger's airbag first inflator
11	ORN	SRS IND	SRS indicator output line
12	RED/BLU	PTT	Passenger's airbag cutoff indicator output line
14	GRN/ORN	ODS	Sends and receives communication signal
15	BRN/YEL	LFS—	Ground for left front impact sensor
16	BRN	RFS—	Ground for right front impact sensor
17	RED/WHT	VA	SRS system sub power
18	BLK/WHT	VB	SRS dedicated power (dedicated booster circuit)
21	YEL	CDS	Crash detection signal
22	BLK	SRS GND A	Ground circuit for the SRS
23	BLK	SRS GND B	Ground circuit for the SRS
24	GRY	K-LINE	Sends and receives scan tool signal
27	RED	LFS+	Power source for left front impact sensor
28	GRN	RFS+	Power source for right front impact sensor

(cont'd)

System Description (cont'd)

SRS Unit Inputs and Outputs at Connector B (28P)

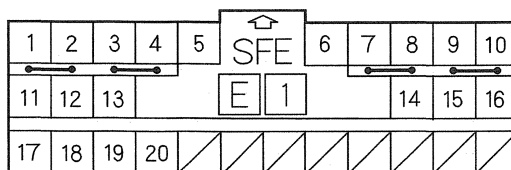


Wire side of female terminals

Terminal Number	Wire Color	Terminal Name	Description
1	RED/BLU	LRP+	Power source for driver's side seat belt tensioner
2	RED/WHT	LRP—	Ground for driver's seat belt tensioner
3	RED/BLK	RRP+	Power source for front passenger's seat belt tensioner
4	RED/YEL	RRP—	Ground for front passenger's seat belt tensioner
5	GRN/YEL	SS—	Ground for driver's seat position sensor
6	GRN/RED	SS+	Power source for driver's seat position sensor
11	BLU/RED	LBSC	Driver's seat belt buckle switch un-buckled signal
12	LT GRN	LBSC	Driver's seat belt buckle switch buckled signal
15	BLU	RBSC	Front passenger's seat belt buckle switch un-buckled signal
16	ORN	RBSC	Front passenger's seat belt buckle switch buckled signal



SRS Unit Inputs and Outputs at Connector C (28P)

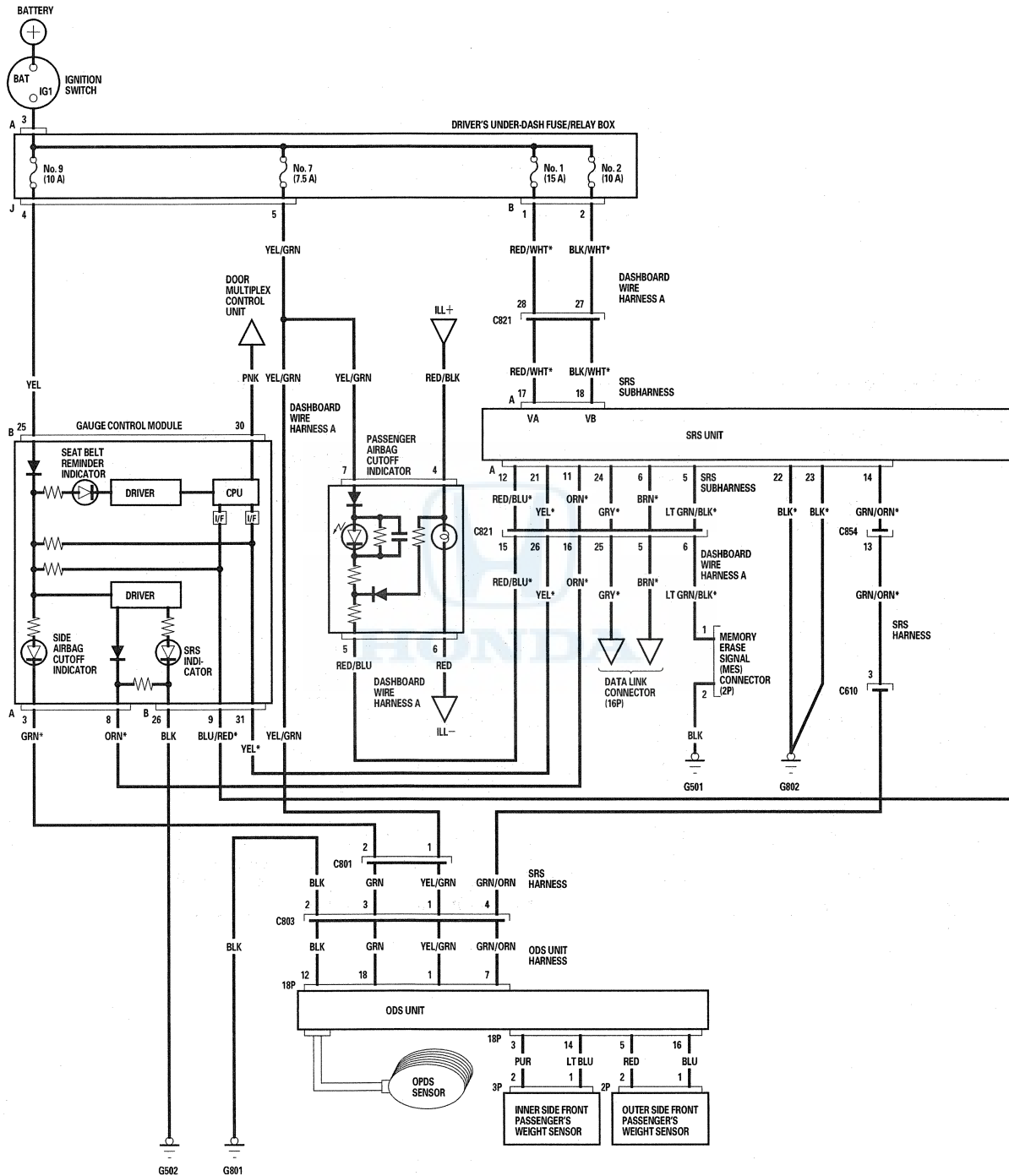


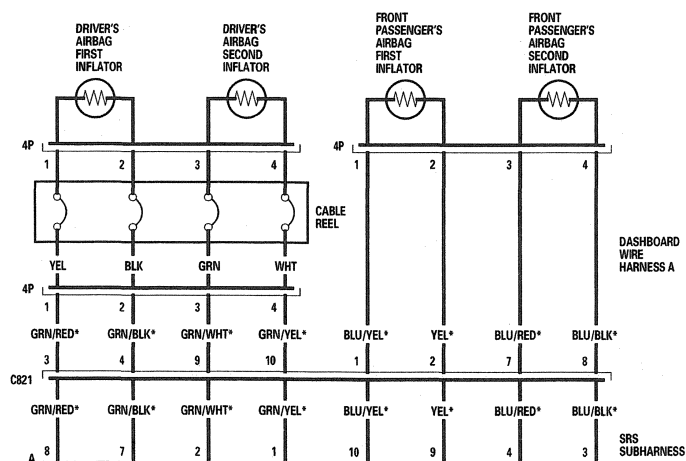
Wire side of female terminals

Terminal Number	Wire Color	Terminal Name	Description
1	WHT/GRN	LSA+	Power source for driver's airbag inflator
2	WHT/RED	LSA-	Ground for driver's airbag inflator
3	WHT/BLK	RSA+	Power source for front passenger's airbag inflator
4	WHT/BLU	RSA-	Ground for front passenger's airbag inflator
5	BLU/WHT	SSS+	Power source for rear safing sensor
6	BLU/YEL	SSS-	Ground for rear safing sensor
7	BLU/BLK	LCA+	Power source for left side curtain airbag inflator
8	BLU	LCA-	Ground for left side curtain airbag inflator
9	RED/YEL	RCA+	Power source for right side curtain airbag inflator
10	RED	RCA-	Ground for right side curtain airbag inflator
11	PNK/BLU	LBS1+	Power source for left side impact sensor (first)
12	GRY/RED	LBS-	Ground for left side impact sensor (first)
13	RED/YEL	RRS+	Power source for roll rate sensor
14	BLU/BLK	RRS-	Ground for roll rate sensor
15	BRN/YEL	RBS1+	Power source for right side impact sensor (first)
16	LT GRN/ RED	RBS1-	Ground for right side impact sensor (first)
17	GRN/BLK	LSC1+	Power source for left side impact sensor (second)
18	ORN	LSC1-	Ground for left side impact sensor (second)
19	YEL/BLK	RCS1+	Power source for right side impact sensor (second)
20	YEL	RCS1-	Ground for right side impact sensor (second)

SRS

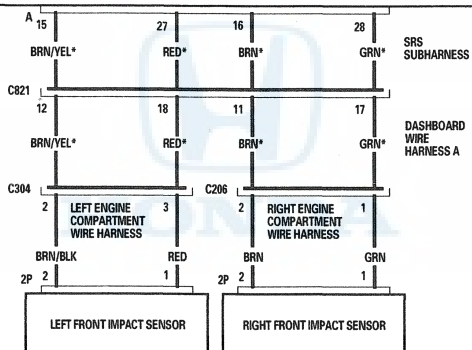
Circuit Diagram





BLUE, BROWN, GRAY, ORANGE, or GREEN wire color can be used for the SRS circuit's that have a * mark

SRS UNIT

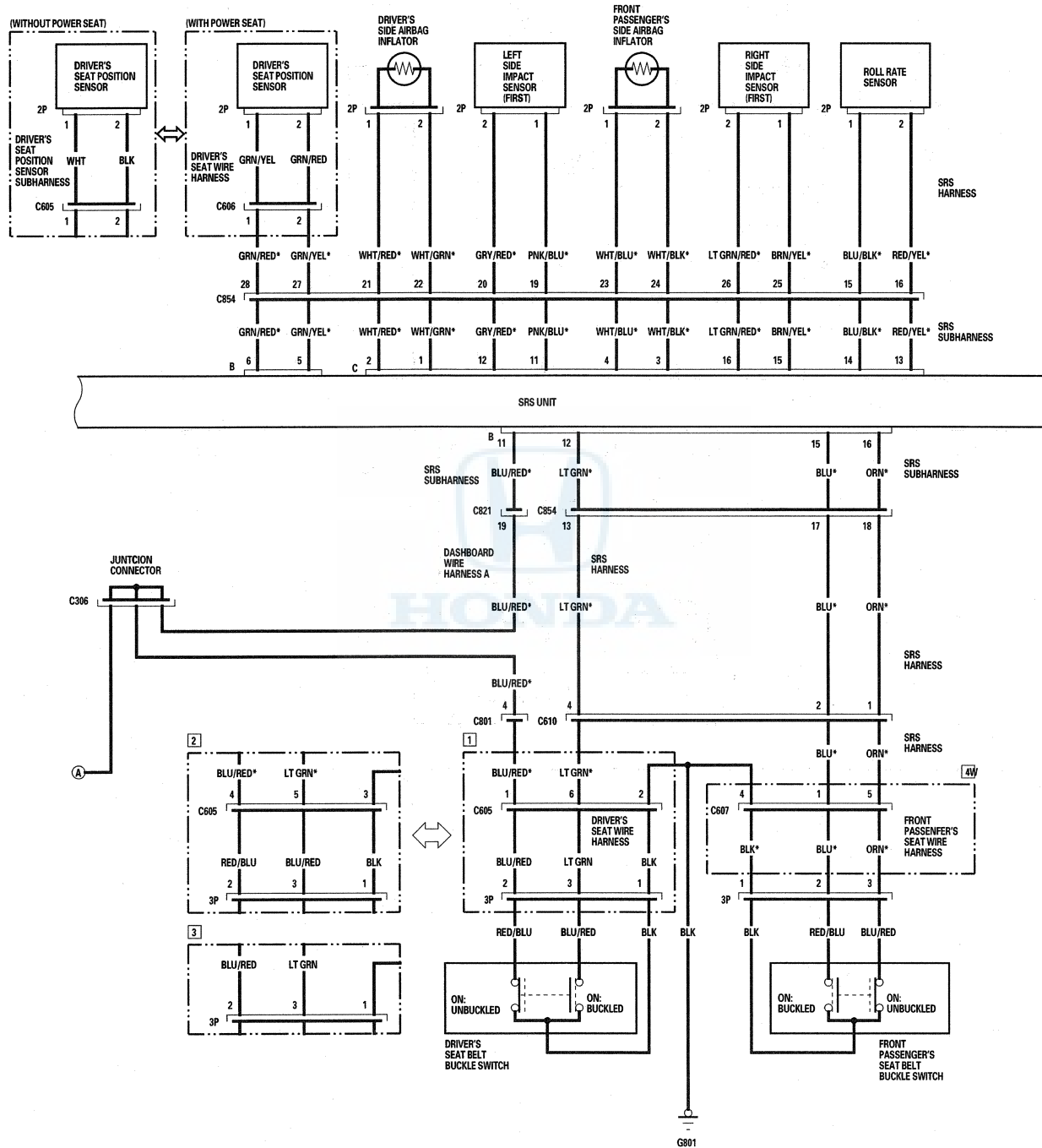


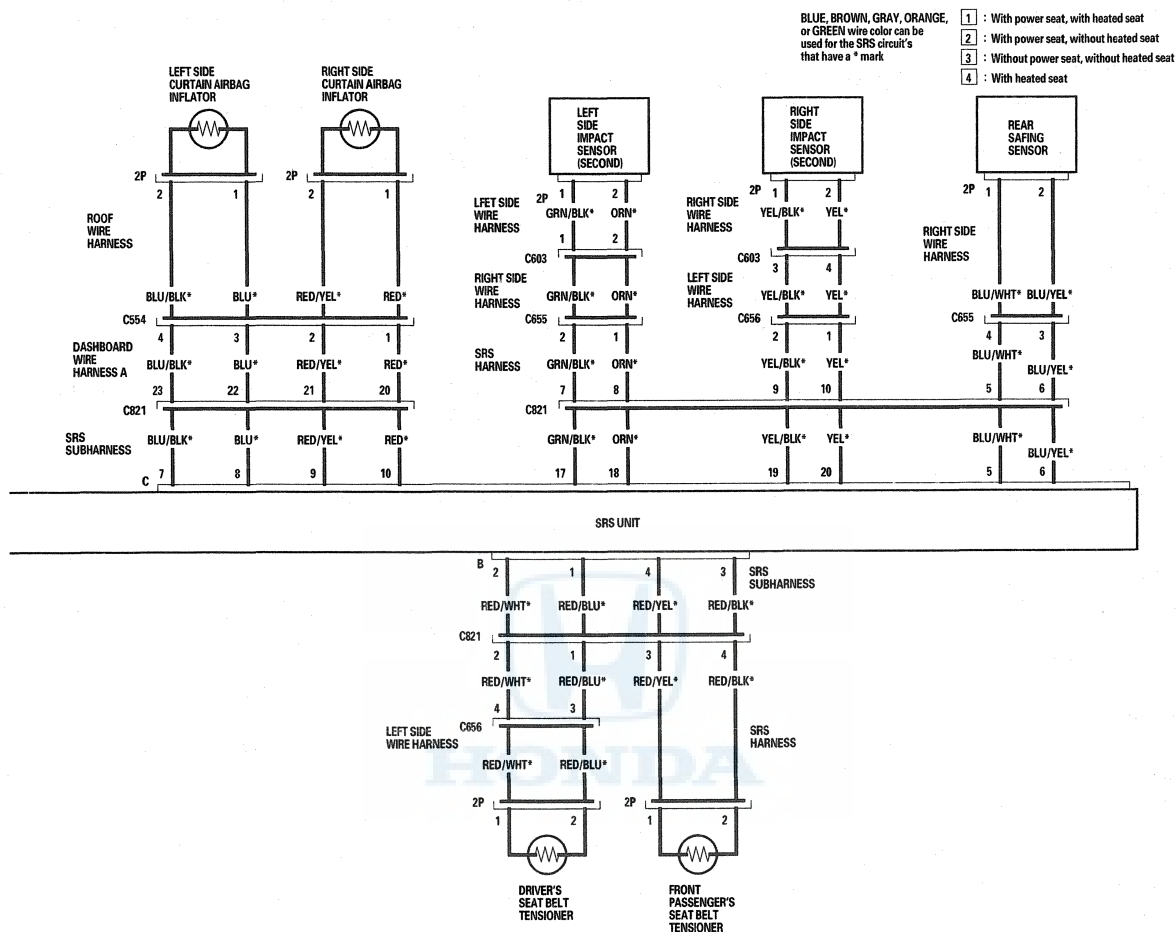
A

(cont'd)

SRS

Circuit Diagram (cont'd)





DTC Troubleshooting

DTC 11-1x ("x" can be 0 thru 9 or A thru F):
Open in Driver's Airbag First Inflator

DTC 11-4x ("x" can be 0 thru 9 or A thru F):
Open in Driver's Airbag Second Inflator

Special Tools Required

- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead F 07XAZ-SZ30100

NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 23-19) and General Troubleshooting Information (see page 23-28).

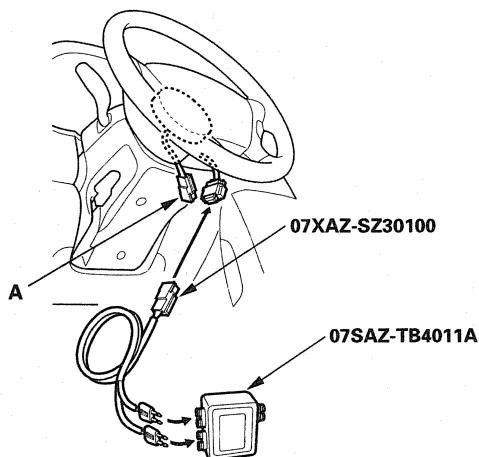
1. Clear the DTC memory (see page 23-29).
2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

Does the SRS indicator stay on, and is DTC 11-1x or 11-4x indicated?

YES—Go to step 3.

NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-31). If another DTC is indicated, troubleshoot the DTC.

3. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.
4. Disconnect the driver's airbag 4P connector (A) from the cable reel.



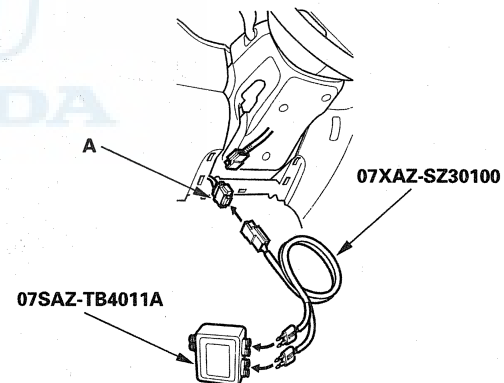
5. Connect the SRS inflator simulator (2 Ω connectors) and the simulator lead F to the cable reel.
6. Reconnect the negative cable to the battery.
7. Clear the DTC memory.
8. Check for a DTC.

Is DTC 11-1x or 11-4x indicated?

YES—Go to step 9.

NO—Open in the driver's airbag first or second inflator; replace the driver's airbag (see page 23-201). ■

9. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.
10. Disconnect the dashboard wire harness A 4P connector (A) from the cable reel.



11. Connect the SRS inflator simulator (2 Ω connectors) and the simulator lead to dashboard wire harness A.
12. Reconnect the negative cable to the battery.
13. Clear the DTC memory.



14. Check for a DTC.

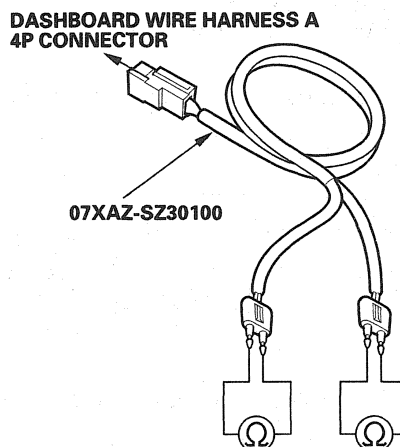
Is DTC 11-1x or 11-4x indicated?

YES—Go to step 15.

NO—Open in the cable reel; replace the cable reel (see page 23-212). ■

15. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.
16. Disconnect SRS unit connector A (28P) from the SRS unit (see step 8 on page 23-28).
17. Disconnect the SRS inflator simulator from the SRS simulator lead. Do not disconnect the simulator lead from the dashboard wire harness A 4P connector.

18. Measure the resistance between the terminals of SRS simulator lead. There should be less than 1 Ω .

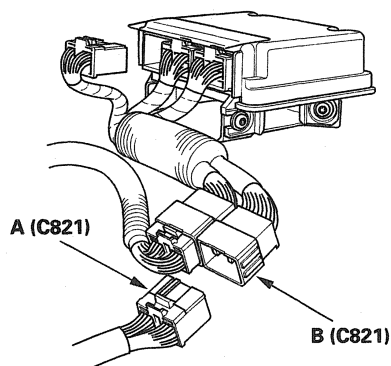


Is the resistance as specified?

YES—Faulty SRS unit or poor connection at SRS unit connector A (28P) and the SRS unit. Check the connection between the connector and the SRS unit. If the connection is OK, replace the SRS unit (see page 23-215). ■

NO—Go to step 19.

19. Disconnect SRS subharness 28P connector C821 (B) from dashboard wire harness A connector C821.

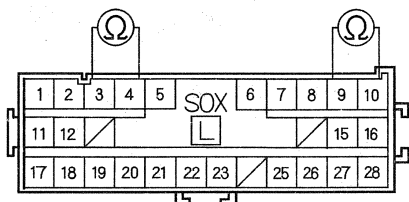


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DTC Troubleshooting (cont'd)

20. Measure the resistance between the No. 3 and No. 4 terminals of SRS subharness 28P connector C821, and between the No. 9 and No. 10 terminals. There should be less than 1 Ω .

SRS SUBHARNESS 28P CONNECTOR C821



Terminal side of male terminals

Is the resistance as specified?

YES—Open in dashboard wire harness A; replace dashboard wire harness A. ■

NO—Open in the SRS subharness; replace the SRS subharness. ■

DTC 11-3x ("x" can be 0 thru 9 or A thru F):
Short to Another Wire or Decreased Resistance in Driver's Airbag First Inflator

DTC 11-6x ("x" can be 0 thru 9 or A thru F):
Short to Another Wire or Decreased Resistance in Driver's Airbag Second Inflator

Special Tools Required

- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead F 07XAZ-SZ30100
- SRS short canceller 070AZ-SAA0100

NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 23-19) and General Troubleshooting Information (see page 23-28).

1. Clear the DTC memory (see page 23-29).
2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

Does the SRS indicator stay on, and is DTC 11-3x or 11-6x indicated?

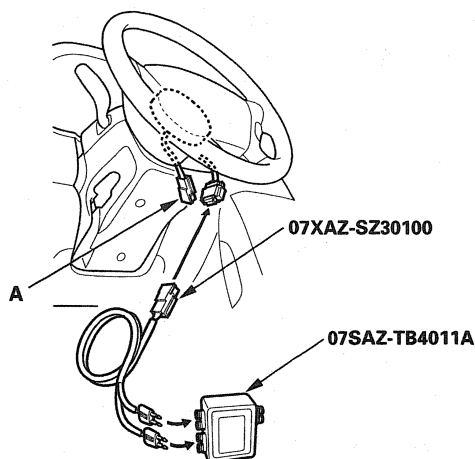
YES—Go to step 3.

NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-31). If another DTC is indicated, troubleshoot the DTC.

3. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.



4. Disconnect the driver's airbag 4P connector (A) from the cable reel.



5. Connect the SRS inflator simulator (2 Ω connectors) and simulator lead F to the cable reel.

6. Reconnect the negative cable to the battery.

7. Clear the DTC memory.

8. Check for a DTC.

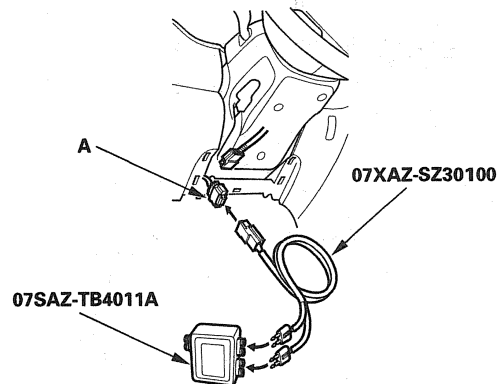
Is DTC 11-3x or 11-6x indicated?

YES—Go to step 9.

NO—Short in the driver's airbag first or second inflator; replace the driver's airbag (see page 23-201). ■

9. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.

10. Disconnect the dashboard wire harness A 4P connector (A) from the cable reel.



11. Connect the SRS inflator simulator (2 Ω connectors) and the simulator lead to dashboard wire harness A.

12. Reconnect the negative cable to the battery.

13. Clear the DTC memory.

14. Check for a DTC.

Is DTC 11-3x or 11-6x indicated?

YES—Go to step 15.

NO—Short in the cable reel; replace the cable reel (see page 23-212). ■

15. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.

16. Disconnect SRS unit connector A (28P) from the SRS unit (see step 8 on page 23-28).

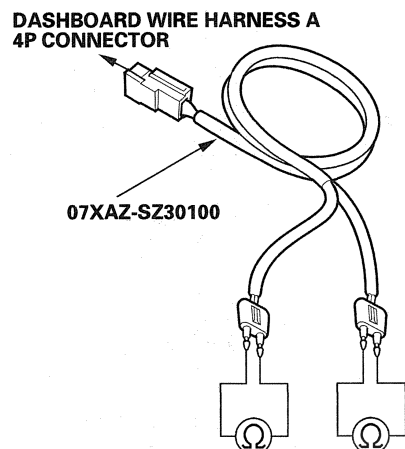
17. Disconnect the SRS inflator simulator from the SRS simulator lead. Do not disconnect the simulator lead from the dashboard wire harness A 4P connector.

18. Connect the SRS short canceller (070AZ-SAA0100) to the No. 7 and No. 8 terminals (for code 11-3x) or No. 1 and No. 2 terminals of SRS unit connector A (28P) (for code 11-6x) (see page 23-24).

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DTC Troubleshooting (cont'd)

19. Measure the resistance between the terminals of SRS simulator lead F. There should be an open circuit or at least 1 M Ω .

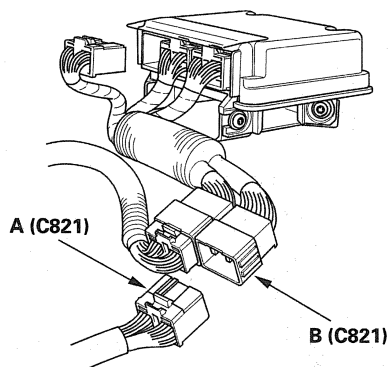


Is the resistance as specified?

YES—Faulty SRS unit; replace the SRS unit (see page 23-215). ■

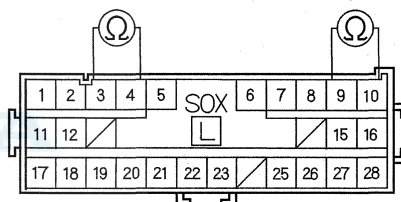
NO—Go to step 20.

20. Disconnect SRS subharness 28P connector C821 (B) from dashboard wire harness A connector C821.



21. Measure the resistance between the No. 3 and No. 4 terminals of SRS subharness 28P connector C821, and between the No. 9 and No. 10 terminals. There should be an open circuit or at least 1 M Ω .

SRS SUBHARNESS 28P CONNECTOR C821



Terminal side of male terminals

Is the resistance as specified?

YES—Short in dashboard wire harness A; replace dashboard wire harness A. ■

NO—Short in the SRS subharness; replace the SRS subharness. ■



**DTC 11-8x ("x" can be 0 thru 9 or A thru F):
Short to Power in Driver's Airbag First
Inflator**

**DTC 11-Ax ("x" can be 0 thru 9 or A thru F):
Short to Power in Driver's Airbag Second
Inflator**

Special Tools Required

- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead F 07XAZ-SZ30100

NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 23-19) and General Troubleshooting Information (see page 23-28).

1. Clear the DTC memory (see page 23-29).
2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

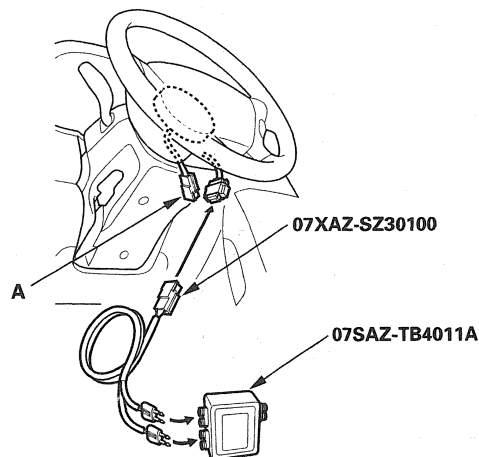
Does the SRS indicator stay on, and is DTC 11-8x or 11-Ax indicated?

YES—Go to step 3.

NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-31). If another DTC is indicated, troubleshoot the DTC.

3. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.

4. Disconnect the driver's airbag 4P connector (A) from the cable reel.



5. Connect the SRS inflator simulator (2 Ω connectors) and simulator lead F to the cable reel.
6. Reconnect the negative cable to the battery.
7. Clear the DTC memory.
8. Check for a DTC.

Is DTC 11-8x or 11-Ax indicated?

YES—Go to step 9.

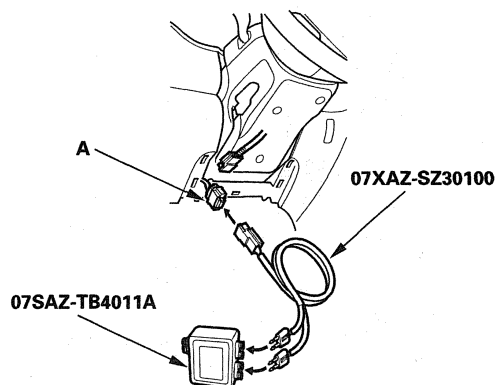
NO—Short to power in the driver's airbag first or second inflator; replace the driver's airbag (see page 23-201). ■

9. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.

(cont'd)

DTC Troubleshooting (cont'd)

10. Disconnect the dashboard wire harness A 4P connector (A) from the cable reel.



11. Connect the SRS inflator simulator (2 Ω connectors) and the simulator lead to dashboard wire harness A.

12. Reconnect the negative cable to the battery.

13. Clear the DTC memory.

14. Check for a DTC.

Is DTC 11-8x or 11-Ax indicated?

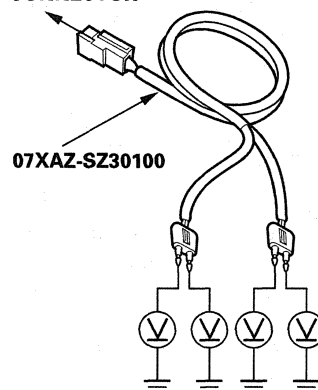
YES—Go to step 15.

NO—Short to power in the cable reel; replace the cable reel (see page 23-212). ■

15. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.
16. Disconnect SRS unit connector A (28P) from the SRS unit (see step 8 on page 23-28).
17. Reconnect the negative cable to the battery.
18. Turn the ignition switch ON (II).
19. Disconnect the SRS inflator simulator from the SRS simulator lead. Do not disconnect the simulator lead from the dashboard wire harness A 4P connector.

20. Measure the for voltage between each terminal of both SRS simulator leads and body ground. There should be less than 0.5 V.

DASHBOARD WIRE HARNESS A 4P CONNECTOR

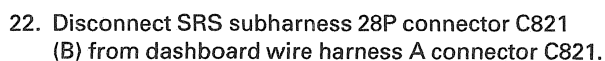


Is the voltage as specified?

YES—Faulty SRS unit; replace the SRS unit (see page 23-215). ■

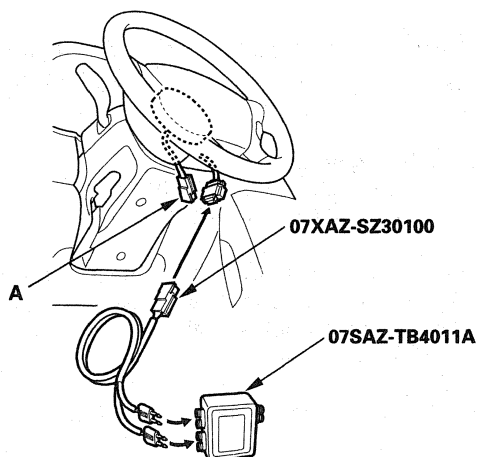
NO—Go to step 21.

21. Turn the ignition switch OFF.



DTC Troubleshooting (cont'd)

4. Disconnect the driver's airbag 4P connector (A) from the cable reel.



5. Connect the SRS inflator simulator (2 Ω connectors) and simulator lead F to the cable reel.
6. Reconnect the negative cable to the battery.
7. Clear the DTC memory.
8. Check for a DTC.

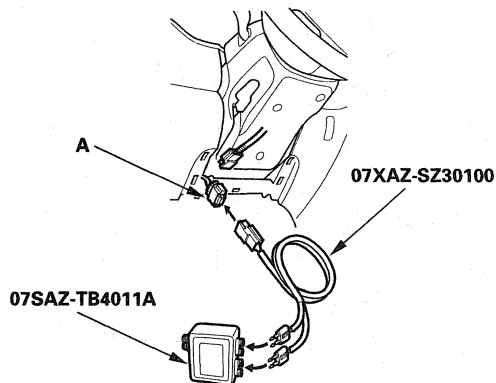
Is DTC 11-9x or 11-Bx indicated?

YES—Go to step 9.

NO—Short to ground in the driver's airbag first or second inflator; replace the driver's airbag (see page 23-201). ■

9. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.

10. Disconnect the dashboard wire harness A 4P connector (A) from the cable reel.



11. Connect the SRS inflator simulator (2 Ω connectors) and the simulator lead to dashboard wire harness A.
12. Reconnect the negative cable to the battery.
13. Clear the DTC memory.
14. Check for a DTC.

Is DTC 11-9x or 11-Bx indicated?

YES—Go to step 15.

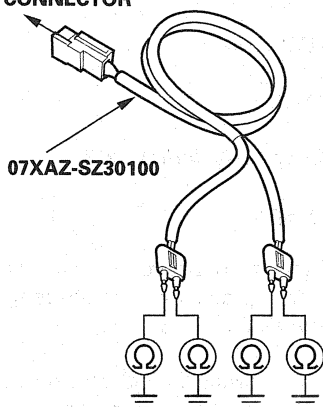
NO—Short to ground in the cable reel; replace the cable reel (see page 23-212). ■

15. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.
16. Disconnect SRS unit connector A (28P) from the SRS unit (see step 8 on page 23-28).
17. Disconnect the SRS inflator simulator from the SRS simulator lead. Do not disconnect the simulator lead from the dashboard wire harness A 4P connector.



18. Measure the resistance between each terminal of both SRS simulator leads and body ground. There should be an open circuit or at least 1 M Ω .

**DASHBOARD WIRE HARNESS A
4P CONNECTOR**

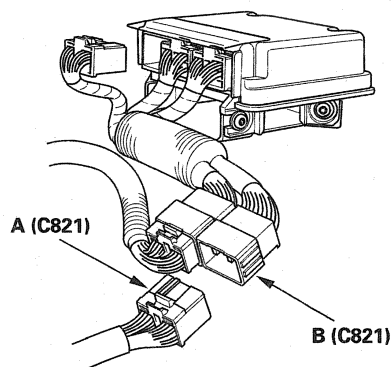


Is the resistance as specified?

YES—Faulty SRS unit; replace the SRS unit (see page 23-215). ■

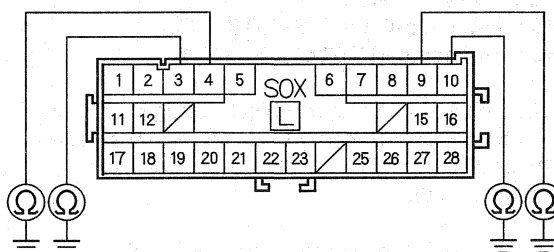
NO—Go to step 19.

19. Disconnect SRS subharness 28P connector C821 (B) from dashboard wire harness A connector C821.



20. Measure the resistance between the No. 3 terminal of SRS subharness 28P connector C821 and body ground, the No. 4 terminal and body ground, the No. 9 terminal and body ground, and No. 10 terminal and body ground. There should be an open circuit or at least 1 M Ω .

SRS SUBHARNESS 28P CONNECTOR C821



Terminal side of male terminals

Is the resistance as specified?

YES—Short to ground in dashboard wire harness A; replace dashboard wire harness A. ■

NO—Short to ground in the SRS subharness; replace the SRS subharness. ■

DTC Troubleshooting (cont'd)

DTC 12-1x ("x" can be 0 thru 9 or A thru F):
Open in Front Passenger's Airbag First Inflator

DTC 12-4x ("x" can be 0 thru 9 or A thru F):
Open in Front Passenger's Airbag Second Inflator

Special Tools Required

- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead F 07XAZ-SZ30100

NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 23-19) and General Troubleshooting Information (see page 23-28).

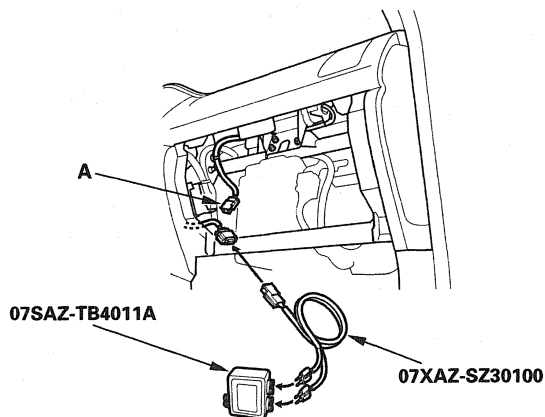
1. Clear the DTC memory (see page 23-29).
2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

Does the SRS indicator stay on, and is DTC 12-1x or 12-4x indicated?

YES—Go to step 3.

NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-31). If another DTC is indicated, troubleshoot the DTC.

3. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.
4. Disconnect the front passenger's airbag 4P connector (A) from dashboard wire harness A.



5. Connect the SRS inflator simulator (2 Ω connectors) and simulator lead F to the dashboard wire harness A 4P connector.
6. Reconnect the negative cable to the battery.
7. Clear the DTC memory.
8. Check for a DTC.

Is DTC 12-1x or 12-4x indicated?

YES—Go to step 9.

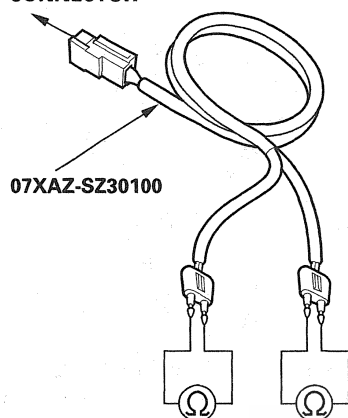
NO—Open in the front passenger's airbag first or second inflator; replace the front passenger's airbag (see page 23-202). ■

9. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.
10. Disconnect SRS unit connector A (28P) from the SRS unit (see step 8 on page 23-28).
11. Disconnect the SRS Inflator simulator from SRS simulator lead. Do not disconnect the simulator lead from the dashboard wire harness A 4P connector.



12. Measure the resistance between the terminals of both SRS simulator leads. There should be less than 1 Ω .

**DASHBOARD WIRE HARNESS A
4P CONNECTOR**

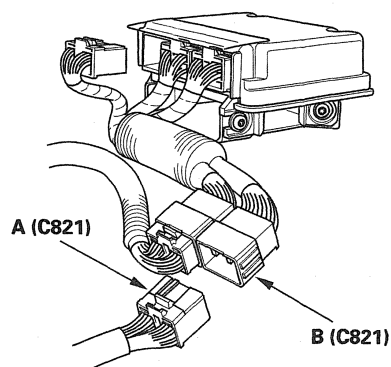


Is the resistance as specified?

YES—Faulty SRS unit or poor connection at SRS unit connector A (28P). Check the connection; if the connection is OK, replace the SRS unit (see page 23-215). ■

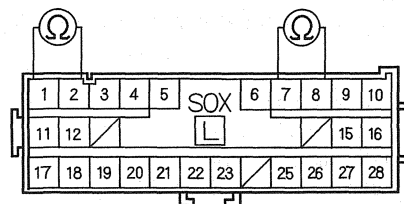
NO—Go to step 13.

13. Disconnect SRS subharness 28P connector C821 (B) from dashboard wire harness A connector C821.



14. Measure the resistance between the No. 1 and the No. 2 terminals and between the No. 7 and the No. 8 terminals of SRS subharness 28P connector C821. There should be less than 1 Ω .

SRS SUBHARNESS 28P CONNECTOR C821



Terminal side of male terminals

Is the resistance as specified?

YES—Open in dashboard wire harness A; replace dashboard wire harness A. ■

NO—Open in the SRS subharness; replace the SRS subharness. ■

DTC Troubleshooting (cont'd)

DTC 12-3x ("x" can be 0 thru 9 or A thru F):
Short to Another Wire or Decreased
Resistance in Front Passenger's Airbag First
Inflator

DTC 12-6x ("x" can be 0 thru 9 or A thru F):
Short to Another Wire or Decreased
Resistance in Front Passenger's Airbag
Second Inflator

Special Tools Required

- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead F 07XAZ-SZ30100
- SRS short canceller 070AZ-SAA0100

NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 23-19) and General Troubleshooting Information (see page 23-28).

1. Clear the DTC memory (see page 23-29).
2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

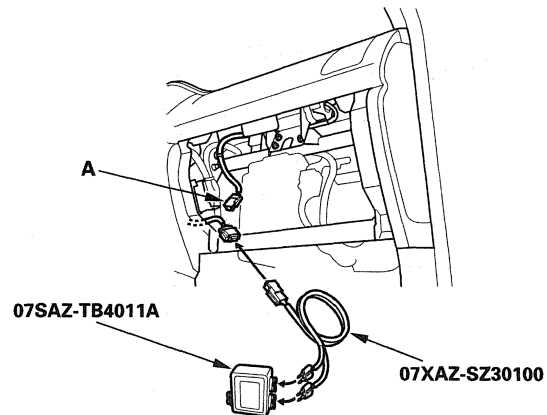
Does the SRS indicator stay on, and is DTC 12-3x or 12-6x indicated?

YES—Go to step 3.

NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-31). If another DTC is indicated, troubleshoot the DTC.

3. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.

4. Disconnect the front passenger's airbag 4P connector (A) from dashboard wire harness A.



5. Connect the SRS inflator simulator (2 Ω connectors) and simulator lead F to the dashboard wire harness 4P connector.

6. Reconnect the negative cable to the battery.

7. Clear the DTC memory.

8. Check for a DTC.

Is DTC 12-3x or 12-6x indicated?

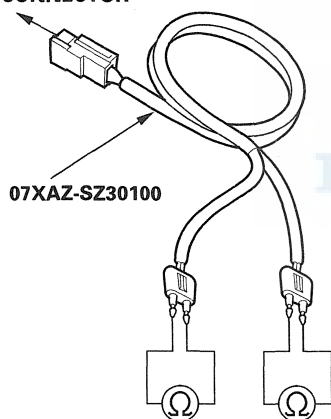
YES—Go to step 9.

NO—Short in the front passenger's airbag first or second inflator; replace the front passenger's airbag (see page 23-202). ■



9. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.
10. Disconnect SRS unit connector A (28P) from the SRS unit (see step 8 on page 23-28).
11. Disconnect the SRS inflator simulator from the SRS simulator lead. Do not disconnect the simulator lead from the dashboard wire harness A 4P connector.
12. Connect four SRS short cancellers (070AZ-SAA0100) to the No. 3 and No. 4 terminals and the No. 9 and No. 10 terminals of SRS unit connector A (28P) (see page 23-24).
13. Measure the resistance between the terminals of both SRS simulator leads. There should be an open circuit or at least 1 M Ω .

DASHBOARD WIRE HARNESS A 4P CONNECTOR

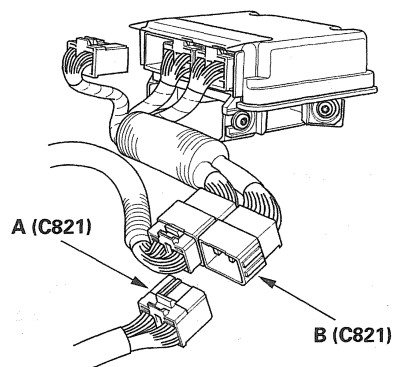


Is the resistance as specified?

YES—Faulty SRS unit; replace the SRS unit (see page 23-215). ■

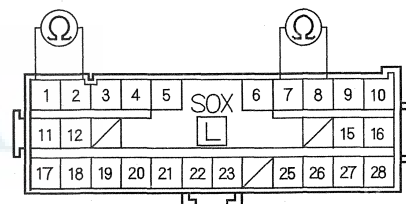
NO—Go to step 14.

14. Disconnect SRS subharness 28P connector C821 (B) from dashboard wire harness A connector C821.



15. Measure the resistance between the No. 1 and No. 2 terminals and between the No. 7 and No. 8 terminals of SRS subharness 28P connector C821. There should be an open circuit or at least 1 M Ω .

SRS SUBHARNESS 28P CONNECTOR C821



Terminal side of male terminals

Is the resistance as specified?

YES—Short in dashboard wire harness A; replace dashboard wire harness A. ■

NO—Short in the SRS subharness; replace the SRS subharness. ■

DTC Troubleshooting (cont'd)

DTC 12-8x ("x" can be 0 thru 9 or A thru F):
Short to Power in Front Passenger's Airbag
First Inflator

DTC 12-Ax ("x" can be 0 thru 9 or A thru F):
Short to Power in Front Passenger's Airbag
Second Inflator

Special Tools Required

- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead F 07XAZ-SZ30100

NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 23-19) and General Troubleshooting Information (see page 23-28).

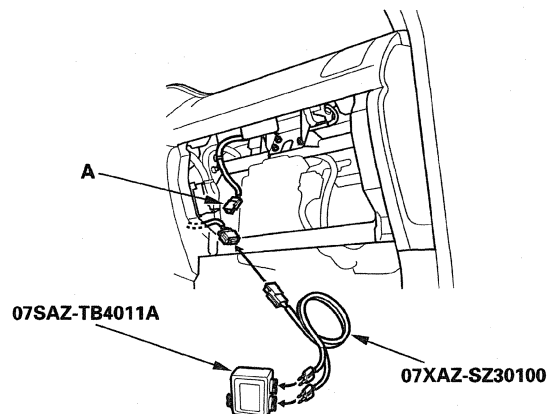
1. Clear the DTC memory (see page 23-29).
2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

Does the SRS indicator stay on, and is DTC 12-8x or 12-Ax indicated?

YES—Go to step 3.

NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-31). If another DTC is indicated, troubleshoot the DTC.

3. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.
4. Disconnect the front passenger's airbag 4P connector (A) from dashboard wire harness A.



5. Connect the SRS inflator simulator (2 Ω connectors) and simulator lead F to the dashboard wire harness A 4P connector.

6. Reconnect the negative cable to the battery.

7. Clear the DTC memory.

8. Check for a DTC.

Is DTC 12-8x or 12-Ax indicated?

YES—Go to step 9.

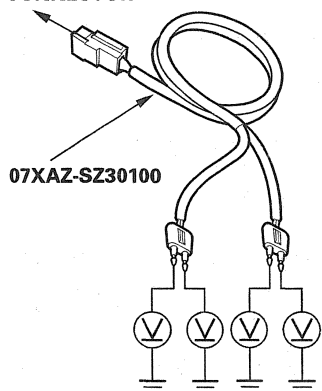
NO—Short to power in the front passenger's airbag first or second inflator; replace the front passenger's airbag (see page 23-202). ■

9. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.
10. Disconnect SRS unit connector A (28P) from the SRS unit (see step 8 on page 23-28).
11. Disconnect the SRS inflator simulator from the SRS simulator lead. Do not disconnect the simulator lead from the dashboard wire harness A 4P connector.
12. Reconnect the negative cable to the battery.
13. Turn the ignition switch ON (II).



14. Measure the voltage between each terminal of both SRS simulator leads and body ground. There should be less than 0.5 V.

**DASHBOARD WIRE HARNESS A
4P CONNECTOR**



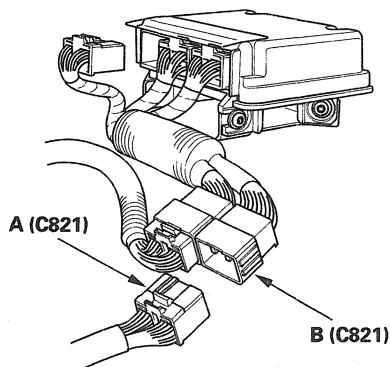
Is the voltage as specified?

YES—Faulty SRS unit; replace the SRS unit (see page 23-215). ■

NO—Go to step 15.

15. Turn the ignition switch OFF.

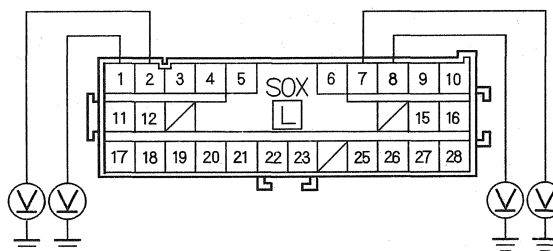
16. Disconnect SRS subharness 28P connector C821 (B) from dashboard wire harness A connector C821.



17. Turn the ignition switch ON (II).

18. Measure the voltage between the No. 1 terminal of SRS subharness 28P connector C821 and body ground, the No. 2 terminal and body ground, the No. 7 terminal and body ground, and the No. 8 terminal and body ground. There should be less than 0.5 V.

SRS SUBHARNESS 28P CONNECTOR C821



Terminal side of male terminals

Is the voltage as specified?

YES—Short to power in dashboard wire harness A; replace dashboard wire harness A. ■

NO—Short to power in the SRS subharness; replace the SRS subharness. ■

DTC Troubleshooting (cont'd)

DTC 12-9x ("x" can be 0 thru 9 or A thru F):
Short to Ground in Front Passenger's Airbag
First Inflator

DTC 12-Bx ("x" can be 0 thru 9 or A thru F):
Short to Ground in Front Passenger's Airbag
Second Inflator

Special Tools Required

- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead F 07XAZ-SZ30100

NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 23-19) and General Troubleshooting Information (see page 23-28).

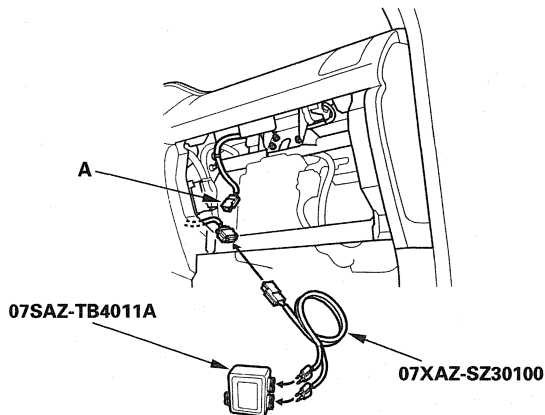
1. Clear the DTC memory (see page 23-29).
2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

Does the SRS indicator stay on, and is DTC 12-9x or 12-Bx indicated?

YES—Go to step 3.

NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-31). If another DTC is indicated, troubleshoot the DTC.

3. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.
4. Disconnect the front passenger's airbag 4P connector (A) from dashboard wire harness A.



5. Connect the SRS inflator simulator (2 Ω connectors) and simulator lead F to the dashboard wire harness A 4P connector.
6. Reconnect the negative cable to the battery.
7. Clear the DTC memory.
8. Check for a DTC.

Is DTC 12-9x or 12-Bx indicated?

YES—Go to step 9.

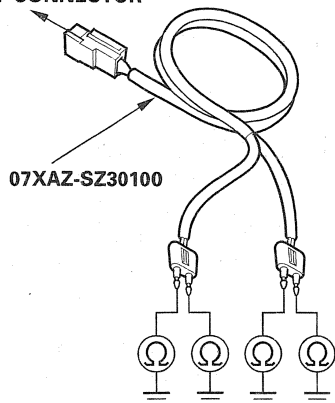
NO—Short to ground in the front passenger's airbag first or second inflator; replace the front passenger's airbag (see page 23-202). ■

9. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.
10. Disconnect SRS unit connector A (28P) from the SRS unit (see step 8 on page 23-28).
11. Disconnect the SRS inflator simulator from the SRS simulator lead. Do not disconnect the simulator lead from the dashboard wire harness A 4P connector.



12. Measure the resistance between each terminal of both SRS simulator leads F and body ground. There should be an open circuit or at least 1 M Ω .

**DASHBOARD WIRE HARNESS A
4P CONNECTOR**

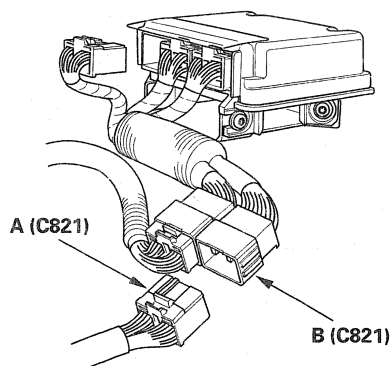


Is the resistance as specified?

YES—Faulty SRS unit; replace the SRS unit (see page 23-215). ■

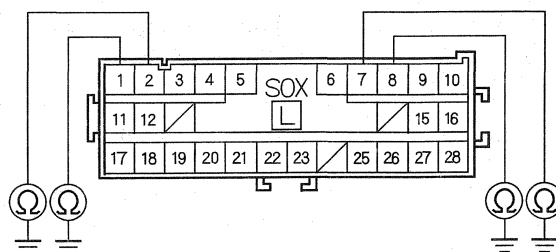
NO—Go to step 13.

13. Disconnect SRS subharness 28P connector C821 (B) from dashboard wire harness A connector C821.



14. Measure the resistance between the No. 1 terminal of SRS subharness 28P connector C821 and body ground, the No. 2 terminal and body ground, the No. 7 terminal and body ground, and the No. 8 terminal and body ground. There should be an open circuit or at least 1 M Ω .

SRS SUBHARNESS 28P CONNECTOR C821



Terminal side of male terminals

Is the resistance as specified?

YES—Short to ground in dashboard wire harness A; replace dashboard wire harness A. ■

NO—Short to ground in the SRS subharness; replace the SRS subharness. ■

DTC Troubleshooting (cont'd)

DTC 21-1x ("x" can be 0 thru 9 or A thru F): Open in Driver's Seat Belt Tensioner

Special Tools Required

- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead C 07TAZ-SZ5011A
- SRS simulator lead F 07XAZ-SZ30100

NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 23-19) and General Troubleshooting Information (see page 23-28).

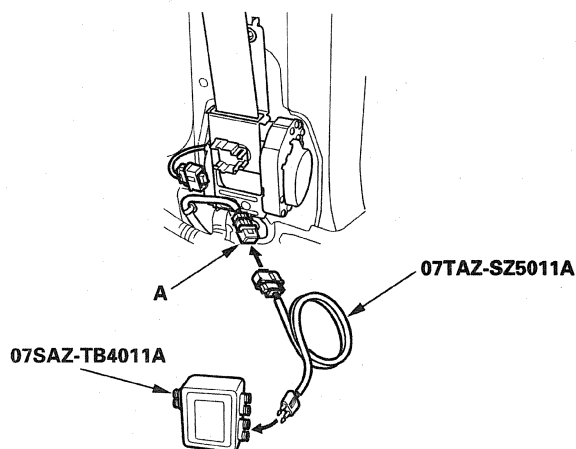
1. Clear the DTC memory (see page 23-29).
2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

Does the SRS indicator stay on, and is DTC 22-1x indicated?

YES—Go to step 3.

NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-31). If another DTC is indicated, troubleshoot the DTC.

3. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.
4. Disconnect the driver's seat belt tensioner 2P connector from the left side wire harness (A).



5. Connect the SRS inflator simulator (2 Ω connector) and simulator lead C to the left side wire harness.

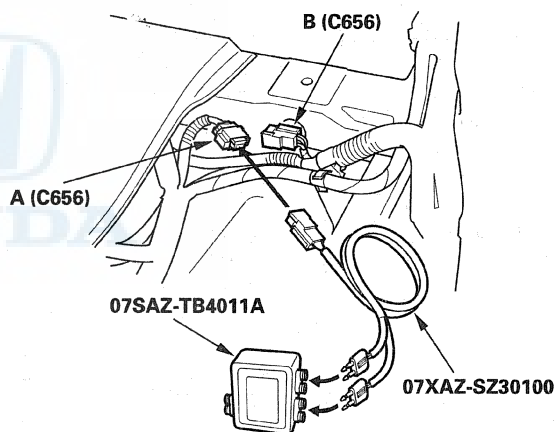
6. Reconnect the negative cable to the battery.
7. Clear the DTC memory.
8. Check for a DTC.

Is DTC 21-1x indicated?

YES—Go to step 9.

NO—Open in the driver's seat belt tensioner; replace the driver's seat belt (see page 23-4). ■

9. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.
10. Disconnect SRS harness 4P connector C656 (A) from the left side wire harness 4P connector C656 (B).



11. Connect the SRS inflator simulator (2 Ω connectors) and simulator lead F to the SRS harness 4P connector C656.



12. Reconnect the negative cable to the battery.

13. Clear the DTC memory.

14. Check for a DTC.

Is DTC 21-1x indicated?

YES—Go to step 15.

NO—Open in the left side wire harness; replace the left side wire harness. ■

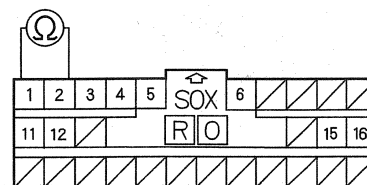
15. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.

16. Disconnect the front passenger's seat belt tensioner connector (see step 7 on page 23-28).

17. Disconnect SRS unit connector B (28P) from the SRS unit (see step 8 on page 23-28). Do not disconnect the simulator lead from the SRS harness 4P connector.

18. Measure the resistance between the No. 1 and No. 2 terminals of SRS unit connector B (28P). There should be 2.0–3.0 Ω .

SRS UNIT CONNECTOR B (28P)



Wire side of female terminals

Is the resistance as specified?

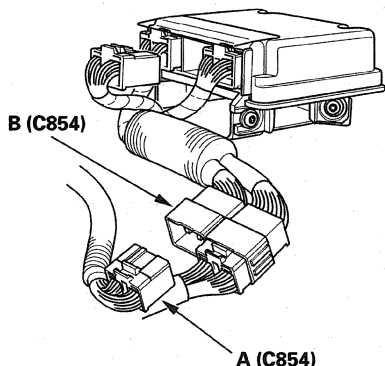
YES—Faulty SRS unit or poor connection at SRS unit connector B (28P) and the SRS unit. Check the connection; if the connection is OK, replace the SRS unit (see page 23-215). ■

NO—Go to step 19.

(cont'd)

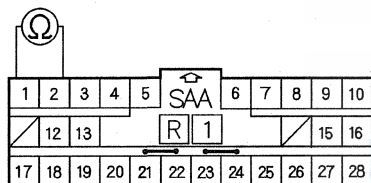
DTC Troubleshooting (cont'd)

19. Disconnect SRS harness 28P connector C854 (A) from SRS subharness connector C854 (B).



20. Measure the resistance between the No. 1 and the No. 2 terminals of SRS harness 28P connector C854. There should be 2.0—3.0 Ω .

SRS HARNESS 28P CONNECTOR C854



Wire side of female terminals

Is the resistance as specified?

YES—Open in the SRS subharness; replace the SRS subharness. ■

NO—Open in the SRS harness; replace the SRS harness. ■

DTC 21-3x ("x" can be 0 thru 9 or A thru F): Short to Another Wire or Decreased Resistance in Driver's Seat Belt Tensioner

Special Tools Required

- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead C 07TAZ-SZ5011A
- SRS simulator lead F 07XAZ-SZ30100

NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 23-19) and General Troubleshooting Information (see page 23-28).

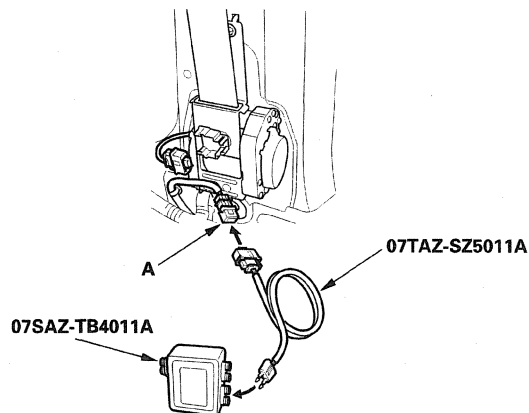
1. Clear the DTC memory (see page 23-29).
2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

Does the SRS indicator stay on, and is DTC 21-3x indicated?

YES—Go to step 3.

NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-31). If another DTC is indicated, troubleshoot the DTC.

3. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.
4. Disconnect the driver's seat belt tensioner 2P connector from the left side wire harness (A).



5. Connect the SRS inflator simulator (2 Ω connector) and simulator lead C to the left side wire harness.



6. Reconnect the negative cable to the battery.

7. Clear the DTC memory.

8. Check for a DTC.

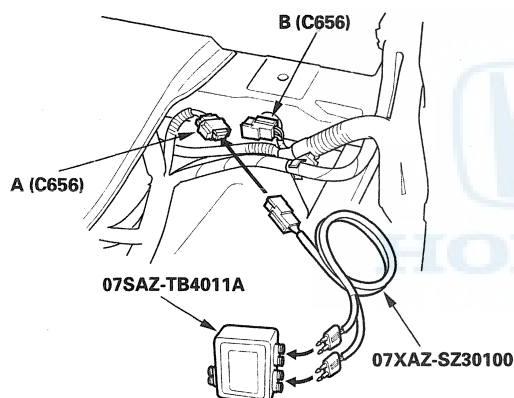
Is DTC 21-3x indicated?

YES—Go to step 9.

NO—Short in the driver's seat belt tensioner; replace the driver's seat belt (see page 23-4). ■

9. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.

10. Disconnect SRS harness 4P connector C656 (A) from left side wire harness 4P connector C656 (B).



11. Connect the SRS inflator simulator (2 Ω connectors) and simulator lead F to the SRS harness.

12. Reconnect the negative cable to the battery.

13. Clear the DTC memory.

14. Check for a DTC.

Is DTC 21-3x indicated?

YES—Go to step 15.

NO—Short in the left side wire harness; replace the left side wire harness. ■

15. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.

16. Disconnect the front passenger's seat belt tensioner connector (see step 7 on page 23-28).

17. Disconnect SRS unit connector B (28P) from the SRS unit (see step 8 on page 23-28).

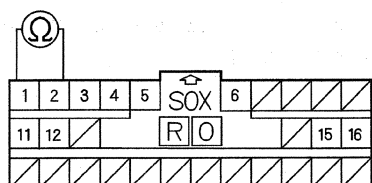
18. Disconnect the simulator lead from the SRS harness 4P connector.

(cont'd)

DTC Troubleshooting (cont'd)

19. Measure the resistance between the No. 1 and No. 2 terminals of SRS unit connector B (28P). There should be an open circuit or at least 1 M Ω .

SRS UNIT CONNECTOR B (28P)



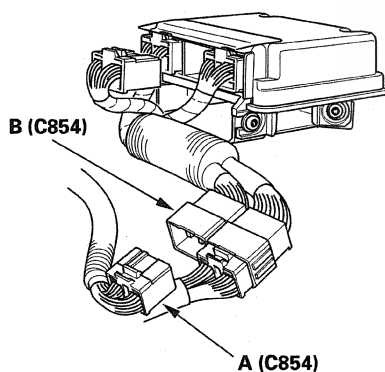
Wire side of female terminals

Is the resistance as specified?

YES—Faulty SRS unit; replace the SRS unit (see page 23-215). ■

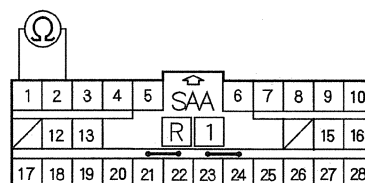
NO—Go to step 20.

20. Disconnect SRS harness 28P connector C854 (A) from SRS subharness connector C854 (B).



21. Measure the resistance between No. 1 and No. 2 terminals of SRS harness 28P connector C854. There should be an open circuit or at least 1 M Ω .

SRS HARNESS 28P CONNECTOR C854



Wire side of female terminals

Is the resistance as specified?

YES—Short in the SRS subharness; replace the SRS subharness. ■

NO—Short in the SRS harness; replace the SRS harness. ■



**DTC 21-8x ("x" can be 0 thru 9 or A thru F):
Short to Power in Driver's Seat Belt
Tensioner**

Special Tools Required

- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead C 07TAZ-SZ5011A
- SRS simulator lead F 07XAZ-SZ30100

NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 23-19) and General Troubleshooting Information (see page 23-28).

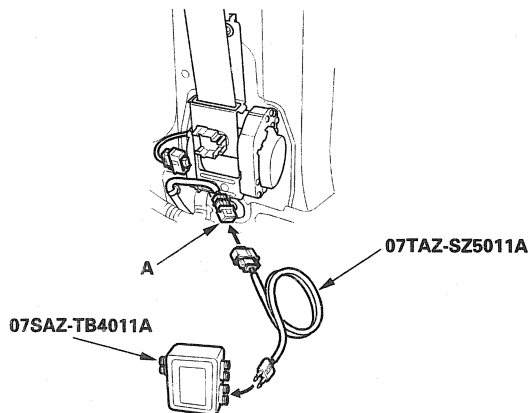
1. Clear the DTC memory (see page 23-29).
2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

Does the SRS indicator stay on and is DTC 21-8x indicated?

YES—Go to step 3.

NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-31). If another DTC is indicated, troubleshoot the DTC.

3. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.
4. Disconnect the driver's seat belt tensioner 2P connector from the left side wire harness (A).



5. Connect the SRS inflator simulator (2 Ω connector) and simulator lead C to the left side wire harness.

6. Reconnect the negative cable to the battery.

7. Clear the DTC memory.

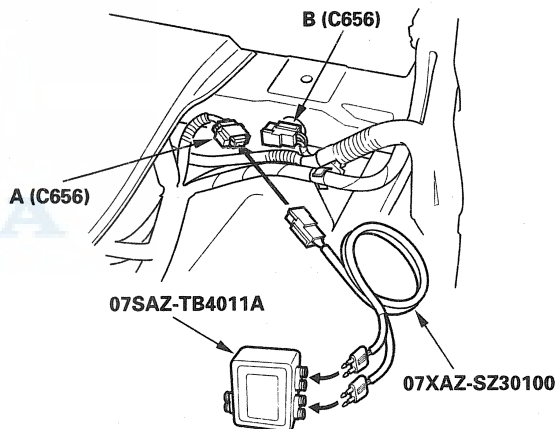
8. Check for a DTC.

Is DTC 21-8x indicated?

YES—Go to step 9.

NO—Short to power in the driver's seat belt tensioner; replace the driver's seat belt (see page 23-4). ■

9. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.
10. Disconnect SRS harness 4P connector C656 (A) from left side wire harness 4P connector C656 (B).



11. Connect the SRS inflator simulator (2 Ω connectors) and simulator lead F to the SRS harness.
12. Reconnect the negative cable to the battery.
13. Clear the DTC memory.
14. Check for a DTC.

Is DTC 21-8x indicated?

YES—Go to step 15.

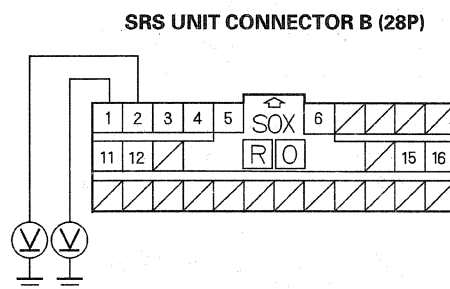
NO—Short to power in the left side wire harness; replace the left side wire harness. ■

(cont'd)

DTC Troubleshooting (cont'd)

15. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.
16. Disconnect the front passenger's seat belt tensioner connector (see step 7 on page 23-28).
17. Disconnect SRS unit connector B (28P) from the SRS unit (see step 8 on page 23-28).
18. Disconnect the simulator lead from the SRS harness 4P connector.
19. Reconnect the negative cable to the battery.
20. Turn the ignition switch ON (II).

21. Measure the voltage between the No. 1 terminal of SRS unit connector B (28P) and body ground, and between the No. 2 terminal and body ground. There should be less than 0.5 V.



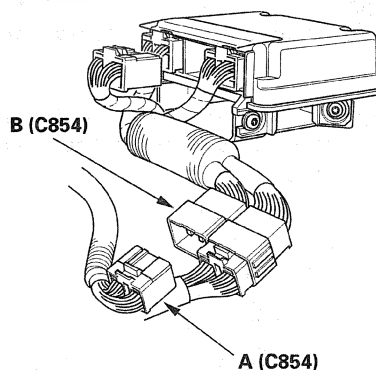
Wire side of female terminals

Is the voltage as specified?

YES—Faulty SRS unit; replace the SRS unit (see page 23-215). ■

NO—Go to step 22.

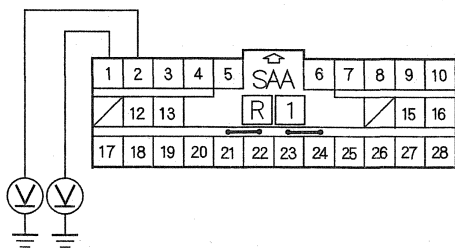
22. Turn the ignition switch OFF.
23. Disconnect SRS harness 28P connector C854 (A) from SRS subharness connector C854 (B).





24. Turn the ignition switch ON (II).
25. Measure the voltage between the No. 1 terminal of the SRS harness 28P connector and body ground and between the No. 2 terminal and body ground. There should be less than 0.5 V.

SRS HARNESS 28P CONNECTOR C854



Wire side of female terminals

Is the voltage as specified?

YES—Short to power in the SRS subharness; replace the SRS subharness. ■

NO—Short to power in the SRS harness; replace the SRS harness. ■

DTC 21-9x ("x" can be 0 thru 9 or A thru F): Short to Ground in Driver's Seat Belt Tensioner

Special Tools Required

- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead C 07TAZ-SZ5011A
- SRS simulator lead F 07XAZ-SZ30100

NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 23-19) and General Troubleshooting Information (see page 23-28).

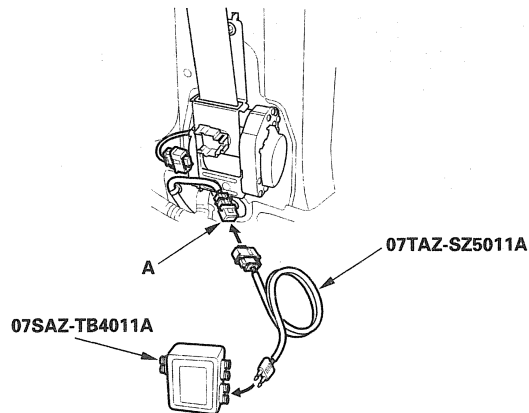
1. Clear the DTC memory (see page 23-29).
2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

Does the SRS indicator stay on, and is DTC 21-9x indicated?

YES—Go to step 3.

NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-31). If another DTC is indicated, troubleshoot the DTC.

3. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.
4. Disconnect the driver's seat belt tensioner 2P connector from the left side wire harness (A).



5. Connect the SRS inflator simulator (2 Ω connector) and simulator lead C to the left side wire harness.

(cont'd)

DTC Troubleshooting (cont'd)

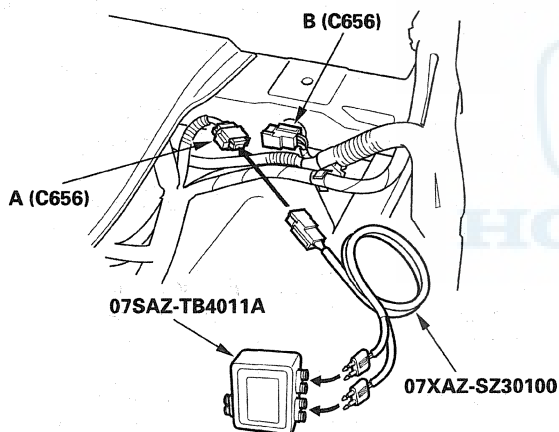
6. Reconnect the negative cable to the battery.
7. Clear the DTC memory.
8. Check for a DTC.

Is DTC 21-9x indicated?

YES—Go to step 9.

NO—Short to ground in the driver's seat belt tensioner; replace the driver's seat belt (see page 23-4). ■

9. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.
10. Disconnect SRS harness 4P connector C656 (A) from left side wire harness 4P connector C656 (B).



11. Connect the SRS inflator simulator (2 Ω connectors) and simulator lead F to the SRS harness.

12. Reconnect the negative cable to the battery.
13. Clear the DTC memory.
14. Check for a DTC.

Is DTC 21-9x indicated?

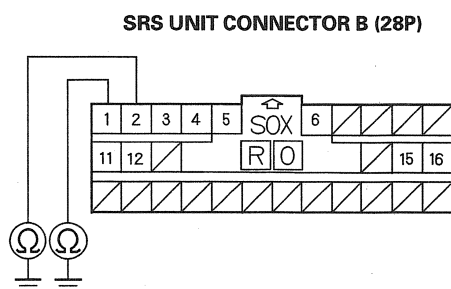
YES—Go to step 15.

NO—Short to ground in the left side wire harness; replace the left side wire harness. ■

15. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.
16. Disconnect the front passenger's seat belt tensioner connector (see step 7 on page 23-28).
17. Disconnect SRS unit connector B (28P) from the SRS unit (see step 8 on page 23-28).
18. Disconnect the simulator lead from the SRS harness 4P connector.



19. Measure the resistance between the No. 1 terminal of SRS unit connector B (28P) and body ground, and between the No. 2 terminal and body ground. There should be an open circuit or at least 1 M Ω .



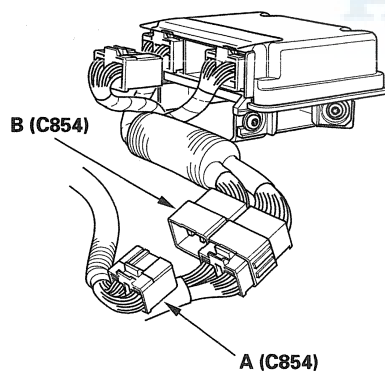
Wire side of female terminals

Is the resistance as specified?

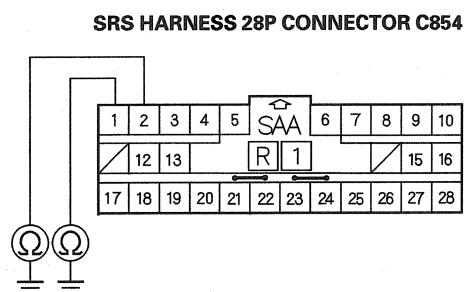
YES—Faulty SRS unit; replace the SRS unit (see page 23-215). ■

NO—Go to step 20.

20. Disconnect SRS harness 28P connector C854 (A) from SRS subharness connector C854 (B).



21. Measure the resistance between the No. 1 terminal of SRS harness 28P connector C854 and body ground, and between the No. 2 terminal and body ground. There should be an open circuit or at least 1 M Ω .



Wire side of female terminals

Is the resistance as specified?

YES—Short to ground in the SRS subharness; replace the SRS subharness. ■

NO—Short to the ground in the SRS harness; replace the SRS harness. ■

DTC Troubleshooting (cont'd)

DTC 22-1x ("x" can be 0 thru 9 or A thru F): Open in Front Passenger's Seat Belt Tensioner

Special Tools Required

- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead C 07TAZ-SZ5011A

NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 23-19) and General Troubleshooting Information (see page 23-28).

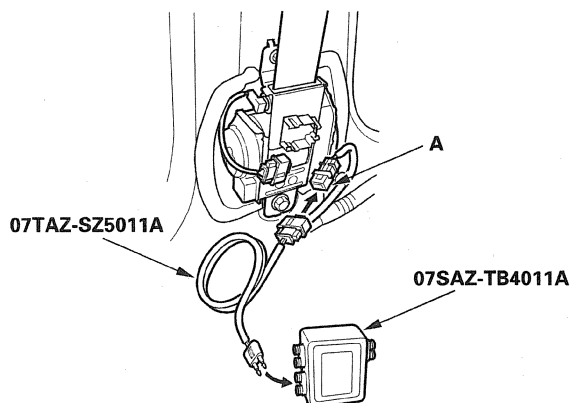
1. Clear the DTC memory (see page 23-29).
2. Turn the ignition switch ON (II), and check that the SRS indicator comes on, for about 6 seconds and then goes off.

Does the SRS indicator stay on, and is DTC 22-1x indicated?

YES—Go to step 3.

NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-31). If another DTC is indicated, troubleshoot the DTC.

3. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.
4. Disconnect the front passenger's seat belt tensioner 2P connector from the SRS harness (A).



5. Connect the SRS inflator simulator (2 Ω connector) and simulator lead C to the SRS harness.

6. Reconnect the negative cable to the battery.

7. Clear the DTC memory.

8. Check for a DTC.

Is DTC 22-1x indicated?

YES—Go to step 9.

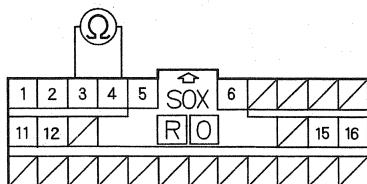
NO—Open in the front passenger's seat belt tensioner; replace the front passenger's seat belt (see page 23-4). ■

9. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.
10. Disconnect the driver's seat belt tensioner connector (see step 7 on page 23-28).



11. Disconnect SRS unit connector B (28P) from the SRS unit (see step 8 on page 23-28). Do not disconnect the simulator lead from the SRS harness 2P connector.
12. Measure the resistance between the No. 3 and No. 4 terminals of SRS unit connector B (28P). There should be 2.0—3.0 Ω .

SRS UNIT CONNECTOR B (28P)



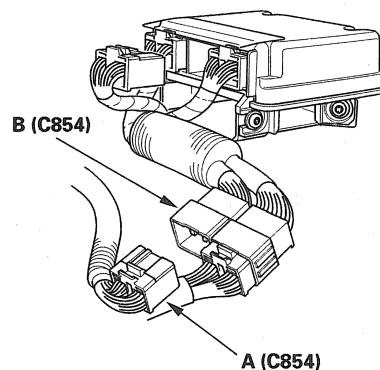
Wire side of female terminals

Is the resistance as specified?

YES—Faulty SRS unit or poor connection at SRS unit connector B (28P). Check the connection; if the connection is OK, replace the SRS unit (see page 23-215). ■

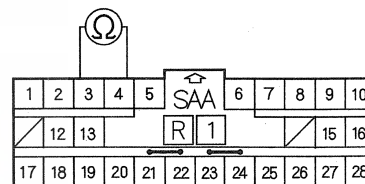
NO—Go to step 13.

13. Disconnect SRS harness 28P connector C854 (A) from SRS subharness connector C854 (B).



14. Measure the resistance between the No. 3 and No. 4 terminals of SRS harness 28P connector C854. There should be 2.0—3.0 Ω .

SRS HARNESS 28P CONNECTOR C854



Wire side of female terminals

Is the resistance as specified?

YES—Open in the SRS subharness; replace the SRS subharness. ■

NO—Open in the SRS harness; replace the SRS harness. ■

DTC Troubleshooting (cont'd)

DTC 22-3x ("x" can be 0 thru 9 or A thru F): Short to Another Wire or Decreased Resistance in Front Passenger's Seat Belt Tensioner

Special Tools Required

- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead C 07TAZ-SZ5011A

NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 23-19) and General Troubleshooting Information (see page 23-28).

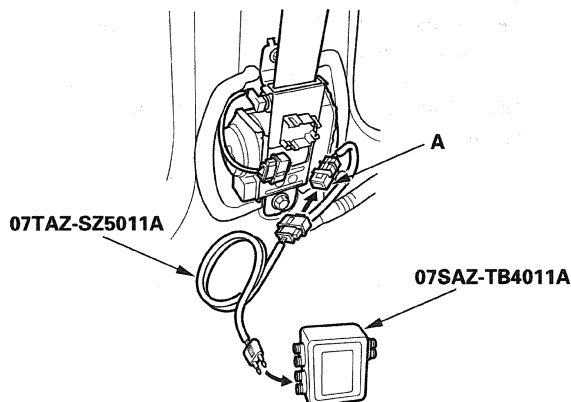
1. Clear the DTC memory (see page 23-29).
2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

Does the SRS indicator stay on, and is DTC 22-3x indicated?

YES—Go to step 3.

NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-31). If another DTC is indicated, troubleshoot the DTC.

3. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.
4. Disconnect the front passenger's seat belt tensioner 2P connector from the SRS harness (A).



5. Connect the SRS inflator simulator (2 Ω connector) and simulator lead C to the SRS harness.

6. Reconnect the negative cable to the battery.

7. Clear the DTC memory.

8. Check for a DTC.

Is DTC 22-3x indicated?

YES—Go to step 9.

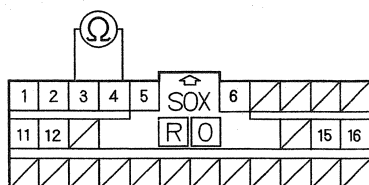
NO—Short in the front passenger's seat belt tensioner; replace the front passenger's seat belt (see page 23-4). ■

9. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.
10. Disconnect the driver's seat belt tensioner connector (see step 7 on page 23-28).



11. Disconnect SRS unit connector B (28P) from the SRS unit (see step 8 on page 23-28).
12. Disconnect the simulator lead from the SRS harness 2P connector.
13. Measure the resistance between the No. 3 and No. 4 terminals of SRS unit connector B (28P). There should be an open circuit or at least 1 M Ω .

SRS UNIT CONNECTOR B (28P)



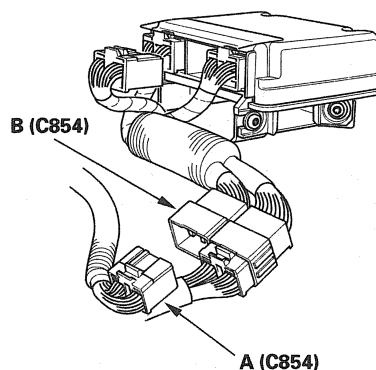
Wire side of female terminals

Is the resistance as specified?

YES—Faulty SRS unit; replace the SRS unit (see page 23-215). ■

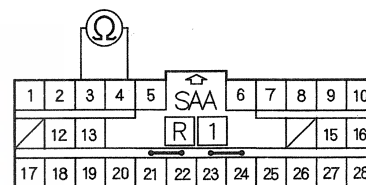
NO—Go to step 14.

14. Disconnect SRS harness 28P connector C854 (A) from SRS subharness connector C854 (B).



15. Measure the resistance between the No. 3 and No. 4 terminals of SRS harness 28P connector C854. There should be an open circuit or at least 1 M Ω .

SRS HARNESS 28P CONNECTOR C854



Wire side of female terminals

Is the resistance as specified?

YES—Short in the SRS subharness; replace the SRS subharness. ■

NO—Short in the SRS harness; replace the SRS harness. ■

DTC Troubleshooting (cont'd)

DTC 22-8x ("x" can be 0 thru 9 or A thru F): Short to Power in Front Passenger's Seat Belt Tensioner

Special Tools Required

- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead C 07TAZ-SZ5011A

NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 23-19) and General Troubleshooting Information (see page 23-28).

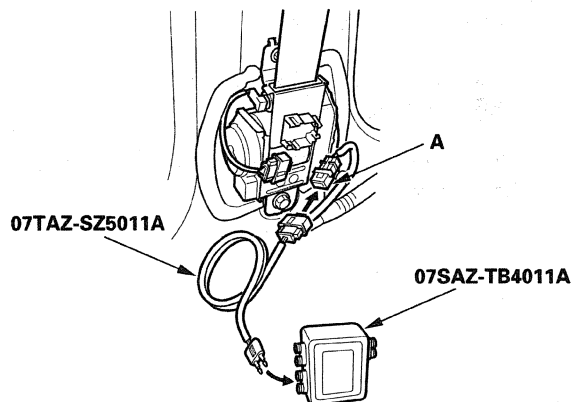
1. Clear the DTC memory (see page 23-29).
2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

Does the SRS indicator stay on, and is DTC 22-8x indicated?

YES—Go to step 3.

NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-31). If another DTC is indicated, troubleshoot the DTC.

3. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.
4. Disconnect the front passenger's seat belt tensioner 2P connector from the SRS harness (A).



5. Connect the SRS inflator simulator (2 Ω connector) and simulator lead C to the SRS harness.

6. Reconnect the negative cable to the battery.
7. Clear the DTC memory.
8. Check for a DTC.

Is DTC 22-8x indicated?

YES—Go to step 9.

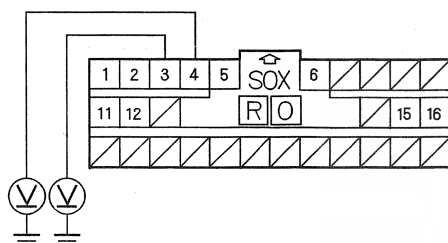
NO—Short to power in the front passenger's seat belt tensioner; replace the front passenger's seat belt (see page 23-4). ■

9. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.
10. Disconnect the driver's seat belt tensioner connector (see step 7 on page 23-28).



11. Disconnect SRS unit connector B (28P) from the SRS unit (see step 8 on page 23-28).
12. Disconnect the simulator lead from the SRS harness 2P connector.
13. Reconnect the negative cable to the battery.
14. Turn the ignition switch ON (II).
15. Measure the voltage between the No. 3 terminal of SRS unit connector B (28P) and body ground, and between the No. 4 terminal and body ground. There should be less than 0.5 V.

SRS UNIT CONNECTOR B (28P)



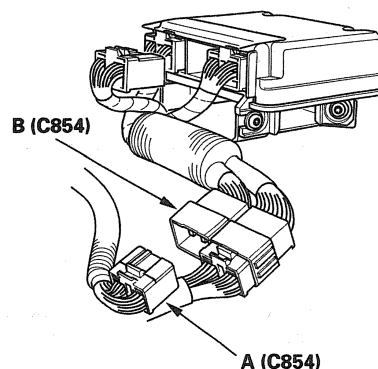
Wire side of female terminals

Is the voltage as specified?

YES—Faulty SRS unit; replace the SRS unit (see page 23-215). ■

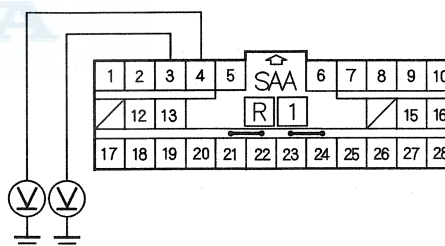
NO—Go to step 16.

16. Turn the ignition switch OFF.
17. Disconnect SRS harness 28P connector C854 (A) from SRS subharness connector C854 (B).



18. Turn the ignition switch ON (II).
19. Measure the voltage between the No. 3 terminal of SRS harness 28P connector C854 and body ground and between the No. 4 terminal and body ground. There should be less than 0.5 V.

SRS HARNESS 28P CONNECTOR C854



Wire side of female terminals

Is the voltage as specified?

YES—Short to power in the SRS subharness; replace the SRS subharness. ■

NO—Short to power in the SRS harness; replace the SRS harness. ■

DTC Troubleshooting (cont'd)

DTC 22-9x ("x" can be 0 thru 9 or A thru F): Short to Ground in Front Passenger's Seat Belt Tensioner

Special Tools Required

- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead C 07TAZ-SZ5011A

NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 23-19) and General Troubleshooting Information (see page 23-28).

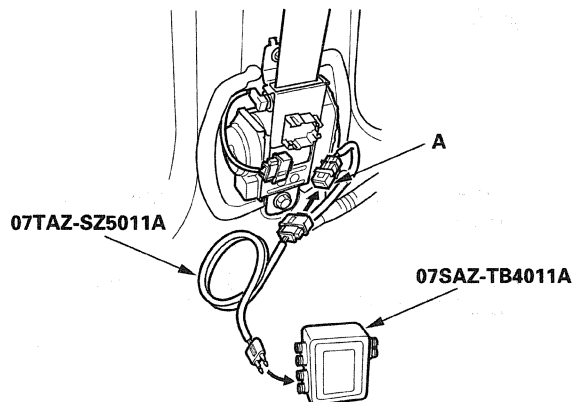
1. Clear the DTC memory (see page 23-29).
2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

Does the SRS indicator stay on, and is DTC 22-9x indicated?

YES—Go to step 3.

NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-31). If another DTC is indicated, troubleshoot the DTC.

3. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.
4. Disconnect the front passenger's seat belt tensioner 2P connector from the SRS harness (A).



5. Connect the SRS inflator simulator (2 Ω connector) and simulator lead C to the SRS harness.

6. Reconnect the negative cable to the battery.
7. Clear the DTC memory.
8. Check for a DTC.

Is DTC 22-9x indicated?

YES—Go to step 9.

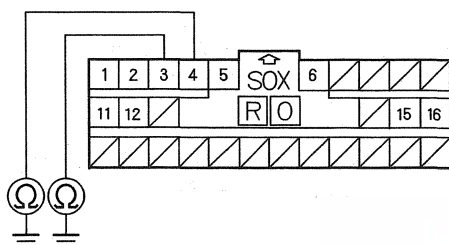
NO—Short to ground in the front passenger's seat belt tensioner; replace the front passenger's seat belt (see page 23-4). ■

9. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.
10. Disconnect the driver's seat belt tensioner connector (see step 7 on page 23-28).



11. Disconnect SRS unit connector B (28P) from the SRS unit (see step 8 on page 23-28).
12. Disconnect the simulator lead from the SRS harness 2P connector.
13. Measure the resistance between the No. 3 terminal of SRS unit connector B (28P) and body ground, and between the No. 4 terminal and body ground. There should be an open circuit or at least 1 M Ω .

SRS UNIT CONNECTOR B (28P)



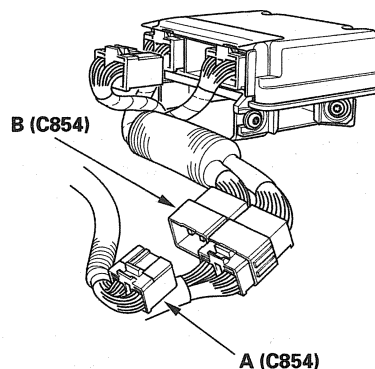
Wire side of female terminals

Is the resistance as specified?

YES—Faulty SRS unit; replace the SRS unit (see page 23-215). ■

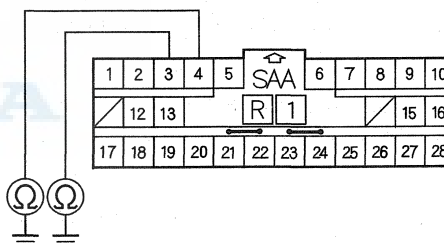
NO—Go to step 14.

14. Disconnect SRS harness 28P connector C854 (A) from SRS subharness connector C854 (B).



15. Measure the resistance between the No. 3 terminal of SRS harness 28P connector C854 and body ground, and between the No. 4 terminal and body ground. There should be an open circuit or at least 1 M Ω .

SRS HARNESS 28P CONNECTOR C854



Wire side of female terminals

Is the resistance as specified?

YES—Short to ground in the SRS subharness; replace the SRS subharness. ■

NO—Short to ground in the SRS harness; replace the SRS harness. ■

DTC Troubleshooting (cont'd)

DTC 31-1x ("x" can be 0 thru 9 or A thru F): Open in Driver's Side Airbag Inflator

Special Tools Required

- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead E 07XAZ-S1A0200

NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 23-19) and General Troubleshooting Information (see page 23-28).

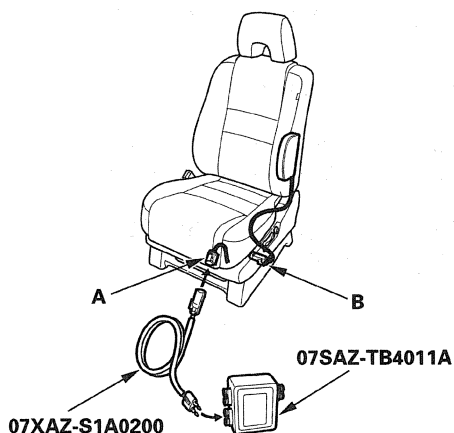
1. Clear the DTC memory (see page 23-29).
2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

Does the SRS indicator stay on, and is DTC 31-1x indicated?

YES—Go to step 3.

NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-31). If another DTC is indicated, troubleshoot the DTC.

3. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.
4. Disconnect the SRS harness 2P connector (A) from the driver's side airbag (B).



5. Connect the SRS inflator simulator (2 Ω connector) and simulator lead E to the SRS harness.

6. Reconnect the negative cable to the battery.

7. Clear the DTC memory.

8. Check for a DTC.

Is DTC 31-1x indicated?

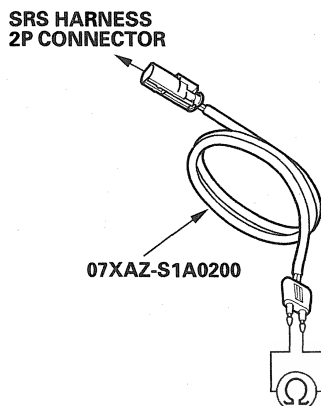
YES—Go to step 9.

NO—Open in the driver's side airbag inflator; replace the driver's side airbag (see page 23-203).

9. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.
10. Disconnect SRS unit connector C (28P) from the SRS unit (see step 8 on page 23-28).



11. Disconnect the SRS inflator simulator from the SRS simulator lead. Do not disconnect the simulator lead from the SRS harness 2P connector.
12. Measure the resistance between the terminals of the SRS simulator lead. There should be less than 1.0 Ω .

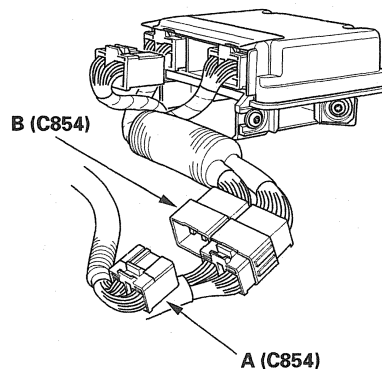


Is the resistance as specified?

YES—Faulty SRS unit or poor connection at SRS unit connector C (28P) and the SRS unit. Check the connection; if the connection is OK, replace the SRS unit (see page 23-215). ■

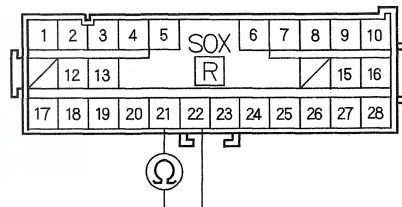
NO—Go to step 13.

13. Disconnect SRS harness 28P connector C854 (A) from SRS subharness connector C854 (B).



14. Measure the resistance between the No. 21 and No. 22 terminals of SRS subharness 28P connector C854. There should be less than 1.0 Ω .

SRS SUBHARNESS 28P CONNECTOR C854



Terminal side of male terminals

Is the resistance as specified?

YES—Open in the SRS harness; replace the SRS harness. ■

NO—Open in the SRS subharness; replace the SRS subharness. ■

DTC Troubleshooting (cont'd)

DTC 31-3x ("x" can be 0 thru 9 or A thru F): Short to Another Wire or Decreased Resistance in Driver's Side Airbag Inflator

Special Tools Required

- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead E 07XAZ-S1A0200
- SRS short canceller 070AZ-SAA0100

NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 23-19) and General Troubleshooting Information (see page 23-28).

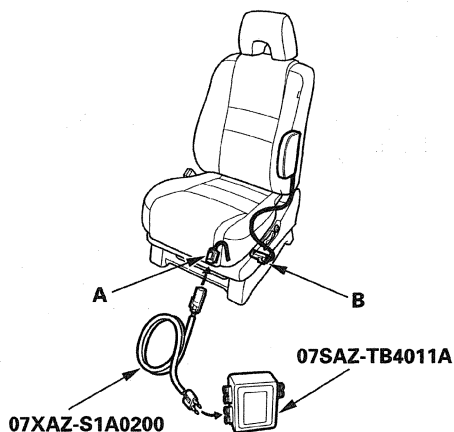
1. Clear the DTC memory (see page 23-29).
2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

Does the SRS indicator stay on, and is DTC 31-3x indicated?

YES—Go to step 3.

NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-31). If another DTC is indicated, troubleshoot the DTC.

3. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.
4. Disconnect the SRS harness 2P connector (A) from the driver's side airbag (B).



5. Connect the SRS inflator simulator (2 Ω connector) and simulator lead E to the SRS harness.

6. Reconnect the negative cable to the battery.

7. Clear the DTC memory.

8. Check for a DTC.

Is DTC 31-3x indicated?

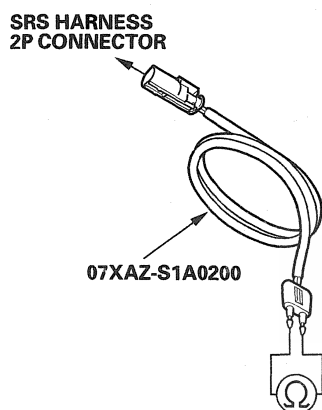
YES—Go to step 9.

NO—Short to another wire in the driver's side airbag inflator; replace the driver's side airbag (see page 23-203). ■

9. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.
10. Disconnect SRS unit connector C (28P) from the SRS unit (see step 8 on page 23-28).



11. Disconnect the SRS inflator simulator from SRS simulator lead. Do not disconnect the simulator lead from the SRS harness 2P connector.
12. Connect the SRS short canceller (070AZ-SAA0100) to the No. 1 and No. 2 terminals of SRS unit connector C (28P) (see page 23-24).
13. Measure the resistance between the terminals of SRS simulator lead E. There should be an open circuit or at least 1 M Ω .

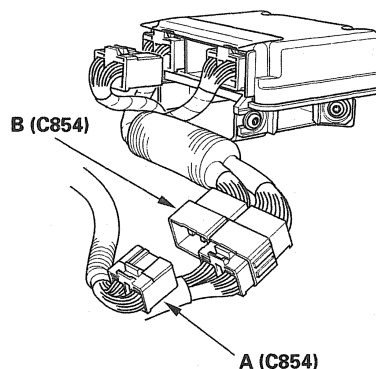


Is the resistance as specified?

YES—Faulty SRS unit; replace the SRS unit (see page 23-215). ■

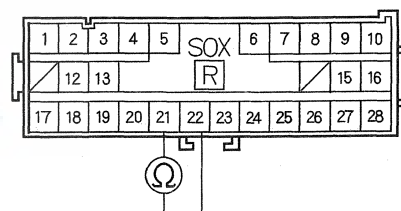
NO—Go to step 14.

14. Disconnect SRS harness 28P connector C854 (A) from SRS subharness connector C854 (B).



15. Measure the resistance between the No. 21 and No. 22 terminals of SRS subharness 28P connector C854. There should be an open circuit or at least 1 M Ω .

SRS SUBHARNESS 28P CONNECTOR C854



Terminal side of male terminals

Is the resistance as specified?

YES—Short in the SRS harness; replace the SRS harness. ■

NO—Short in the SRS subharness; replace the SRS subharness. ■

DTC Troubleshooting (cont'd)

DTC 31-8x ("x" can be 0 thru 9 or A thru F): Short to Power in Driver's Side Airbag Inflator

Special Tools Required

- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead E 07XAZ-S1A0200

NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 23-19) and General Troubleshooting Information (see page 23-28).

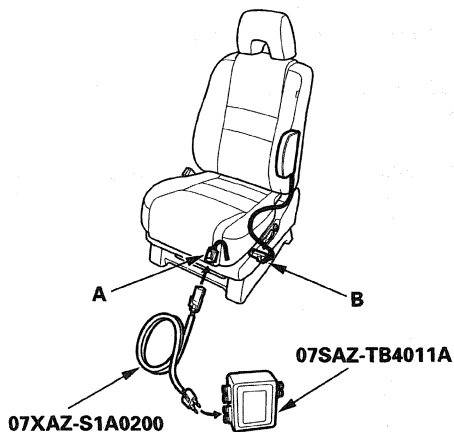
1. Clear the DTC memory (see page 23-29).
2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

Does the SRS indicator stay on, and is DTC 31-8x indicated?

YES—Go to step 3.

NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-31). If another DTC is indicated, troubleshoot the DTC.

3. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.
4. Disconnect the SRS harness 2P connector (A) from the driver's side airbag (B).



5. Connect the SRS inflator simulator (2 Ω connector) and simulator lead E to the SRS harness.

6. Reconnect the negative cable to the battery.

7. Clear the DTC memory.

8. Check for a DTC.

Is DTC 31-8x indicated?

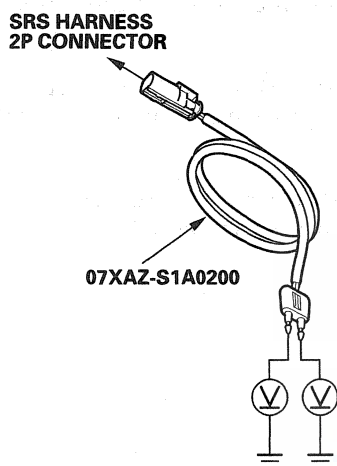
YES—Go to step 9.

NO—Short to power in the driver's side airbag inflator; replace the driver's side airbag (see page 23-203). ■

9. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.
10. Disconnect SRS unit connector C (28P) from the SRS unit (see step 8 on page 23-28).



11. Reconnect the negative cable to the battery.
12. Disconnect the SRS inflator simulator from the SRS simulator lead. Do not disconnect the simulator lead from the SRS harness 2P connector.
13. Turn the ignition switch ON (II).
14. Measure the voltage between each terminal of the SRS simulator lead and body ground. There should be less than 0.5 V.

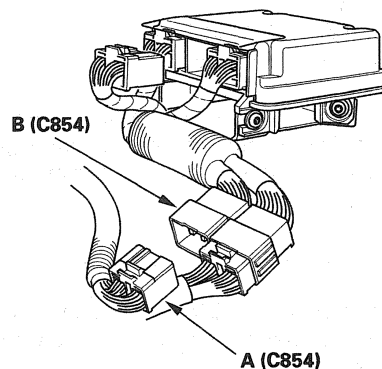


Is the voltage as specified?

YES—Faulty SRS unit; replace the SRS unit (see page 23-215). ■

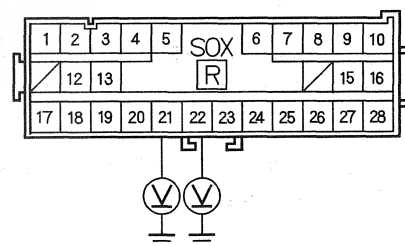
NO—Go to step 15.

15. Turn the ignition switch OFF.
16. Disconnect SRS harness 28P connector C854 (A) from SRS subharness connector C854 (B).



17. Turn the ignition switch ON (II).
18. Measure the voltage between the No. 21 terminal of SRS subharness 28P connector C854 and body ground, and between the No. 22 terminal and body ground. There should be less than 0.5 V.

SRS SUBHARNESS 28P CONNECTOR C854



Is the voltage as specified?

YES—Short to power in the SRS harness; replace the SRS harness. ■

NO—Short to power in the SRS subharness; replace the SRS subharness. ■

DTC Troubleshooting (cont'd)

DTC 31-9x ("x" can be 0 thru 9 or A thru F): Short to Ground in Driver's Side Airbag Inflator

Special Tools Required

- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead E 07XAZ-S1A0200

NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 23-19) and General Troubleshooting Information (see page 23-28).

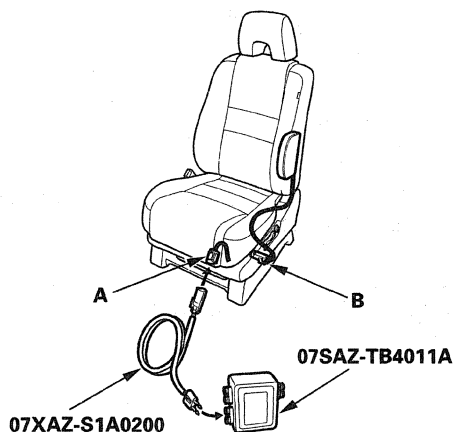
1. Clear the DTC memory (see page 23-29).
2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

Does the SRS indicator stay on, and is DTC 31-9x indicated?

YES—Go to step 3.

NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-31). If another DTC is indicated, troubleshoot the DTC.

3. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.
4. Disconnect the SRS harness 2P connector (A) from the driver's side airbag (B).



5. Connect the SRS inflator simulator (2 Ω connector) and simulator lead E to the SRS harness.

6. Reconnect the negative cable to the battery.

7. Clear the DTC memory.

8. Check for a DTC.

Is DTC 31-9x indicated?

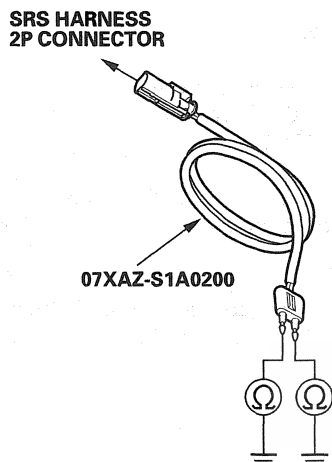
YES—Go to step 9.

NO—Short to ground in the driver's side airbag inflator; replace the driver's side airbag (see page 23-203). ■

9. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.
10. Disconnect SRS unit connector C (28P) from the SRS unit (see step 8 on page 23-28).



11. Disconnect the SRS inflator simulator from the SRS simulator lead. Do not disconnect the simulator lead from the SRS harness 2P connector.
12. Measure the resistance between each terminal of the SRS simulator lead and body ground. There should be an open circuit or at least 1 M Ω .

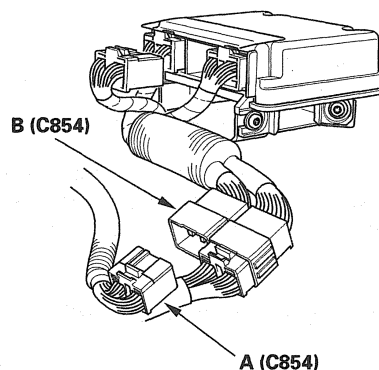


Is the resistance as specified?

YES—Faulty SRS unit; replace the SRS unit (see page 23-215). ■

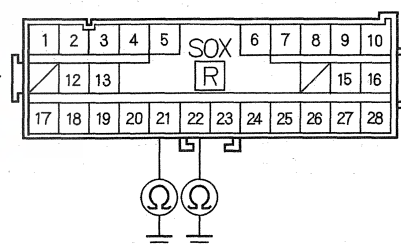
NO—Go to step 13.

13. Disconnect SRS harness 28P connector C854 (A) from SRS subharness connector C854 (B).



14. Measure the resistance between the No. 21 terminal of SRS subharness 28P connector C854 and body ground, and between the No. 22 terminal and body ground. There should be an open circuit or at least 1 M Ω .

SRS SUBHARNESS 28P CONNECTOR C854



Terminal side of male terminals

Is the resistance as specified?

YES—Short to ground in the SRS harness; replace the SRS harness. ■

NO—Short to ground in the SRS subharness; replace the SRS subharness. ■

DTC Troubleshooting (cont'd)

DTC 32-1x ("x" can be 0 thru 9 or A thru F): Open in Front Passenger's Side Airbag Inflator

Special Tools Required

- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead E 07XAZ-S1A0200

NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 23-19) and General Troubleshooting Information (see page 23-28).

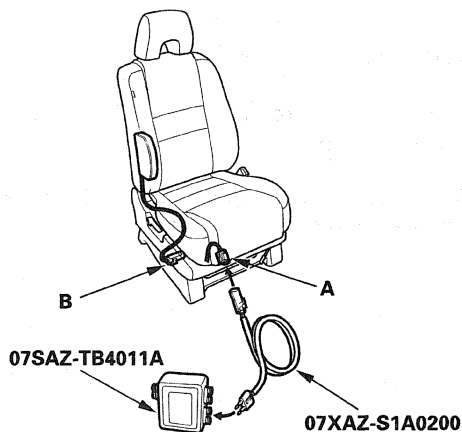
1. Clear the DTC memory (see page 23-29).
2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

Does the SRS indicator stay on, and is DTC 32-1x indicated?

YES—Go to step 3.

NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-31). If another DTC is indicated, troubleshoot the DTC.

3. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.
4. Disconnect the SRS harness 2P connector (A) from the front passenger's side airbag (B).



5. Connect the SRS inflator simulator (2 Ω connector) and simulator lead E to the SRS harness.

6. Reconnect the negative cable to the battery.

7. Clear the DTC memory.

8. Check for a DTC.

Is DTC 32-1x indicated?

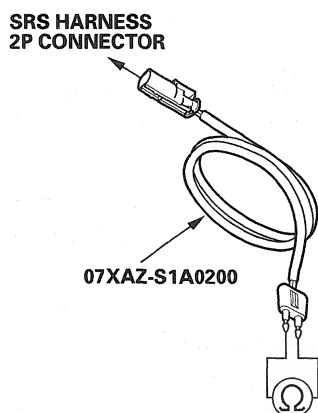
YES—Go to step 9.

NO—Open in the front passenger's side airbag inflator, replace the front passenger's side airbag (see page 23-203). ■

9. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.
10. Disconnect SRS unit connector C (28P) from the SRS unit (see step 8 on page 23-28).



11. Disconnect the SRS inflator simulator from the SRS simulator lead. Do not disconnect the simulator lead from the SRS harness 2P connector.
12. Measure the resistance between the terminals of the SRS simulator lead. There should be less than 1.0 Ω .

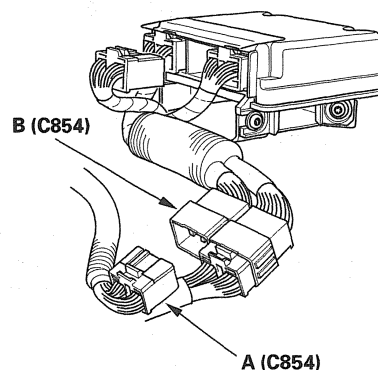


Is the resistance as specified?

YES—Faulty SRS unit or poor connection at SRS unit connector C (28P) and the SRS unit. Check the connection; if the connection is OK, replace the SRS unit (see page 23-215). ■

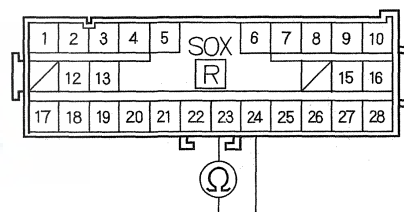
NO—Go to step 13.

13. Disconnect SRS harness 28P connector C854 (A) from SRS subharness connector C854 (B).



14. Measure the resistance between the No. 23 and No. 24 terminals of SRS subharness 28P connector C854. There should be less than 1.0 Ω .

SRS SUBHARNESS 28P CONNECTOR C854



Terminal side of male terminals

Is the resistance as specified?

YES—Open in the SRS harness; replace the SRS harness. ■

NO—Open in the SRS subharness; replace the SRS subharness. ■

DTC Troubleshooting (cont'd)

DTC 32-3x ("x" can be 0 thru 9 or A thru F): Short to Another Wire or Decreased Resistance in Front Passenger's Side Airbag Inflator

Special Tools Required

- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead E 07XAZ-S1A0200
- SRS short canceller 070AZ-SAA0100

NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 23-19) and General Troubleshooting Information (see page 23-28).

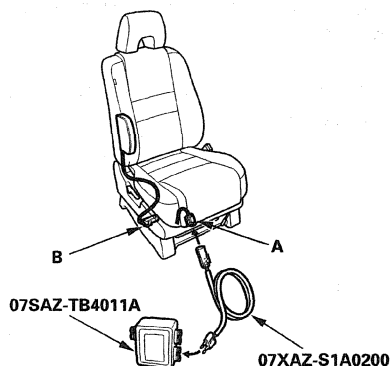
1. Clear the DTC memory (see page 23-29).
2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

Does the SRS indicator stay on, and is DTC 32-3x indicated?

YES—Go to step 3.

NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-31). If another DTC is indicated, troubleshoot the DTC.

3. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.
4. Disconnect the SRS harness 2P connector (A) from the front passenger's side airbag (B).



5. Connect the SRS inflator simulator (2 Ω connector) and simulator lead E to the SRS harness.

6. Reconnect the negative cable to the battery.

7. Clear the DTC memory.

8. Check for a DTC.

Is DTC 32-3x indicated?

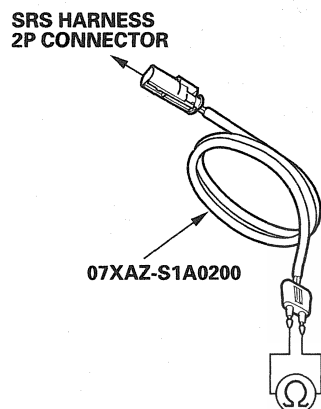
YES—Go to step 9.

NO—Short to another wire in the front passenger's side airbag inflator; replace the front passenger's side airbag (see page 23-203). ■

9. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.
10. Disconnect SRS unit connector C (28P) from the SRS unit (see step 8 on page 23-28).



11. Disconnect the SRS inflator simulator from the SRS simulator lead. Do not disconnect the simulator lead from the SRS harness 2P connector.
12. Connect the SRS short canceller (070AZ-SAA0100) to the No. 3 and No. 4 terminals of SRS unit connector C (28P) (see page 23-24).
13. Measure the resistance between the terminals of SRS simulator lead E. There should be an open circuit or at least 1 M Ω .

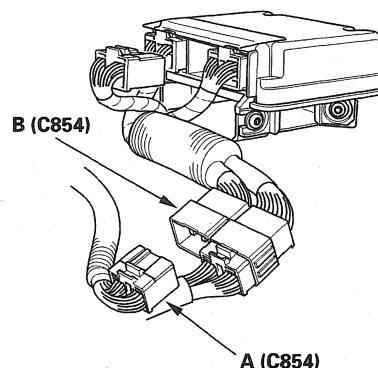


Is the resistance as specified?

YES—Faulty SRS unit; replace the SRS unit (see page 23-215). ■

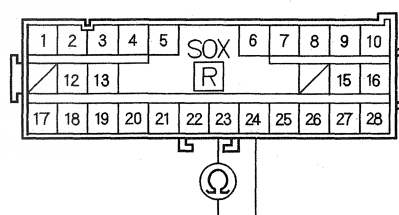
NO—Go to step 14.

14. Disconnect SRS harness 28P connector C854 (A) from SRS subharness connector C854 (B).



15. Measure the resistance between the No. 23 and No. 24 terminals of SRS subharness 28P connector C854. There should be an open circuit or at least 1 M Ω .

SRS SUBHARNESS 28P CONNECTOR C854



Terminal side of male terminals

Is the resistance as specified?

YES—Short in the SRS harness; replace the SRS harness. ■

NO—Short in the SRS subharness; replace the SRS subharness. ■

DTC Troubleshooting (cont'd)

DTC 32-8x ("x" can be 0 thru 9 or A thru F): Short to Power in Front Passenger's Side Airbag Inflator

Special Tools Required

- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead E 07XAZ-S1A0200

NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 23-19) and General Troubleshooting Information (see page 23-28).

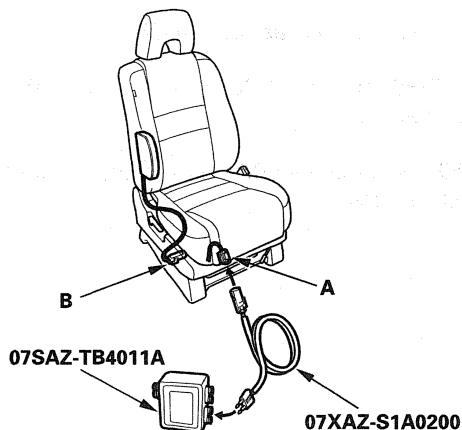
1. Clear the DTC memory (see page 23-29).
2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

Does the SRS indicator stay on, and is DTC 32-8x indicated?

YES—Go to step 3.

NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-31). If another DTC is indicated, troubleshoot the DTC.

3. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.
4. Disconnect the SRS harness 2P connector (A) from the front passenger's side airbag (B).



5. Connect the SRS inflator simulator (2 Ω connector) and the simulator lead E to the SRS harness.

6. Reconnect the negative cable to the battery.

7. Clear the DTC memory.

8. Check for a DTC.

Is DTC 32-8x indicated?

YES—Go to step 9.

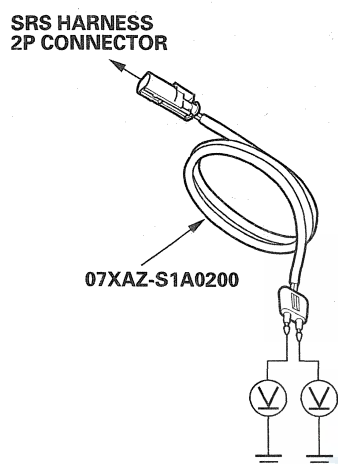
NO—Short to power in the front passenger's side airbag inflator, replace the front passenger's side airbag (see page 23-203). ■

9. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.

10. Disconnect SRS unit connector C (28P) from the SRS unit (see step 8 on page 23-28).



11. Reconnect the negative cable to the battery.
12. Disconnect the SRS inflator simulator from the SRS simulator lead. Do not disconnect the simulator lead from the SRS harness 2P connector.
13. Turn the ignition switch ON (II).
14. Measure the voltage between each terminal of the SRS simulator lead and body ground. There should be less than 0.5 V.

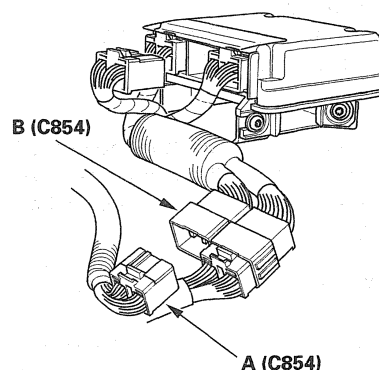


Is the voltage as specified?

YES—Faulty SRS unit; replace the SRS unit (see page 23-215). ■

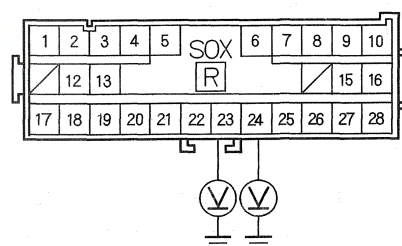
NO—Go to step 15.

15. Turn the ignition switch OFF.
16. Disconnect SRS harness 28P connector C854 (A) from the SRS subharness connector C854 (B).



17. Turn the ignition switch ON (II).
18. Measure the voltage between the No. 23 terminal of SRS subharness 28P connector C854 and body ground, and between the No. 24 terminal and body ground. There should be less than 0.5 V.

SRS SUBHARNES 28P CONNECTOR C854



Terminal side of male terminals

Is the voltage as specified?

YES—Short to power in the SRS harness; replace the SRS harness. ■

NO—Short to power in the SRS subharness; replace the SRS subharness. ■

DTC Troubleshooting (cont'd)

DTC 32-9x ("x" can be 0 thru 9 or A thru F): Short to Ground in Front Passenger's Side Airbag Inflator

Special Tools Required

- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead E 07XAZ-S1A0200

NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 23-19) and General Troubleshooting Information (see page 23-28).

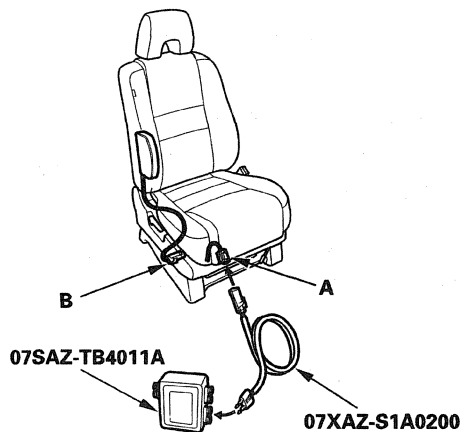
1. Clear the DTC memory (see page 23-29).
2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

Does the SRS indicator stay on, and is DTC 32-9x indicated?

YES—Go to step 3.

NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-31). If another DTC is indicated, troubleshoot the DTC.

3. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.
4. Disconnect the SRS harness 2P connector (A) from the front passenger's side airbag (B).



5. Connect the SRS inflator simulator (2 Ω connector) and simulator lead E to the SRS harness.

6. Reconnect the negative cable to the battery.

7. Clear the DTC memory.

8. Check for a DTC.

Is DTC 32-9x indicated?

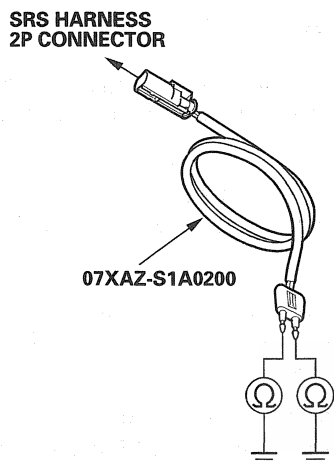
YES—Go to step 9.

NO—Short to ground in the front passenger's side airbag inflator; replace the front passenger's side airbag (see page 23-203). ■

9. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.
10. Disconnect SRS unit connector C (28P) from the SRS unit (see step 8 on page 23-28).



11. Disconnect the SRS inflator simulator from the SRS simulator lead. Do not disconnect the simulator lead from the SRS harness 2P connector.
12. Measure the resistance between each terminal of the SRS simulator lead and body ground. There should be an open circuit or at least 1 M Ω .

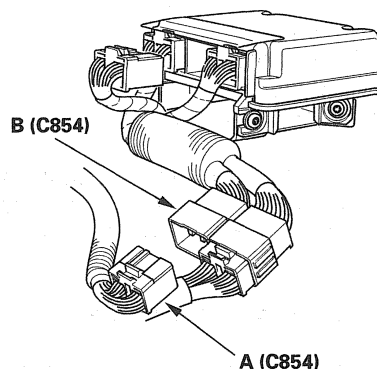


Is the resistance as specified?

YES—Faulty SRS unit; replace the SRS unit (see page 23-215). ■

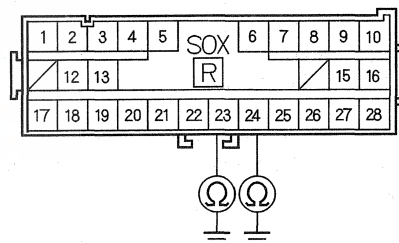
NO—Go to step 13.

13. Disconnect SRS harness 28P connector C854 (A) from SRS subharness connector C854 (B).



14. Measure the resistance between the No. 23 terminal of SRS subharness 28P connector C854 and body ground, and between the No. 24 terminal and body ground. There should be an open circuit or at least 1 M Ω .

SRS SUBHARNESS 28P CONNECTOR C854



Terminal side of male terminals

Is the resistance as specified?

YES—Short to ground in the SRS harness; replace the SRS harness. ■

NO—Short to ground in the SRS subharness; replace the SRS subharness. ■

DTC Troubleshooting (cont'd)

DTC 33-1x ("x" can be 0 thru 9 or A thru F): Open in Left Side Curtain Airbag Inflator

Special Tools Required

- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead E 07XAZ-S1A0200
- SRS simulator lead F 07XAZ-SZ30100

NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 23-19) and General Troubleshooting Information (see page 23-28).

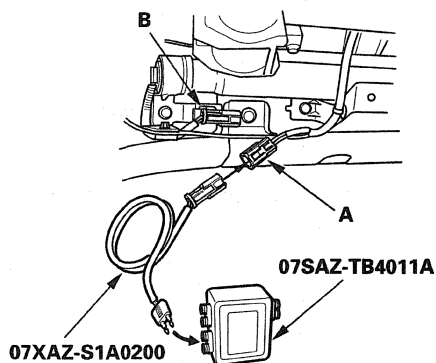
1. Clear the DTC memory (see page 23-29).
2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

Does the SRS indicator stay on, and is DTC 33-1x indicated?

YES—Go to step 3.

NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-31). If another DTC is indicated, troubleshoot the DTC.

3. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.
4. Disconnect the roof wire harness 2P connector (A) from the left side curtain airbag 2P connector (B).



5. Connect the SRS inflator simulator (2 Ω connector) and simulator lead E to the roof wire harness.

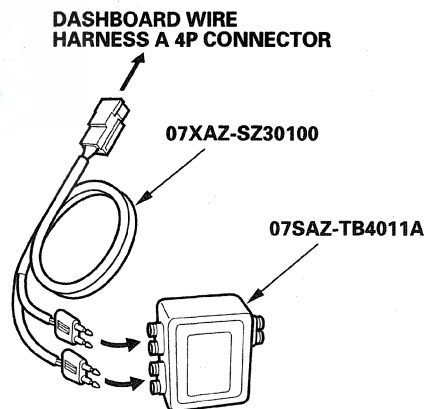
6. Reconnect the negative cable to the battery.
7. Clear the DTC memory.
8. Check for a DTC.

Is DTC 33-1x indicated?

YES—Go to step 9.

NO—Open in the left side curtain airbag inflator, replace the left side curtain airbag (see page 23-204). ■

9. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.
10. Disconnect roof wire harness 4P connector C554 from the dashboard wire harness A 4P connector (see page 22-55).
11. Connect the SRS inflator simulator (2 Ω connectors) and simulator lead F to the dashboard wire harness A 4P connector.





12. Reconnect the negative cable to the battery.

13. Clear the DTC memory.

14. Check for a DTC.

Is DTC 33-1x indicated?

YES—Go to step 15.

NO—Open in the roof wire harness; replace the roof wire harness. ■

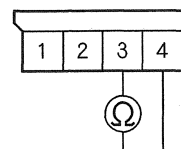
15. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.

16. Disconnect SRS unit connector C (28P) from the SRS unit (see step 8 on page 23-28).

17. Disconnect the simulator lead from the dashboard wire harness A 4P connector.

18. Measure the resistance between the No. 3 and No. 4 terminals of the dashboard wire harness 4P connector. There should be less than 1.0 Ω .

DASHBOARD WIRE HARNESS A 4P CONNECTOR



Wire side of female terminals

Is the resistance as specified?

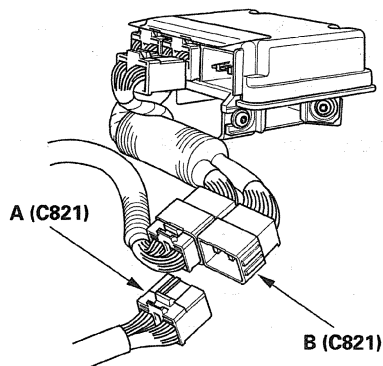
YES—Faulty SRS unit or poor connection at SRS unit connector C (28P) and the SRS unit. Check the connection; if the connection is OK, replace the SRS unit (see page 23-215). ■

NO—Go to step 19.

(cont'd)

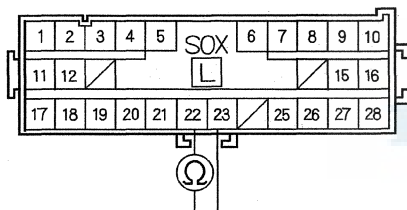
DTC Troubleshooting (cont'd)

19. Disconnect SRS subharness 28P connector C821 (B) from dashboard wire harness A C821.



20. Measure the resistance between the No. 22 and No. 23 terminals of SRS subharness 28P connector C821. There should be less than 1.0 Ω .

SRS SUBHARNESS 28P CONNECTOR C821



Terminal side of male terminals

Is the resistance as specified?

YES—Open in dashboard wire harness A; replace dashboard wire harness A. ■

NO—Open in the SRS subharness; replace the SRS subharness. ■

DTC 33-3x ("x" can be 0 thru 9 or A thru F): Short to Another Wire or Decreased Resistance in Left Side Curtain Airbag Inflator

Special Tools Required

- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead E 07XAZ-S1A0200
- SRS simulator lead F 07XAZ-SZ30100
- SRS short canceller 070AZ-SAA0100

NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 23-19) and General Troubleshooting Information (see page 23-28).

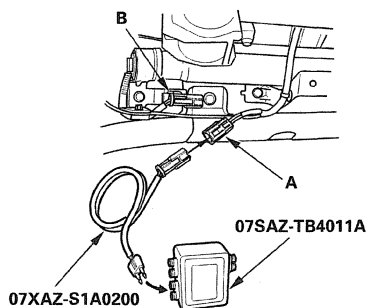
1. Clear the DTC memory (see page 23-29).
2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

Does the SRS indicator stay on, and is DTC 33-3x indicated?

YES—Go to step 3.

NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-31). If another DTC is indicated, troubleshoot the DTC.

3. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.
4. Disconnect the roof wire harness 2P connector (A) from the left side curtain airbag 2P connector (B).



5. Connect the SRS inflator simulator (2 Ω connector) and simulator lead E to the roof wire harness 2P connector.



6. Reconnect the negative cable to the battery.

7. Clear the DTC memory.

8. Check for a DTC.

Is DTC 33-3x indicated?

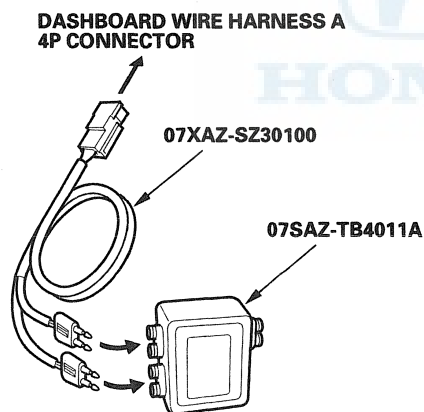
YES—Go to step 9.

NO—Short to another wire in the left side curtain airbag inflator; replace the left side curtain airbag (see page 23-204). ■

9. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.

10. Disconnect roof wire harness 4P connector C554 from the dashboard wire harness A 4P connector (see page 22-55).

11. Connect the SRS inflator simulator (2 Ω connectors) and simulator lead F to dashboard wire harness A.



12. Reconnect the negative cable to the battery.

13. Clear the DTC memory.

14. Check for a DTC.

Is DTC 33-3x indicated?

YES—Go to step 15.

NO—Short in the roof wire harness; replace the roof wire harness. ■

15. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.

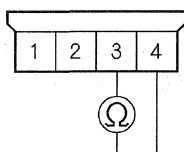
16. Disconnect SRS unit connector C (28P) from the SRS unit (see step 8 on page 23-28).

(cont'd)

DTC Troubleshooting (cont'd)

17. Disconnect the simulator lead from dashboard wire harness A.
18. Connect the SRS short canceller (070AZ-SAA0100) to the No. 7 and No. 8 terminals of SRS unit connector C (28P) (see page 23-24).
19. Measure the resistance between the No. 3 and No. 4 terminals of the dashboard wire harness A 4P connector. There should be an open circuit or at least 1 M Ω .

DASHBOARD WIRE HARNESS A 4P CONNECTOR



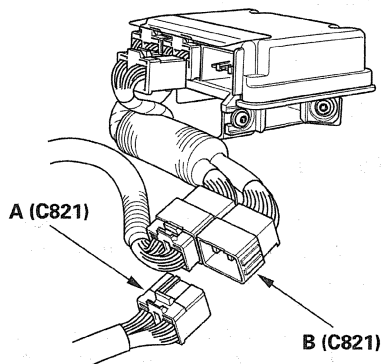
Wire side of female terminals

Is the resistance as specified?

YES—Faulty SRS unit; replace the SRS unit (see page 23-215).

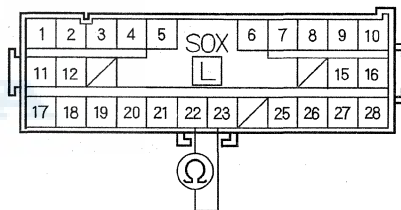
NO—Go to step 20.

20. Disconnect SRS subharness 28P connector C821 (B) from dashboard wire harness A C821.



21. Measure the resistance between the No. 22 and No. 23 terminals of SRS subharness 28P connector C821. There should be an open circuit or at least 1 M Ω .

SRS SUBHARNESS 28P CONNECTOR C821



Terminal side of male terminals

Is the resistance as specified?

YES—Short in dashboard wire harness A; replace dashboard wire harness A. ■

NO—Short in the SRS subharness; replace the SRS subharness. ■



**DTC 33-8x ("x" can be 0 thru 9 or A thru F):
Short to Power in Left Side Curtain Airbag
First Inflator**

Special Tools Required

- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead E 07XAZ-S1A0200
- SRS simulator lead F 07XAZ-SZ30100

NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 23-19) and General Troubleshooting Information (see page 23-28).

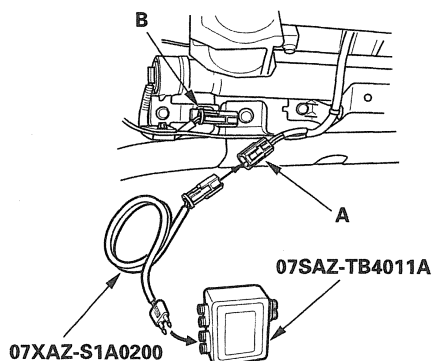
1. Clear the DTC memory (see page 23-29).
2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

Does the SRS indicator stay on, and is DTC 33-8x indicated?

YES—Go to step 3.

NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-31). If another DTC is indicated, troubleshoot the DTC.

3. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.
4. Disconnect the roof wire harness 2P connector (A) from the left side curtain airbag 2P connector (B).



5. Connect the SRS inflator simulator (2 Ω connector) and simulator lead E to the roof wire harness.

6. Reconnect the negative cable to the battery.

7. Clear the DTC memory.

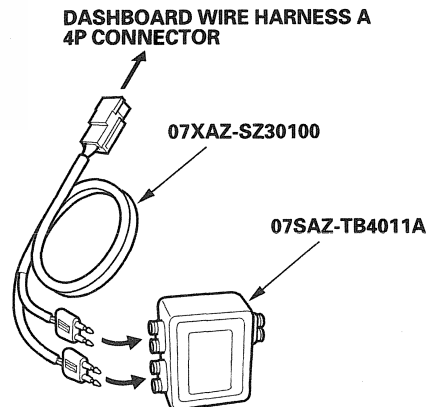
8. Check for a DTC.

Is DTC 33-8x indicated?

YES—Go to step 9.

NO—Short to power in the left side curtain airbag inflator, replace the left side curtain airbag (see page 23-204). ■

9. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.
10. Disconnect dashboard wire harness A 4P connector C544 from the roof wire harness 4P connector (see page 22-55).
11. Connect the SRS inflator simulator (2 Ω connectors) and simulator lead F to dashboard wire harness A.



(cont'd)

DTC Troubleshooting (cont'd)

12. Reconnect the negative cable to the battery.

13. Clear the DTC memory.

14. Check for a DTC.

Is DTC 33-8x indicated?

YES—Go to step 15.

NO—Short to power in the roof wire harness; replace the roof wire harness. ■

15. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.

16. Disconnect SRS unit connector C (28P) from the SRS unit (see step 8 on page 23-28).

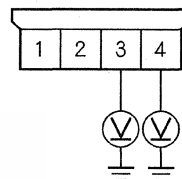
17. Reconnect the negative cable to the battery.

18. Disconnect the simulator lead from dashboard wire harness A.

19. Turn the ignition switch ON (II).

20. Measure the voltage between the No. 3 terminal of the dashboard wire harness 4P connector and body ground, and the No. 4 terminal and body ground. There should be less than 0.5 V.

DASHBOARD WIRE HARNESS A 4P CONNECTOR



Wire side of female terminals

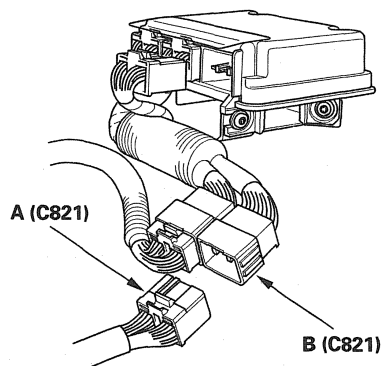
Is the voltage as specified?

YES—Faulty SRS unit; replace the SRS unit (see page 23-215). ■

NO—Go to step 21.

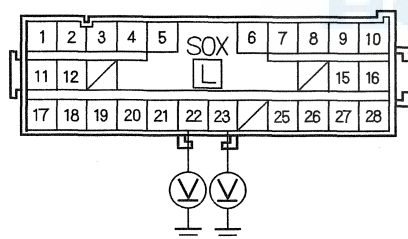


21. Turn the ignition switch OFF.
22. Disconnect SRS subharness 28P connector (B) from dashboard wire harness A C821.



23. Turn the ignition switch ON (II).
24. Measure the voltage between the No. 22 terminal of SRS subharness 28P connector C821 and body ground, and between the No. 23 terminal and body ground. There should be less than 0.5 V.

SRS SUBHARNESS 28P CONNECTOR C821



Terminal side of male terminals

Is the voltage as specified?

YES—Short to power in the dashboard wire harness A; replace the dashboard wire harness A. ■

NO—Short to power in the SRS subharness; replace the SRS subharness. ■

DTC 33-9x ("x" can be 0 thru 9 or A thru F): Short to Ground in Left Side Curtain Airbag First Inflator

Special Tools Required

- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead E 07XAZ-S1A0200
- SRS simulator lead F 07XAZ-SZ30100

NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 23-19) and General Troubleshooting Information (see page 23-28).

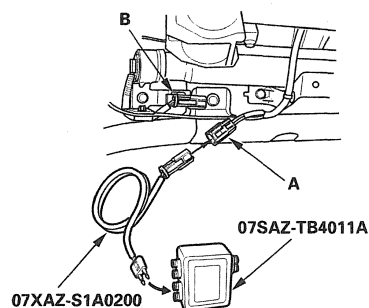
1. Clear the DTC memory (see page 23-29).
2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

Does the SRS indicator stay on, and is DTC 33-9x indicated?

YES—Go to step 3.

NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-31). If another DTC is indicated, troubleshoot the DTC.

3. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.
4. Disconnect the roof wire harness 2P connector (A) from the left side curtain airbag 2P connector (B).



5. Connect the SRS inflator simulator (2 Ω connector) and simulator lead E to the roof wire harness 2P connector.

(cont'd)

DTC Troubleshooting (cont'd)

6. Reconnect the negative cable to the battery.

7. Clear the DTC memory.

8. Check for a DTC.

Is DTC 33-9x indicated?

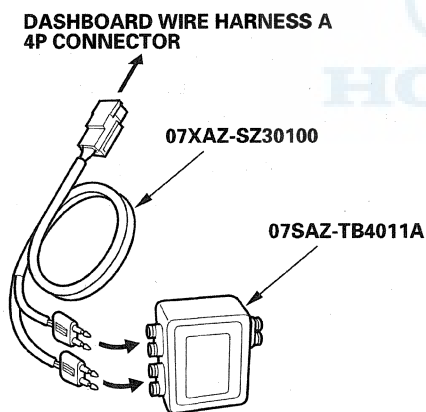
YES—Go to step 9.

NO—Short to ground in the left side curtain airbag inflator; replace the left side curtain airbag (see page 23-204). ■

9. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.

10. Disconnect dashboard wire harness A 4P connector C554 from the roof wire harness 4P connector (see page 22-55).

11. Connect the SRS inflator simulator (2 Ω connectors) and simulator lead F to dashboard wire harness A.



12. Reconnect the negative cable to the battery.

13. Clear the DTC memory.

14. Check for a DTC.

Is DTC 33-9x indicated?

YES—Go to step 15.

NO—Short to ground in the roof wire harness; replace the roof wire harness. ■

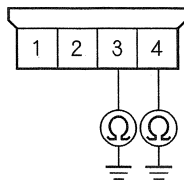
15. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.

16. Disconnect SRS unit connector C (28P) from the SRS unit (see step 8 on page 23-28).



17. Disconnect the simulator lead from dashboard wire harness A.
18. Measure the resistance between the No. 3 terminal of the dashboard wire harness A 4P connector and body ground, and between the No. 4 terminal and body ground. There should be an open ground, circuit or at least $1\text{ M}\Omega$.

DASHBOARD WIRE HARNESS A 4P CONNECTOR



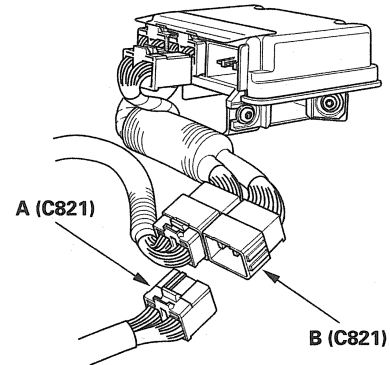
Wire side of female terminals

Is the resistance as specified?

YES—Faulty SRS unit; replace the SRS unit (see page 23-215). ■

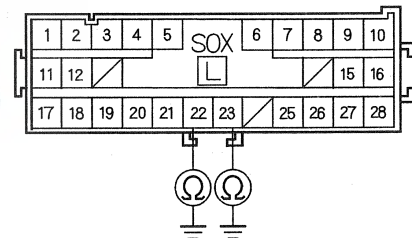
NO—Go to step 19.

19. Disconnect SRS subharness 28P connector C821 (B) from dashboard wire harness A C821.



20. Measure the resistance between the No. 22 terminal of SRS subharness 28P connector C821 and body ground, and between the No. 23 terminal and body ground. There should be an open circuit or at least $1\text{ M}\Omega$.

SRS SUBHARNESS 28P CONNECTOR C821



Terminal side of male terminals

Is the resistance as specified?

YES—Short to ground in dashboard wire harness A; replace dashboard wire harness A. ■

NO—Short to ground in the SRS subharness; replace the SRS subharness. ■

DTC Troubleshooting (cont'd)

DTC 34-1x ("x" can be 0 thru 9 or A thru F): Open in Right Side Curtain Airbag First Inflator

Special Tools Required

- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead E 07XAZ-S1A0200
- SRS simulator lead F 07XAZ-SZ30100

NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 23-19) and General Troubleshooting Information (see page 23-28).

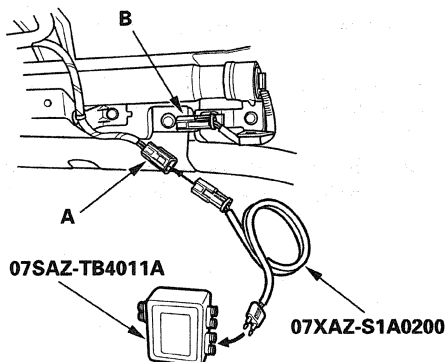
1. Clear the DTC memory (see page 23-29).
2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

Does the SRS indicator stay on, and is DTC 34-1x indicated?

YES—Go to step 3.

NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-31). If another DTC is indicated, troubleshoot the DTC.

3. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.
4. Disconnect the roof wire harness 2P connector (A) from the right side curtain airbag 2P connector (B).



5. Connect the SRS inflator simulator (2 Ω connector) and simulator lead E to the roof wire harness.

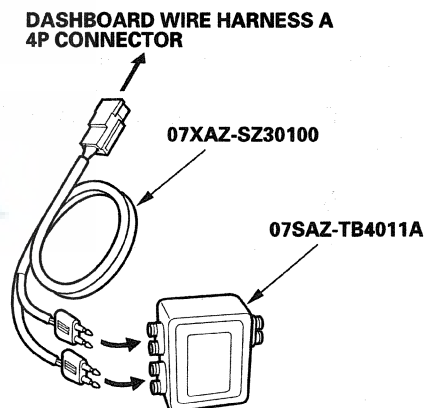
6. Reconnect the negative cable to the battery.
7. Clear the DTC memory.
8. Check for a DTC.

Is DTC 34-1x indicated?

YES—Go to step 9.

NO—Open in the right side curtain airbag inflator, replace the right side curtain airbag (see page 23-204). ■

9. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.
10. Disconnect roof wire harness 4P connector C554 from the dashboard wire harness A 4P connector (see page 22-55).



11. Connect the SRS inflator simulator (2 Ω connectors) and simulator lead F to dashboard wire harness A.



12. Reconnect the negative cable to the battery.

13. Clear the DTC memory.

14. Check for a DTC.

Is DTC 34-1x indicated?

YES—Go to step 15.

NO—Open in the roof wire harness; replace the roof wire harness. ■

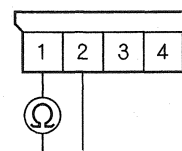
15. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.

16. Disconnect SRS unit connector C (28P) from the SRS unit (see step 8 on page 23-28).

17. Disconnect the simulator lead from the dashboard wire harness A 4P connector.

18. Measure the resistance between the No. 1 and No. 2 terminals of the dashboard wire harness A 4P connector. There should be less than 1.0 Ω .

DASHBOARD WIRE HARNESS A 4P CONNECTOR



Wire side of female terminals

Is the resistance as specified?

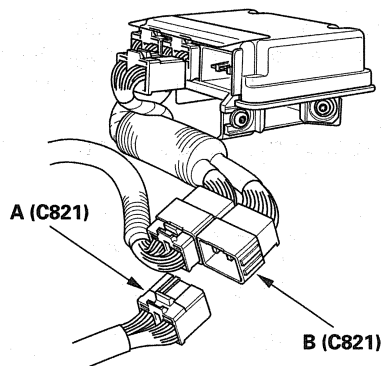
YES—Faulty SRS unit or poor connection at SRS unit connector C (28P) and the SRS unit. Check the connection; if the connection is OK, replace the SRS unit (see page 23-215). ■

NO—Go to step 19.

(cont'd)

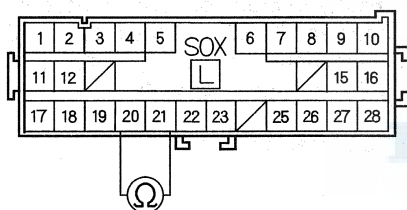
DTC Troubleshooting (cont'd)

19. Disconnect SRS subharness 28P connector (B) from dashboard wire harness A C821.



20. Measure the resistance between the No. 20 and No. 21 terminals of SRS subharness 28P connector C821. There should be less than 1.0 Ω .

SRS SUBHARNES 28P CONNECTOR C821



Terminal side of male terminals

Is the resistance as specified?

YES—Open in dashboard wire harness A; replace dashboard wire harness A. ■

NO—Open in the SRS subharness; replace the SRS subharness. ■

DTC 34-3x ("x" can be 0 thru 9 or A thru F): Short to Another Wire or Decreased Resistance in Right Side Curtain Airbag First Inflator

Special Tools Required

- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead E 07XAZ-S1A0200
- SRS simulator lead F 07XAZ-SZ30100
- SRS short canceller 070AZ-SAA0100

NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 23-19) and General Troubleshooting Information (see page 23-28).

1. Clear the DTC memory (see page 23-29).
2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

Does the SRS indicator stay on, and is DTC 34-3x indicated?

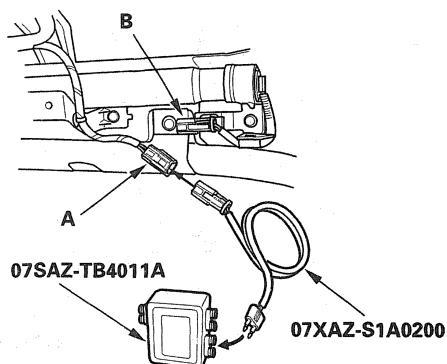
YES—Go to step 3.

NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-31). If another DTC is indicated, troubleshoot the DTC.

3. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.



4. Disconnect the roof wire harness 2P connector (A) from the right side curtain airbag 2P connector (B).



5. Connect the SRS inflator simulator (2 Ω connector) and simulator lead E to the roof wire harness 2P connector.
6. Reconnect the negative cable to the battery.
7. Clear the DTC memory.
8. Check for a DTC.

Is DTC 34-3x indicated?

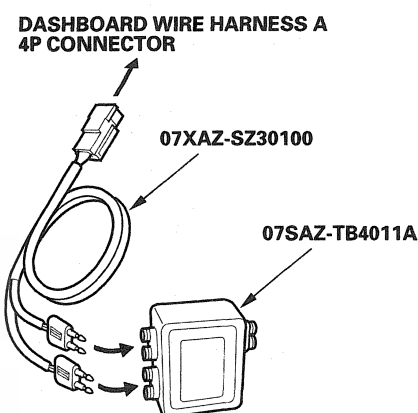
YES—Go to step 9.

NO—Short to another wire in the right side curtain airbag inflator; replace the right side curtain airbag (see page 23-204). ■

9. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.

10. Disconnect dashboard wire harness A 4P connector C554 from the roof wire harness 4P connector (see page 22-55).

11. Connect the SRS inflator simulator (2 Ω connectors) and simulator lead F to dashboard wire harness A.



12. Reconnect the negative cable from the battery.
13. Clear the DTC memory.
14. Check for a DTC.

Is DTC 34-3x indicated?

YES—Go to step 15.

NO—Short in the roof wire harness; replace the roof wire harness. ■

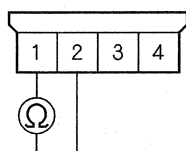
15. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.
16. Disconnect SRS unit connector C (28P) from the SRS unit (see step 8 on page 23-28).

(cont'd)

DTC Troubleshooting (cont'd)

17. Disconnect the simulator lead from the dashboard wire harness.
18. Connect the SRS short canceller (070AZ-SAA0100) to the No. 9 and No. 10 terminals of SRS unit connector C (28P) (see page 23-24).
19. Measure the resistance between the No. 1 and No. 2 terminals of the dashboard wire harness A 4P connector. There should be an open circuit or at least 1 M Ω .

DASHBOARD WIRE HARNESS A 4P CONNECTOR



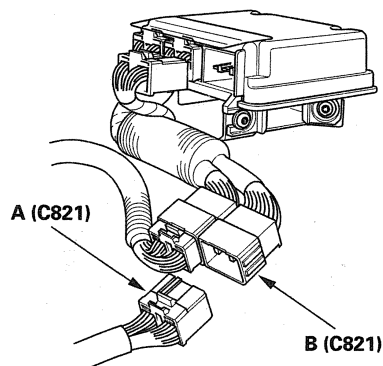
Wire side of female terminals

Is the resistance as specified?

YES—Faulty SRS unit; replace the SRS unit (see page 23-215). ■

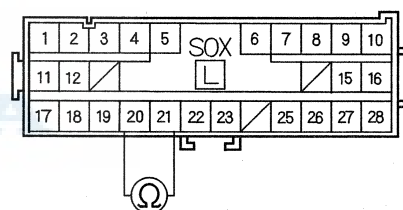
NO—Go to step 20.

20. Disconnect SRS subharness 28P connector C821 (B) from dashboard wire harness A C821.



21. Measure the resistance between the No. 20 and No. 21 terminals of SRS subharness 28P connector C821. There should be an open circuit or at least 1 M Ω .

SRS SUBHARNESS 28P CONNECTOR C821



Terminal side of male terminals

Is the resistance as specified?

YES—Short in dashboard wire harness A; replace dashboard wire harness A. ■

NO—Short in the SRS subharness; replace the SRS subharness. ■



**DTC 34-8x ("x" can be 0 thru 9 or A thru F):
Short to Power in Right Side Curtain Airbag
First Inflator**

Special Tools Required

- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead E 07XAZ-S1A0200
- SRS simulator lead F 07XAZ-SZ30100

NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 23-19) and General Troubleshooting Information (see page 23-28).

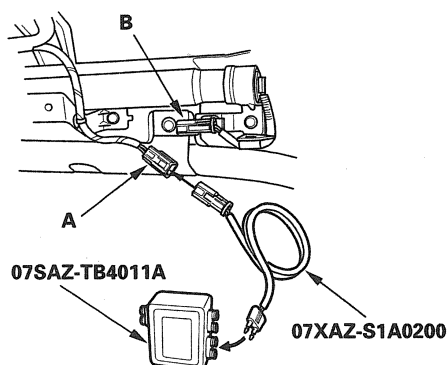
1. Clear the DTC memory (see page 23-29).
2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

Does the SRS indicator stay on, and is DTC 34-8x indicated?

YES—Go to step 3.

NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-31). If another DTC is indicated, troubleshoot the DTC.

3. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.
4. Disconnect the roof wire harness 2P connector (A) from the right side curtain airbag 2P connector (B).



5. Connect the SRS inflator simulator (2 Ω connector) and simulator lead E to the roof wire harness 2P connector.

6. Reconnect the negative cable to the battery.

7. Clear the DTC memory.

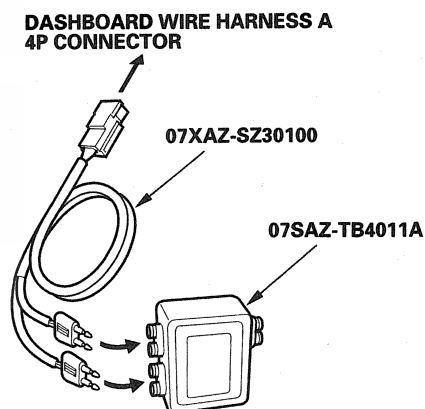
8. Check for a DTC.

Is DTC 34-8x indicated?

YES—Go to step 9.

NO—Short to power in the right side curtain airbag inflator, replace the right side curtain airbag (see page 23-204). ■

9. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.
10. Disconnect dashboard wire harness A 4P connector C554 from the roof wire harness 4P connector (see page 22-55).



11. Connect the SRS inflator simulator (2 Ω connectors) and simulator lead F to dashboard wire harness A.

(cont'd)

DTC Troubleshooting (cont'd)

12. Reconnect the negative cable to the battery.

13. Clear the DTC memory.

14. Check for a DTC.

Is DTC 34-8x indicated?

YES—Go to step 15.

NO—Short to power in the roof wire harness; replace the roof wire harness. ■

15. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.

16. Disconnect SRS unit connector C (28P) from the SRS unit (see step 8 on page 23-28)

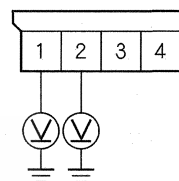
17. Reconnect the negative cable to the battery.

18. Disconnect the simulator lead from dashboard wire harness A.

19. Turn the ignition switch ON (II).

20. Measure the voltage between the No. 1 terminal of the dashboard wire harness 4P connector and body ground, and the No. 2 terminal and body ground. There should be less than 0.5 V.

DASHBOARD WIRE HARNESS A 4P CONNECTOR



Wire side of female terminals

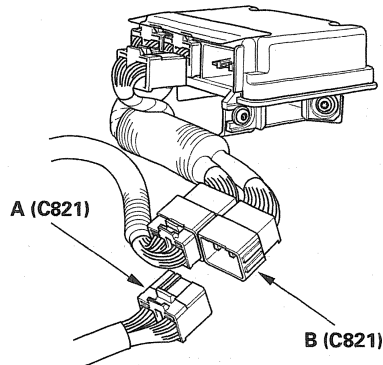
Is the voltage as specified?

YES—Faulty SRS unit; replace the SRS unit (see page 23-215). ■

NO—Go to step 21.

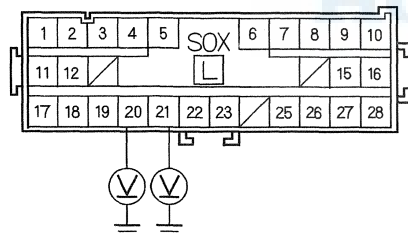


21. Turn the ignition switch OFF.
22. Disconnect SRS subharness 28P connector C821 (B) from dashboard wire harness A C821.



23. Turn the ignition switch ON (II).
24. Measure the voltage between the No. 20 terminal of SRS subharness 28P connector C821 and body ground, and between the No. 21 terminal and body ground. There should be less than 0.5 V.

SRS SUBHARNESS 28P CONNECTOR C821



Terminal side of male terminals

Is the voltage as specified?

YES—Short to power in dashboard wire harness A; replace dashboard wire harness A. ■

NO—Short to power in the SRS subharness; replace the SRS subharness. ■

DTC 34-9x ("x" can be 0 thru 9 or A thru F): Short to Ground in Right Side Curtain Airbag First Inflator

Special Tools Required

- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead E 07XAZ-S1A0200
- SRS simulator lead F 07XAZ-SZ30100

NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 23-19) and General Troubleshooting Information (see page 23-28).

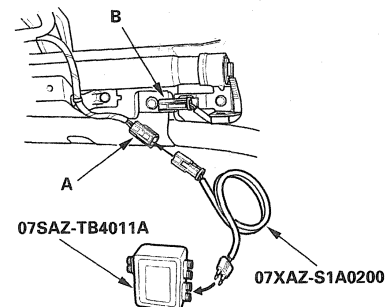
1. Clear the DTC memory (see page 23-29).
2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

Does the SRS indicator stay on, and is DTC 34-9x indicated?

YES—Go to step 3.

NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-31). If another DTC is indicated, troubleshoot the DTC.

3. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.
4. Disconnect the roof wire harness 2P connector (A) from the right side curtain airbag 2P connector (B).



5. Connect the SRS inflator simulator (2 Ω connector) and simulator lead E to the roof wire harness 2P connector.

(cont'd)

DTC Troubleshooting (cont'd)

6. Reconnect the negative cable to the battery.

7. Clear the DTC memory.

8. Check for a DTC.

Is DTC 34-9x indicated?

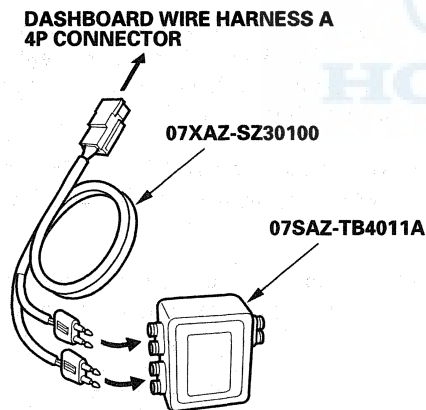
YES—Go to step 9.

NO—Short to ground in the right side curtain airbag inflator; replace the right side curtain airbag (see page 23-204). ■

9. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.

10. Disconnect dashboard wire harness A 4P connectors C554 from the roof wire harness 4P connector (see page 22-55).

11. Connect the SRS inflator simulator (2 Ω connectors) and simulator lead F to dashboard wire harness A.



12. Reconnect the negative cable to the battery.

13. Clear the DTC memory.

14. Check for a DTC.

Is DTC 34-9x indicated?

YES—Go to step 15.

NO—Short to ground in the roof wire harness; replace the roof wire harness. ■

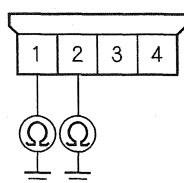
15. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.

16. Disconnect SRS unit connector C (28P) from the SRS unit (see step 8 on page 23-28).



17. Disconnect the simulator lead from dashboard wire harness A.
18. Measure the resistance between the No. 1 terminal of the dashboard wire harness A 4P connector and body ground, and the between No. 2 terminal and body ground. There should be an open circuit or at least 1 M Ω .

DASHBOARD WIRE HARNESS A 4P CONNECTOR



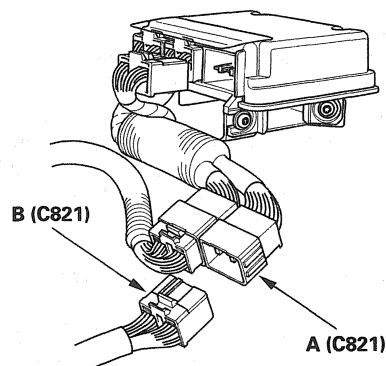
Wire side of female terminals

Is the resistance as specified?

YES—Faulty SRS unit; replace the SRS unit (see page 23-215). ■

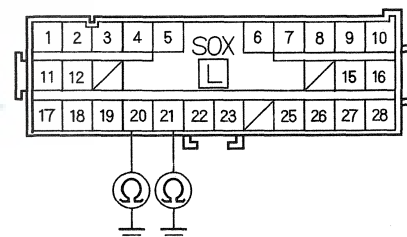
NO—Go to step 19.

19. Disconnect SRS subharness 28P connector C821 (A) from SRS main harness C821 (B).



20. Measure the resistance between the No. 20 terminal of SRS subharness 28P connector C821 and body ground, and between the No. 21 terminal and body ground. There should be an open circuit or at least 1 M Ω .

SRS SUBHARNESS 28P CONNECTOR C821



Terminal side of male terminals

Is the resistance as specified?

YES—Short to ground in dashboard wire harness A; replace dashboard wire harness A. ■

NO—Short to ground in the SRS subharness; replace the SRS subharness. ■

DTC Troubleshooting (cont'd)

DTC 41-1x ("x" can be 0 thru 9 or A thru F): No Signal from the Left Front Impact Sensor

Special Tools Required

- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead H 07YAZ-S3AA100

NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 23-19) and General Troubleshooting Information (see page 23-28).

1. Clear the DTC memory (see page 23-29).
2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

Does the SRS indicator stay on, and is DTC 41-1x indicated?

YES—Go to step 3.

NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-31). If another DTC is indicated, troubleshoot the DTC.

3. Turn the ignition switch OFF. Check the connections between SRS unit connector A (28P) and the SRS unit, between the left engine compartment wire harness 2P connector and the left front impact sensor (see page 23-17), and at connectors C821 (see page 22-39) and C304 (see page 22-31).

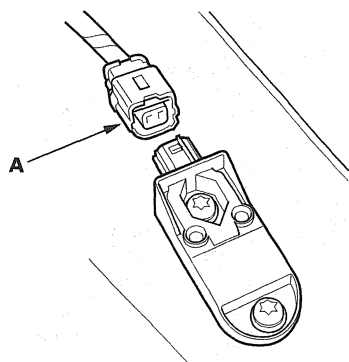
Are the connections OK?

YES—Go to step 4.

NO—Repair the poor connections and retest. If DTC 41-1x is still present, go to step 4.

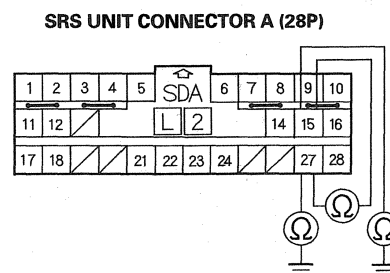
4. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.
5. Disconnect the driver's airbag 4P connector from the cable reel (see step 2 on page 23-27).
6. Disconnect the front passenger's airbag 4P connector from dashboard wire harness A (see step 3 on page 23-27).
7. Disconnect both seat belt tensioner 2P connectors (A) (see step 7 on page 23-28).

8. Disconnect the left front impact sensor 2P connector (A).



9. Disconnect SRS unit connector A (28P) from the SRS unit (see step 8 on page 23-28).

10. Measure the resistance between the No. 15 and No. 27 terminals of SRS unit connector A (28P). Then measure the resistance between the No. 15 terminal and body ground and the No. 27 terminal and body ground. There should be an open circuit or at least 1 M Ω .



Wire side of female terminals

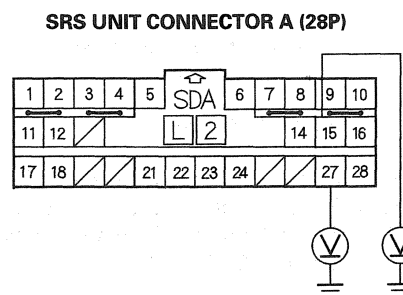
Is the resistance as specified?

YES—Go to step 11.

NO—Go to step 17.

11. Reconnect the negative cable to the battery.
12. Turn the ignition switch ON (II).

13. Measure the for voltage between the No. 27 terminal of SRS unit connector A (28P) and body ground, and the No. 15 terminal and body ground. There should be less than 1 V.



Wire side of female terminals

Is the voltage as specified?

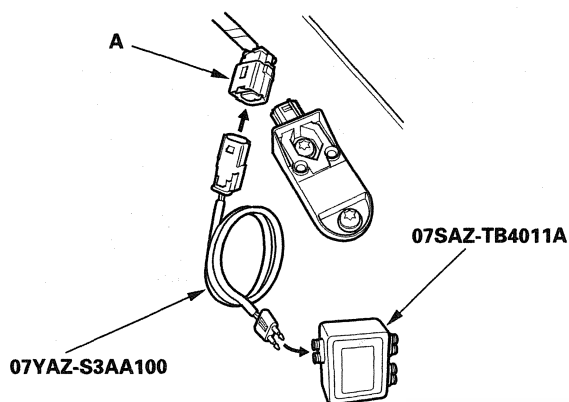
YES—Go to step 14.

NO—Go to step 19.

(cont'd)

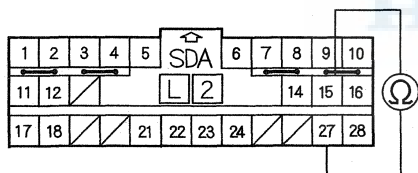
DTC Troubleshooting (cont'd)

14. Turn the ignition switch OFF.
15. Connect the SRS inflator simulator (jumper connector) and simulator lead H to the left engine compartment wire harness 2P connector (A).



16. Measure the resistance between the No. 15 and No. 27 terminals of SRS unit connector A (28P). There should be less than 1 Ω .

SRS UNIT CONNECTOR A (28P)



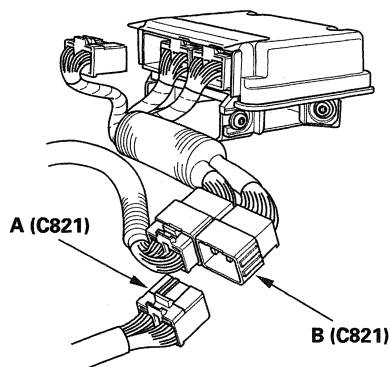
Wire side of female terminals

Is the resistance as specified?

YES—Faulty left front impact sensor or SRS unit. Replace the left front impact sensor (see page 23-220); if the problem is still present, replace the SRS unit (see page 23-215). ■

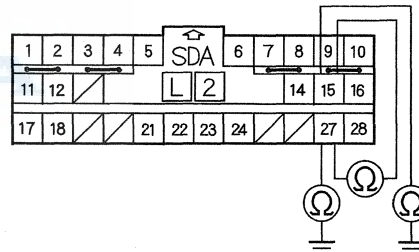
NO—Go to step 23.

17. Disconnect SRS subharness 28P connector C821 (B) from dashboard wire harness A connector C821.



18. Measure the resistance between the No. 15 and No. 27 terminals of SRS unit connector A (28P). Then measure the resistance between the No. 15 terminal and body ground and the No. 27 terminal and body ground. There should be an open circuit or at least 1 M Ω .

SRS UNIT CONNECTOR A (28P)



Wire side of female terminals

Is the resistance as specified?

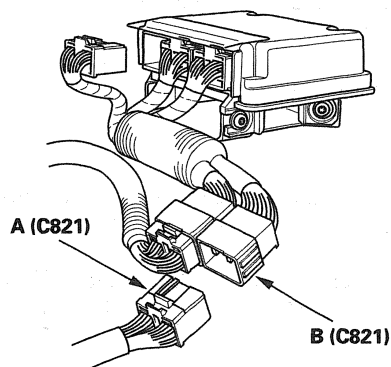
YES—Short in or to ground the left engine compartment wire harness or dashboard wire harness A; replace the faulty harness. ■

NO—Short in or to ground the SRS subharness; replace the SRS subharness. ■



19. Turn the ignition switch OFF.

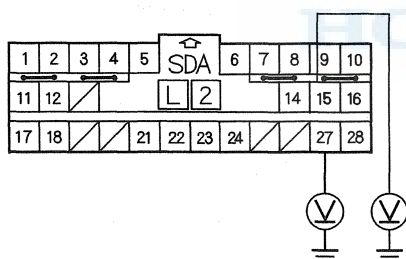
20. Disconnect SRS subharness 28P connector C821 (B) from SRS dashboard wire harness A connector C821.



21. Turn the ignition switch ON (II).

22. Measure the voltage between the No. 15 and No. 27 terminal of SRS unit connector A (28P) and body ground. There should be less than 1 V.

SRS UNIT CONNECTOR A (28P)



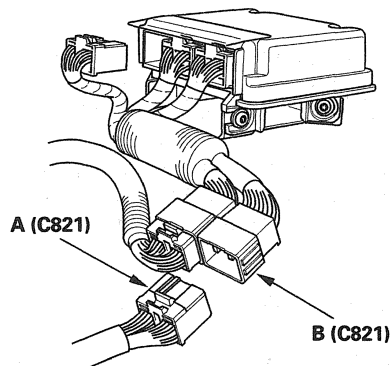
Wire side of female terminals

Is the voltage as specified?

YES—Short to power in the left engine compartment wire harness or dashboard wire harness A; replace the faulty harness. ■

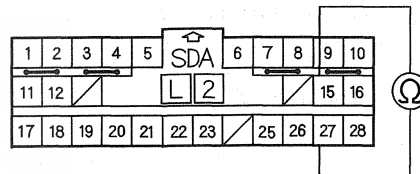
NO—Short to power in the SRS subharness; replace the SRS subharness. ■

23. Disconnect SRS subharness 28P connector C821 (B) from dashboard wire harness A connector C821.



24. Measure the resistance between the No. 15 and No. 27 terminals of the dashboard wire harness A 28P connector. There should be less than 1 Ω .

DASHBOARD WIRE HARNESS A 28P CONNECTOR C821



Wire side of female terminals

Is the resistance as specified?

YES—Faulty SRS subharness; replace the SRS subharness. ■

NO—Faulty left engine compartment wire harness or dashboard wire harness A; replace the faulty harness. ■

DTC Troubleshooting (cont'd)

DTC 42-1x ("x" can be 0 thru 9 or A thru F): No Signal from the Right Front Impact Sensor

Special Tools Required

- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead H 07YAZ-S3AA100

NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 23-19) and General Troubleshooting Information (see page 23-28).

1. Clear the DTC memory (see page 23-29).
2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

Does the SRS indicator stay on, and is DTC 42-1x indicated?

YES—Go to step 3.

NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-31). If another DTC is indicated, troubleshoot the DTC.

3. Turn the ignition switch OFF. Check the connections between SRS unit connector A (28P) and the SRS unit, between the right engine compartment wire harness 2P connector and the right front impact sensor (see page 23-17), and at connectors C821 (see page 22-39) and C206 (see page 22-27).

Are the connections OK?

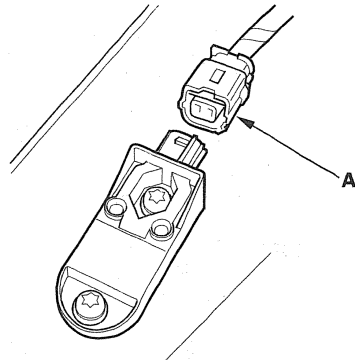
YES—Go to step 4.

NO—Repair the poor connections and retest. If DTC 42-1x is still present, go to step 4.

4. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.
5. Disconnect the driver's airbag 4P connector from the cable reel (see step 2 on page 23-27).
6. Disconnect the front passenger's airbag 4P connector from the SRS main harness (A) (see step 3 on page 23-27).
7. Disconnect both seat belt tensioner 2P connectors (A) (see step 7 on page 23-28).

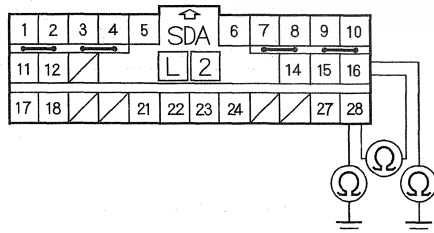


8. Disconnect the right front impact sensor 2P connector (A).



9. Disconnect SRS unit connector A (28P) from the SRS unit (see step 7 on page 23-28).
10. Measure the resistance between the No. 16 and No. 28 terminals of SRS unit connector A (28P). Then check resistance between the No. 16 terminal and body ground, and the No. 28 terminal and body ground. There should be an open circuit or at least 1 M Ω .

SRS UNIT CONNECTOR A (28P)



Wire side of female terminals

Is the resistance as specified?

YES—Go to step 11.

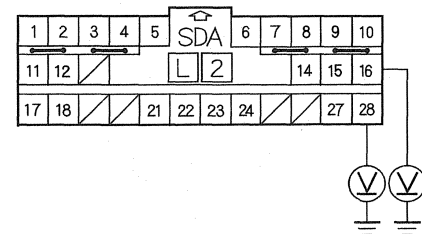
NO—Go to step 17.

11. Reconnect the negative cable to the battery.

12. Turn the ignition switch ON (II).

13. Measure the voltage between the No. 16 terminal of SRS unit connector A (28P) and body ground, and the No. 28 terminal and body ground. There should be less than 1 V.

SRS UNIT CONNECTOR A (28P)



Wire side of female terminals

Is the voltage as specified?

YES—Go to step 14.

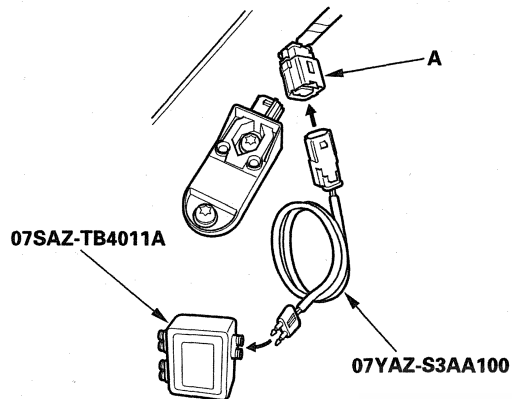
NO—Go to step 19.

(cont'd)

SRS

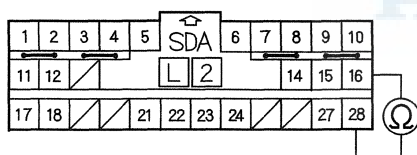
DTC Troubleshooting (cont'd)

14. Turn the ignition switch OFF.
15. Connect the SRS inflator simulator (jumper connector) and the simulator lead H to the right engine compartment wire harness 2P connector (A).



16. Measure the resistance between the No. 16 and No. 28 terminals of SRS unit connector A (28P). There should be less than 1 Ω .

SRS UNIT CONNECTOR A (28P)



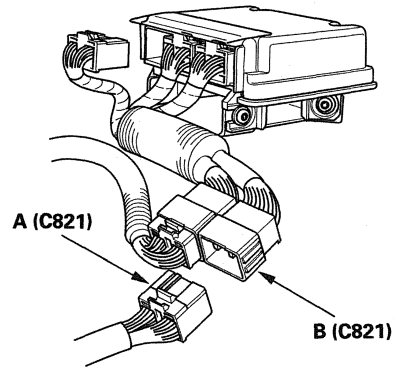
Wire side of female terminals

Is the resistance as specified?

YES—Faulty right front impact sensor. Replace the right front impact sensor (see page 23-220); if the problem is still present, replace the SRS unit (see page 23-215). ■

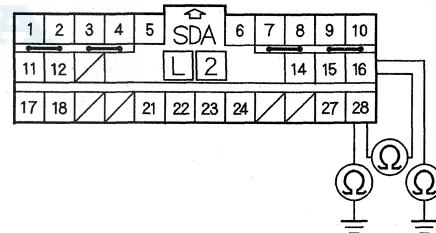
NO—Go to step 23.

17. Disconnect SRS subharness 28P connector C821 (B) from dashboard wire harness A connector C821.



18. Measure the resistance between the No. 16 and No. 28 terminals of SRS unit connector A (28P). Then measure the resistance between the No. 16 terminal and body ground and between the No. 28 terminal and body ground. There should be an open circuit or at least 1 M Ω .

SRS UNIT CONNECTOR A (28P)



Wire side of female terminals

Is the resistance as specified?

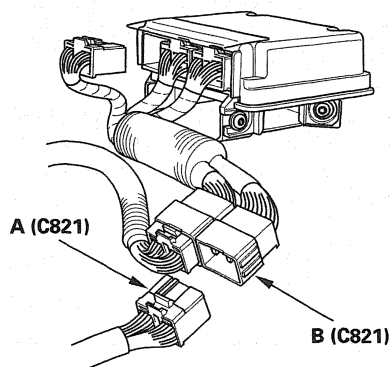
YES—Short in or to ground the right engine compartment wire harness or dashboard wire harness A; replace the faulty harness. ■

NO—Short in or to ground the SRS subharness; replace the SRS subharness. ■



19. Turn the ignition switch OFF.

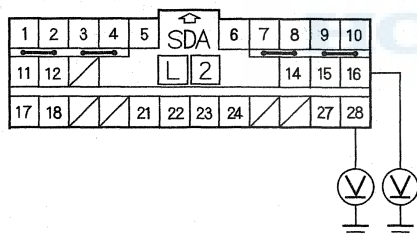
20. Disconnect SRS subharness 28P connector C821 (B) from dashboard wire harness A connector C821.



21. Turn the ignition switch ON (II).

22. Measure the voltage between the No. 16 and No. 28 terminal of SRS unit connector A (28P) and body ground. There should be less than 1 V.

SRS UNIT CONNECTOR A (28P)



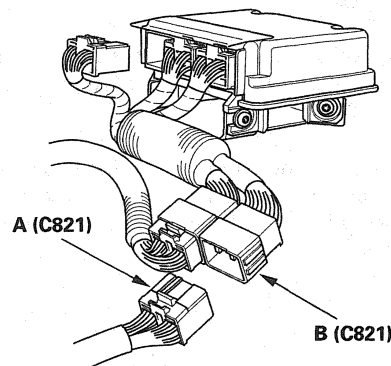
Wire side of female terminals

Is the voltage as specified?

YES—Short to power in the right engine compartment wire harness or dashboard wire harness A; replace the faulty harness. ■

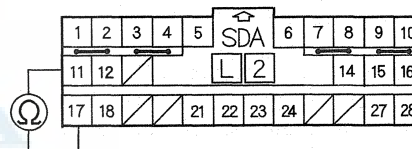
NO—Short to power in the SRS subharness; replace the SRS subharness. ■

23. Disconnect SRS subharness 28P connector C821 (B) from dashboard wire harness A connector C821.



24. Measure the resistance between the No. 11 and No. 17 terminals of the dashboard wire harness A 28P connector. There should be less than 1 Ω .

DASHBOARD WIRE HARNESS A (28P) CONNECTOR C821



Wire side of female terminals

Is the resistance as specified?

YES—Faulty SRS subharness; replace the SRS subharness. ■

NO—Faulty right engine compartment wire harness or dashboard wire harness A; replace the faulty harness. ■

DTC Troubleshooting (cont'd)

DTC 41-2x, 41-3x, 41-Bx ("x" can be 0 thru 9 or A thru F): Internal Failure of the Left Front Impact Sensor

DTC 42-2x, 42-3x, 42-Bx ("x" can be 0 thru 9 or A thru F): Internal Failure of the Right Front Impact Sensor

NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 23-19) and General Troubleshooting Information (see page 23-28).

1. Clear the DTC memory (see page 23-29).
2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

Does the SRS indicator stay on, and is DTC 41-2x, 41-3x, 41-Bx, 42-2x, 42-3x, or 42-Bx indicated?

YES—Replace the left or right front impact sensor (see page 23-220). If the DTC returns, replace the SRS unit (see page 23-215). ■

NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-31). If another DTC is indicated, troubleshoot the DTC.

DTC 43-2x, 43-3x, 43-Bx ("x" can be 0 thru 9 or A thru F): Internal Failure of the Left Side Impact Sensor (first)

DTC 44-2x, 44-3x, 44-Bx ("x" can be 0 thru 9 or A thru F): Internal Failure of the Right Side Impact Sensor (first)

NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 23-19) and General Troubleshooting Information (see page 23-28).

1. Clear the DTC memory (see page 23-29).
2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

Does the SRS indicator stay on, and is DTC 43-2x, 43-3x, 43-Bx, 44-2x, 44-3x, or 44-Bx indicated?

YES—Replace the left or right side impact sensor (first) (see page 23-216). If the DTC returns, replace the SRS unit (see page 23-215). ■

NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-31). If another DTC is indicated, troubleshoot the DTC.



**DTC 43-1x ("x" can be 0 thru 9 or A thru F):
No Signal from the Left Side Impact Sensor
(first)**

Special Tools Required

- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead H 07YAZ-S3AA100

NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 23-19) and General Troubleshooting Information (see page 23-28).

1. Clear the DTC memory (see page 23-29).
2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

Does the SRS indicator stay on, and is DTC 43-1x indicated?

YES—Go to step 3.

NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-31). If another DTC is indicated, troubleshoot the DTC.

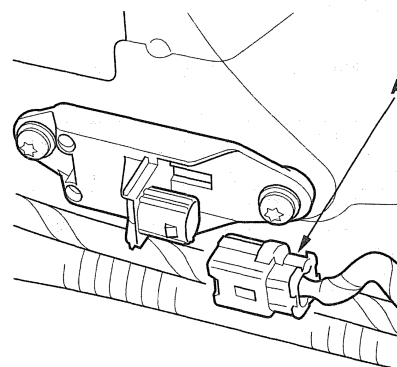
3. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.
4. Check the connection between the SRS harness 2P connector and the left side impact sensor (first).

Is the connection OK?

YES—Go to step 5.

NO—Poor connection between the SRS harness 2P connector and the left side impact sensor (first); replace the left side impact sensor (first) and/or the SRS harness, as needed. ■

5. Disconnect both seat belt tensioner 2P connectors (see step 7 on page 23-28).
6. Disconnect the left side impact sensor (first) 2P connector (A).



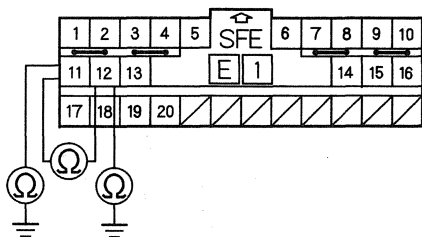
7. Disconnect SRS unit connector C (28P) from the SRS unit (see step 8 on page 23-28).

(cont'd)

DTC Troubleshooting (cont'd)

8. Measure the resistance between the No. 11 and No. 12 terminals of SRS unit connector C (28P). Then measure the resistance between the No. 11 terminal and body ground and the No. 12 terminal and body ground. There should be an open circuit or at least 1 M Ω .

SRS UNIT CONNECTOR C (28P)



Wire side of female terminals

Is the resistance as specified?

YES—Go to step 9.

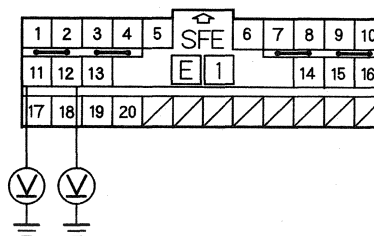
NO—Go to step 15.

9. Reconnect the negative cable to the battery.

10. Turn the ignition switch ON (II).

11. Measure the voltage between the No. 11 terminal of SRS unit connector C (28P) and body ground, and the No. 12 terminal and body ground. There should be less than 1 V.

SRS UNIT CONNECTOR C (28P)



Wire side of female terminals

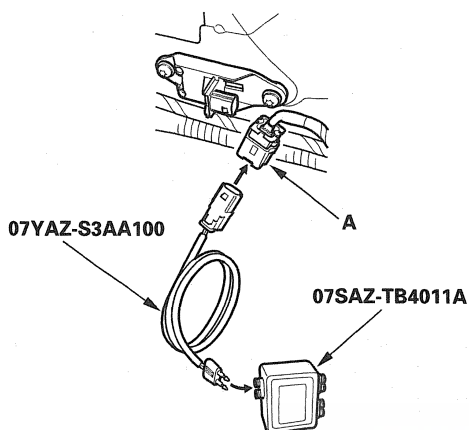
Is the voltage as specified?

YES—Go to step 12.

NO—Go to step 17.

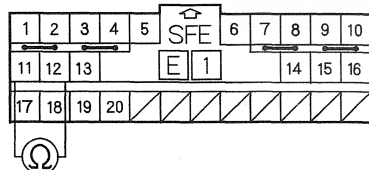


12. Turn the ignition switch OFF.
13. Connect the SRS inflator simulator (jumper connector) and simulator lead H to the SRS harness 2P connector (A).



14. Check resistance between the No. 11 and No. 12 terminals of SRS unit connector C (28P). There should be less than 1 Ω .

SRS UNIT CONNECTOR C (28P)



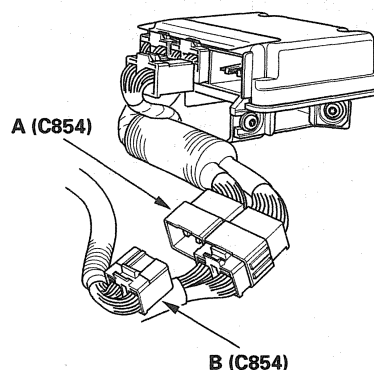
Wire side of female terminals

Is the resistance as specified?

YES—Faulty left side impact sensor (first) or SRS unit. Replace the left side impact sensor (first) (see page 23-216); if the problem is still present, replace the SRS unit (see page 23-215). ■

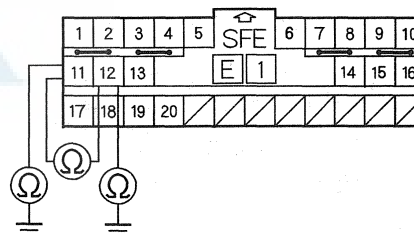
NO—Go to step 21.

15. Disconnect SRS subharness 28P connector C854 (A) from SRS harness connector C854 (B).



16. Measure the resistance between the No. 11 and No. 12 terminals of SRS unit connector C (28P). Then measure the resistance between the No. 11 terminal and body ground and the No. 12 terminal and body ground. There should be an open circuit or at least 1 M Ω .

SRS UNIT CONNECTOR C (28P)



Wire side of female terminals

Is the resistance as specified?

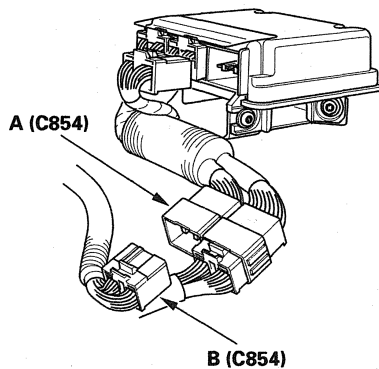
YES—Short in or to ground the SRS subharness; replace the SRS subharness. ■

NO—Short in or to ground the SRS harness; replace the SRS harness. ■

(cont'd)

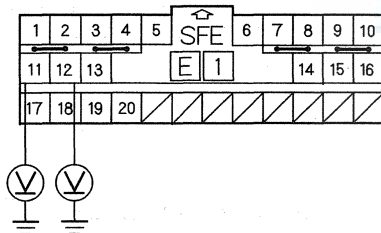
DTC Troubleshooting (cont'd)

17. Turn the ignition switch OFF.
18. Disconnect SRS subharness 28P connector C854 (A) from SRS harness connector C854 (B).



19. Turn the ignition switch ON (II).
20. Measure the voltage between No. 11 terminal of SRS unit connector C (28P) and body ground, and between No. 12 terminal and body ground. There should be less than 1 V.

SRS UNIT CONNECTOR C (28P)



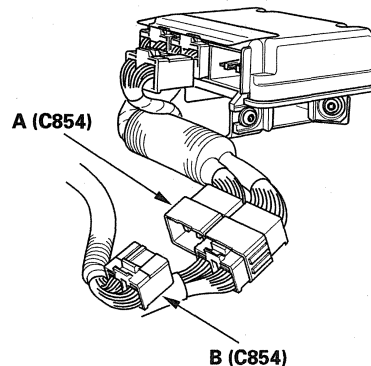
Wire side of female terminals

Is the voltage as specified?

YES—Short to power in the SRS harness; replace the SRS harness. ■

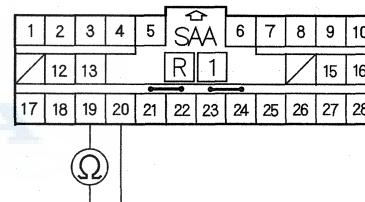
NO—Short to power in the SRS subharness; replace the SRS subharness. ■

21. Disconnect SRS subharness 28P connector C854 (A) from SRS harness connector C854 (B).



22. Measure the resistance between the No. 19 and No. 20 terminals of SRS harness 28P connector C854. There should be less than 1 Ω .

SRS HARNESS 28P CONNECTOR C854



Wire side of female terminals

Is the resistance as specified?

YES—Faulty SRS subharness; replace the SRS subharness. ■

NO—Faulty SRS harness; replace the SRS subharness. ■



**DTC 44-1x ("x" can be 0 thru 9 or A thru F):
No Signal from the Right Side Impact Sensor
(first)**

Special Tools Required

- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead H 07YAZ-S3AA100

NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 23-19) and General Troubleshooting Information (see page 23-28).

1. Clear the DTC memory (see page 23-29).
2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

Does the SRS indicator stay on, and is DTC 44-1x indicated?

YES—Go to step 3.

NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-31). If another DTC is indicated, troubleshoot the DTC.

3. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.
4. Check the connection between the SRS harness 2P connector and the right side impact sensor (first).

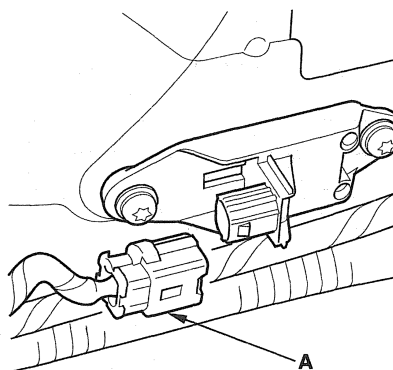
Is the connection OK?

YES—Go to step 5.

NO—Poor connection between the SRS harness 2P connector and the right side impact sensor (first); replace the right side impact sensor (first) and/or the SRS harness, as needed. ■

5. Disconnect both seat belt tensioner 2P connectors (see step 7 on page 23-28).

6. Disconnect the right side impact sensor (first) 2P connector (A).



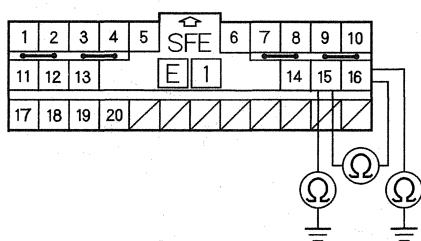
7. Disconnect SRS unit connector C (28P) from the SRS unit (see step 8 on page 23-28).

(cont'd)

DTC Troubleshooting (cont'd)

8. Measure the resistance between the No. 15 and No. 16 terminals of SRS unit connector C (28P). Then measure the resistance between the No. 15 terminal and body ground and the No. 16 terminal and body ground. There should be an open circuit or at least 1 M Ω .

SRS UNIT CONNECTOR C (28P)



Wire side of female terminals

Is the resistance as specified?

YES—Go to step 9.

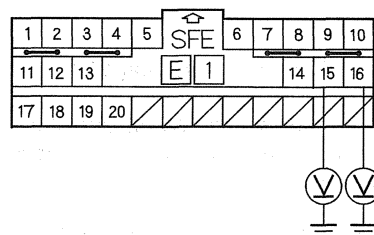
NO—Go to step 15.

9. Reconnect the negative cable to the battery.

10. Turn the ignition switch ON (II).

11. Measure the voltage between the No. 15 terminal of SRS unit connector C (28P) and body ground, and the No. 16 terminal and body ground. There should be less than 1 V.

SRS UNIT CONNECTOR C (28P)



Wire side of female terminals

Is the voltage as specified?

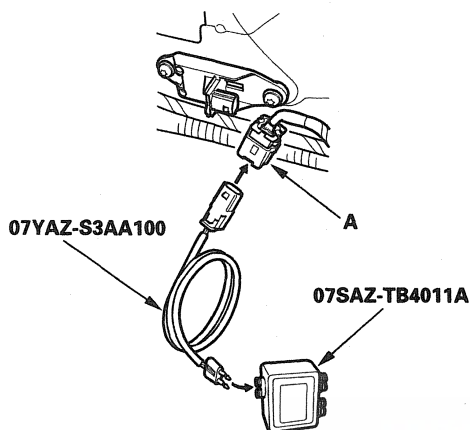
YES—Go to step 12.

NO—Go to step 17.



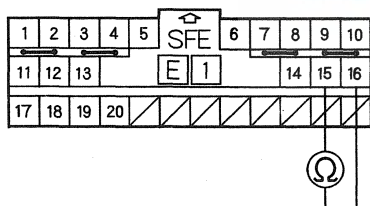
12. Turn the ignition switch OFF.

13. Connect the SRS inflator simulator (jumper connector) and simulator lead H to the SRS right side subharness 2P connector (A).



14. Measure the resistance between the No. 15 and No. 16 terminals of SRS unit connector B (28P). There should be less than 1 Ω .

SRS UNIT CONNECTOR C (28P)



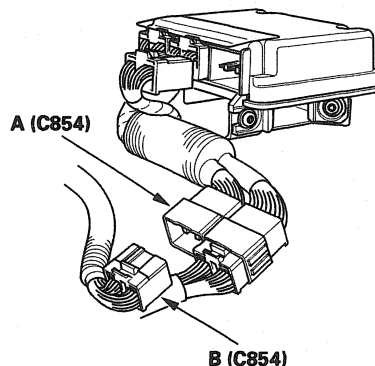
Wire side of female terminals

Is the resistance as specified?

YES—Faulty right side impact sensor (first). Replace the right side impact sensor (first) (see page 23-216); if the problem is still present, replace the SRS unit (see page 23-215). ■

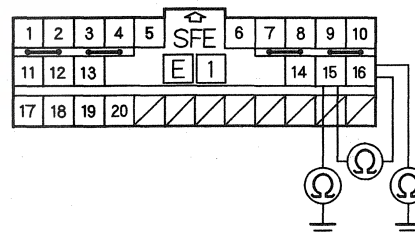
NO—Go to step 21.

15. Disconnect SRS subharness 28P connector C854 (A) from SRS harness connector C854 (B).



16. Measure the resistance between the No. 15 and No. 16 terminals of SRS unit connector C (28P). Then measure the resistance between the No. 15 terminal and body ground and between the No. 16 terminal and body ground. There should be an open circuit or at least 1 M Ω .

SRS UNIT CONNECTOR C (28P)



Wire side of female terminals

Is the resistance as specified?

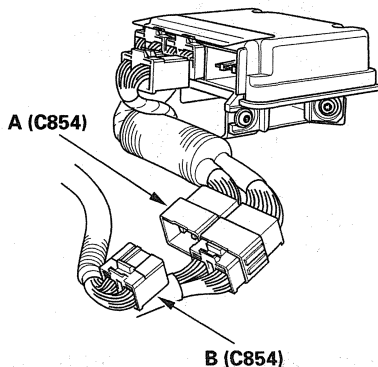
YES—Short in or to ground the SRS harness; replace the SRS harness. ■

NO—Short in or to ground the SRS subharness; replace the SRS subharness. ■

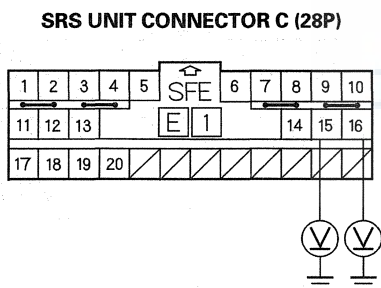
(cont'd)

DTC Troubleshooting (cont'd)

17. Turn the ignition switch OFF.
18. Disconnect SRS subharness 28P connector C854 (A) from SRS harness connector C854 (B).



19. Turn the ignition switch ON (II).
20. Measure the voltage between the No. 15 and No. 16 terminal of SRS unit connector C (28P) and body ground. There should be less than 1 V.



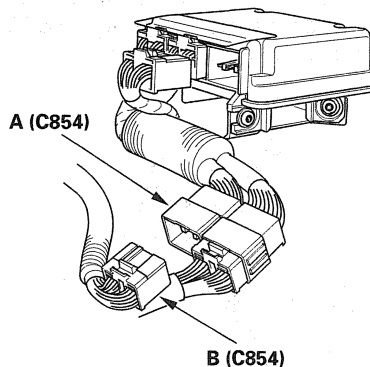
Wire side of female terminals

Is the voltage as specified?

YES—Short to power in the SRS harness; replace the SRS harness. ■

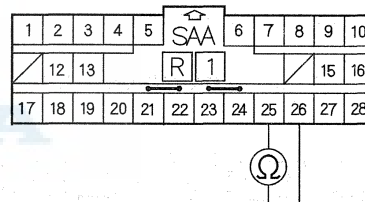
NO—Short to power in the SRS subharness; replace the SRS subharness. ■

21. Disconnect SRS subharness 28P connector C854 (A) from SRS harness connector C854 (B).



22. Measure the resistance between the No. 25 and No. 26 terminals of SRS harness 28P connector C854. There should be less than 1 Ω .

SRS HARNESS 28P CONNECTOR C854



Wire side of female terminals

Is the resistance as specified?

YES—Faulty SRS subharness; replace the SRS subharness. ■

NO—Faulty SRS harness; replace the SRS harness. ■



**DTC 45-1x ("x" can be 0 thru 9 or A thru F):
No Signal from the Left Side Impact Sensor
(second)**

Special Tools Required

- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead H 07YAZ-S3AA100

NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 23-19) and General Troubleshooting Information (see page 23-28).

1. Clear the DTC memory (see page 23-29).
2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

Does the SRS indicator stay on, and is DTC 45-1x indicated?

YES—Go to step 3.

NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-31). If another DTC is indicated, troubleshooting the DTC.

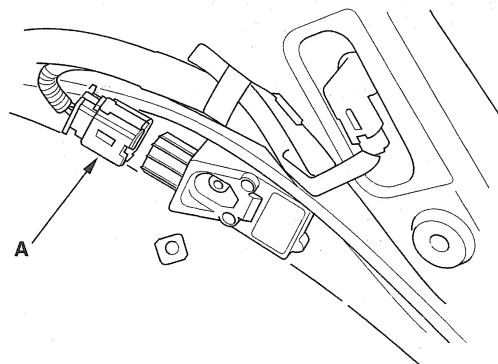
3. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.
4. Check the connection between the left side wire harness 2P connector and the left side impact sensor (second).

Is the connection OK?

YES—Go to step 5.

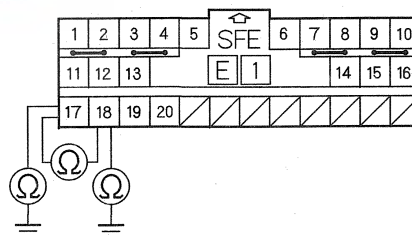
NO—Repair the poor connection and retest. If the DTC 45-1x is still present, go to step 5.

5. Disconnect the left side wire harness 2P connector (A) from the left side impact sensor (second).



6. Disconnect SRS unit connector C (28P) from the SRS unit (see step 8 on page 23-28).
7. Measure the resistance between the No. 17 and No. 18 terminals of SRS unit connector C (28P). Then measure the resistance between the No. 17 terminal and body ground and the No. 18 terminal and body ground. There should be an open circuit or at least 1 M Ω .

SRS UNIT CONNECTOR C (28P)



Wire side of female terminals

Is the resistance as specified?

YES—Go to step 8.

NO—Short in or to ground the SRS subharness, SRS harness, right side wire harness, and/or left side wire harness; replace the faulty harness. ■

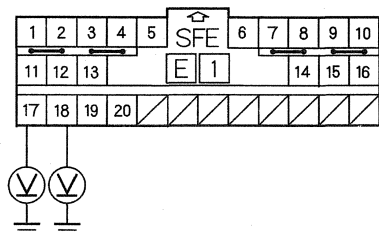
8. Reconnect the negative cable to the battery.
9. Turn the ignition switch ON (II).

(cont'd)

DTC Troubleshooting (cont'd)

10. Measure the for voltage between the No. 17 terminal of SRS unit connector C (28P) and body ground, and between the No. 18 terminal and body ground. There should be less than 1 V.

SRS UNIT CONNECTOR C (28P)



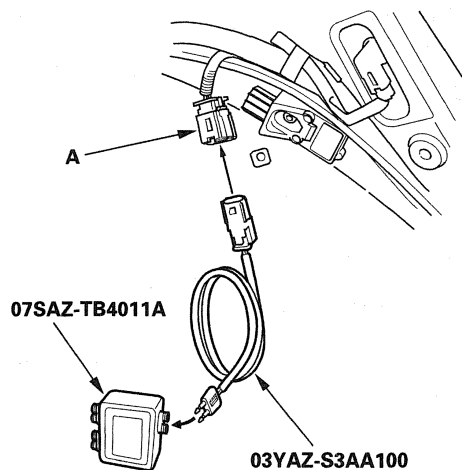
Wire side of female terminals

Is the voltage as specified?

YES—Go to step 11.

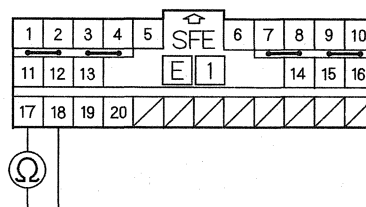
NO—Short to power in the SRS subharness, SRS harness, right side wire harness and/or the left side wire harness; replace the faulty harness. ■

11. Turn the ignition switch OFF.
12. Connect the SRS inflator simulator (jumper connector) and simulator lead H to the left side wire harness 2P connector (A).



13. Measure the resistance between the No. 17 and No. 18 terminals of SRS unit connector C (28P). There should be less than 1.0 Ω .

SRS UNIT CONNECTOR C (28P)



Wire side of female terminals

Is the resistance as specified?

YES—Faulty left side impact sensor (second) or SRS unit; replace the left side impact sensor (second) (see page 23-217). If the problem is still present, replace the SRS unit (see page 23-215). ■

NO—Open in the SRS subharness, SRS harness, right side wire harness and/or the left side wire harness; replace the faulty harness. ■



**DTC 46-1x ("x" can be 0 thru 9 or A thru F):
No Signal from the Right Side Impact Sensor
(second)**

Special Tools Required

- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead H 07YAZ-S3AA100

NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 23-19) and General Troubleshooting Information (see page 23-28).

1. Clear the DTC memory (see page 23-29).
2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

Does the SRS indicator stay on, and is DTC 46-1x indicated?

YES—Go to step 3.

NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-31). If another DTC is indicated, troubleshoot the DTC.

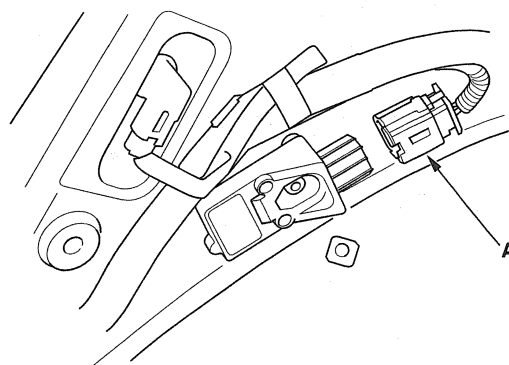
3. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.
4. Check the connection between the right side wire harness 2P connector and the right side impact sensor (second).

Is the connection OK?

YES—Go to step 5.

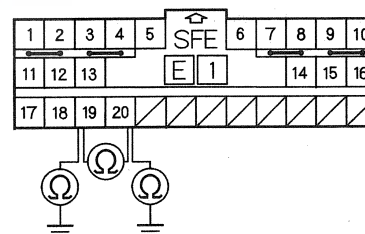
NO—Repair the poor connection and retest. If the DTC 46-1x is still present, go to step 5.

5. Disconnect the right side wire harness 2P connector (A) from the right side impact sensor (second).



6. Disconnect SRS unit connector C (28P) from the SRS unit (see step 8 on page 23-28).
7. Measure the resistance between the No. 19 and No. 20 terminals of SRS unit connector C. Then measure the resistance between the No. 19 terminal and body ground and the No. 20 terminal and body ground. There should be an open circuit or at least 1 M Ω .

SRS UNIT CONNECTOR C (28P)



Wire side of female terminals

Is the resistance as specified?

YES—Go to step 8.

NO—Short in or to ground the SRS subharness, SRS harness, left side wire harness and/or right side wire harness; replace the faulty harness. ■

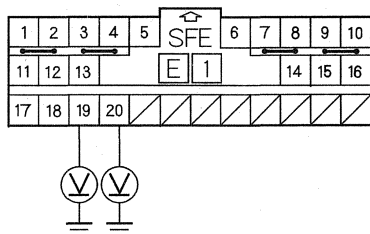
8. Reconnect the negative cable to the battery.
9. Turn the ignition switch ON (II).

(cont'd)

DTC Troubleshooting (cont'd)

10. Measure the voltage between the No. 19 terminal of SRS unit connector C (28P) and body ground, and between the No. 20 terminal and body ground. There should be less than 1 V.

SRS UNIT CONNECTOR C (28P)



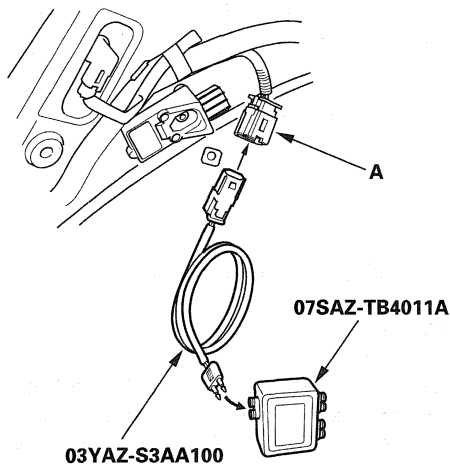
Wire side of female terminals

Is the voltage as specified?

YES—Go to step 11.

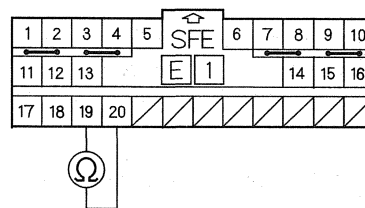
NO—Short to power in the SRS subharness, SRS harness, left side wire harness and/or right side wire harness; replace the faulty harness. ■

11. Turn the ignition switch OFF.
12. Connect the SRS inflator simulator (jumper connector) and simulator lead H to the right side wire harness 2P connector (A).



13. Measure the resistance between the No. 19 and No. 20 terminals of SRS unit connector C (28P). There should be less than 1.0 Ω .

SRS UNIT CONNECTOR C (28P)



Wire side of female terminals

Is the resistance as specified?

YES—Faulty right side impact sensor (second) or SRS unit; replace the right side impact sensor (second) (see page 23-217). If the problem is still present, replace the SRS unit (see page 23-215). ■

NO—Open in the SRS subharness, SRS harness, left side wire harness and/or right side wire harness; replace the faulty harness. ■



DTC 45-2x, 45-3x, 45-Bx ("x" can be 0 thru 9 or A thru F): Internal Failure of the Left Side Impact Sensor (second)

DTC 46-2x, 46-3x, 46-Bx ("x" can be 0 thru 9 or A thru F): Internal Failure of the Right Side Impact Sensor (second)

NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 23-19) and General Troubleshooting Information (see page 23-28).

1. Clear the DTC memory (see page 23-29).
2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

Does the SRS indicator stay on, and is DTC 45-2x, 45-3x, 45-Bx, 46-2x, 46-3x, or 46-Bx indicated?

YES—Replace the left or right side impact sensor (second) (see page 23-217). If the DTC returns, replace the SRS unit (see page 23-215). ■

NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-31). If another DTC is indicated, troubleshoot the DTC.

DTC 51-xx, 52-xx, 53-xx, 54-xx, 55-xx, 56-xx ("x" can be 0 thru 9 or A thru F): Internal Failure of the SRS Unit

NOTE:

- Before troubleshooting any of these DTCs, check the battery/system voltage. If the voltage is low, repair the charging system or replace the battery before troubleshooting the SRS. If the battery/system voltage is now OK, ask the customer if the battery ever went dead or if the engine was started and run with the battery in a low state of charge. A dead battery may trigger one of these DTCs.
- Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 23-19) and General Troubleshooting Information (see page 23-28).

1. Clear the DTC memory (see page 23-29).

2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

Does the SRS indicator stay on, and is DTC 51-xx, 52-xx, 53-xx, 54-xx, 55-xx, or 56-xx indicated?

YES—Replace the SRS unit (see page 23-215). ■

NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-31). If another DTC is indicated, troubleshoot the DTC.

DTC Troubleshooting (cont'd)

DTC 61-1x ("x" can be 0 thru 9 or A thru F): Open in Driver's Seat Belt Buckle Switch

NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 23-19) and General Troubleshooting Information (see page 23-28).

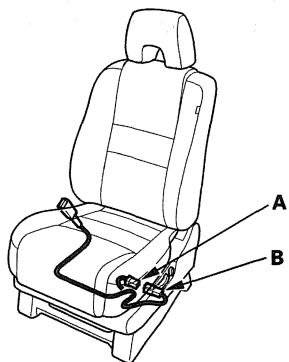
1. Clear the DTC memory (see page 23-29).
2. Turn the ignition switch ON (II), then buckle and unbuckle the driver's seat belt several times.
3. Check for a DTC.

Is DTC 61-1x indicated?

YES—Go to step 4.

NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-31). If another DTC is indicated, troubleshoot the DTC.

4. Turn the ignition switch OFF.
5. Disconnect the driver's seat wire harness 3P connector (A) (with power seat) or the SRS harness 3P connector (A) (without power seat) from the driver's seat belt buckle switch 3P connector (B).

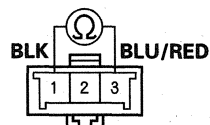


6. Buckle the driver's seat belt.

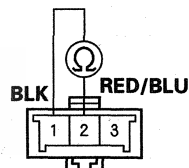
Measure the resistance between the No. 1 and No. 3 terminals of the driver's seat belt buckle switch 3P connector. There should be less than 1.0 Ω .

Measure the resistance between the No. 1 and No. 2 terminals of the same connector. There should be an open circuit or at least 1 M Ω .

DRIVER'S SEAT BELT BUCKLE SWITCH 3P CONNECTOR



Terminal side of male terminals



Terminal side of male terminals

Are the resistances as specified?

YES—Go to step 7.

NO—Replace the driver's seat belt buckle assembly (see page 23-6), then clear the DTC. ■

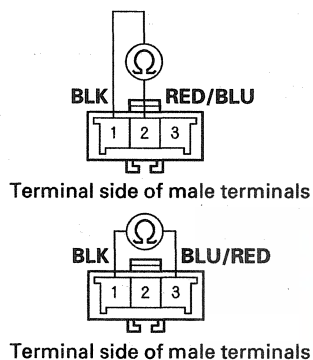


7. Unbuckle the driver's seat belt.

Measure the resistance between the No. 1 and No. 2 terminals of the driver's seat belt buckle switch 3P connector. There should be less than 1.0 Ω .

Measure the resistance between the No. 1 and No. 3 terminals of the same connector. There should be an open circuit or at least 1 M Ω .

DRIVER'S SEAT BELT BUCKLE SWITCH 3P CONNECTOR



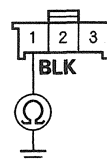
Are the resistances as specified?

YES—Go to step 8.

NO—Replace the driver's seat belt buckle assembly (see page 23-6), then clear the DTC. ■

8. Measure the resistance between the No. 1 terminal of the driver's seat wire harness 3P connector or SRS harness 3P connector and body ground. There should be less than 1.0 Ω .

DRIVER'S SEAT WIRE HARNESS 3P CONNECTOR or SRS HARNESS 3P CONNECTOR



Wire side of female terminals

Is the resistance as specified?

YES—Go to step 9.

NO—Open in the driver's seat wire harness or SRS harness, or poor ground connection at G801 (see page 22-51). If G801 is OK, replace the faulty harness. ■

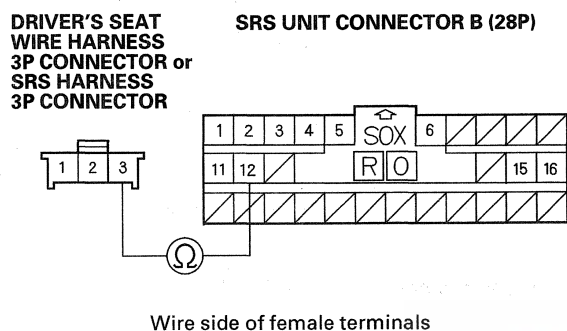
9. Disconnect the negative cable from the battery.

10. Disconnect both seat belt tensioner 2P connectors (see step 7 on page 23-28).

(cont'd)

DTC Troubleshooting (cont'd)

11. Disconnect SRS unit connector B (28P) from the SRS unit (see step 8 on page 23-28).
12. Measure the resistance between the No. 12 terminal of SRS unit connector B (28P) and the No. 3 terminal of the driver's seat wire harness 3P connector or SRS harness 3P connector. There should be less than 1.0 Ω .

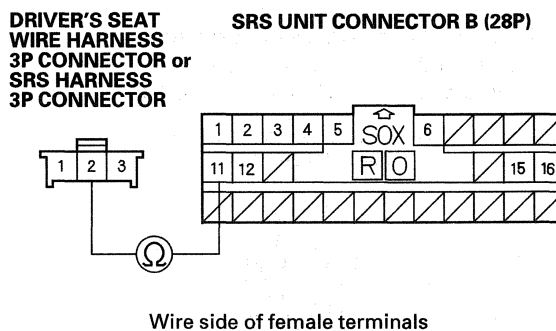


Is the resistance as specified?

YES—Go to step 13.

NO—Open in the driver's seat wire harness, SRS harness, or SRS subharness; replace the faulty harness. ■

13. Measure the resistance between the No. 11 terminal of SRS unit connector B (28P) and the No. 2 terminal of the driver's seat wire harness 3P connector or SRS harness 3P connector. There should be less than 1.0 Ω .



Is the resistance as specified?

YES—Replace the SRS unit (see page 23-215). ■

NO—Open in the driver's seat wire harness, SRS harness, dashboard wire harness A, and/or SRS subharness; replace the faulty harness. ■



DTC 61-2x ("x" can be 0 thru 9 or A thru F): Short in Driver's Seat Belt Buckle Switch

NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 23-19) and General Troubleshooting Information (see page 23-28).

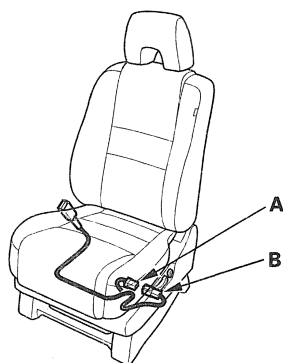
1. Clear the DTC memory (see page 23-29).
2. Turn the ignition switch ON (II), then buckle and unbuckle the driver's seat belt several times.
3. Check for a DTC.

Is DTC 61-2x indicated?

YES—Go to step 4.

NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-31). If another DTC is indicated, troubleshoot the DTC.

4. Turn the ignition switch OFF.
5. Disconnect the driver's seat wire harness 3P connector (A) (with power seat) or the SRS harness 3P connector (A) (without power seat) from the driver's seat belt buckle switch 3P connector (B).

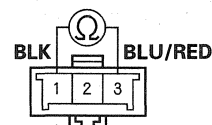


6. Buckle the driver's seat belt.

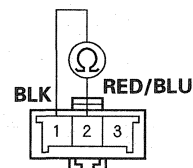
Measure the resistance between the No. 1 and No. 3 terminals of the driver's seat belt buckle switch 3P connector. There should be less than 1.0 Ω .

Measure the resistance between the No. 1 and No. 2 terminals of the same connector. There should be an open circuit or at least 1 M Ω .

DRIVER'S SEAT BELT BUCKLE SWITCH 3P CONNECTOR



Terminal side of male terminals



Terminal side of male terminals

Are the resistances as specified?

YES—Go to step 7.

NO—Replace the driver's seat belt buckle assembly (see page 23-6), then clear the DTC. ■

(cont'd)

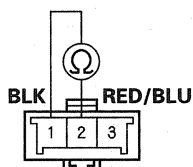
DTC Troubleshooting (cont'd)

7. Unbuckle the driver's seat belt.

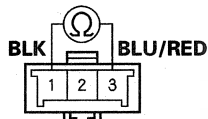
Measure the resistance between the No. 1 and No. 2 terminals of the driver's seat belt buckle switch 3P connector. There should be less than 1.0 Ω .

Measure the resistance between the No. 1 and No. 3 terminals of the same connector. There should be an open circuit or at least 1 M Ω .

DRIVER'S SEAT BELT BUCKLE SWITCH 3P CONNECTOR



Terminal side of male terminals



Terminal side of male terminals

Are the resistances as specified?

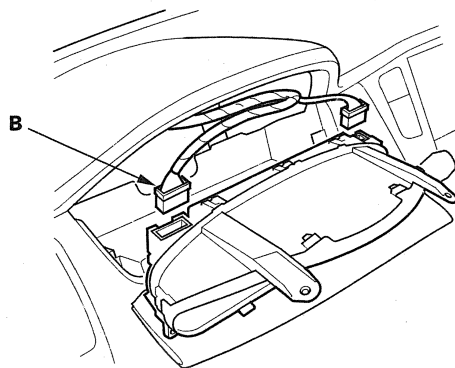
YES—Go to step 8.

NO—Replace the driver's seat belt buckle assembly (see page 23-6), then clear the DTC. ■

8. Disconnect the negative cable from the battery.
9. Disconnect both seat belt tensioner 2P connectors (see step 7 on page 23-28).

10. Disconnect SRS unit connector B (28P) from the SRS unit (see step 5 on page 23-31).

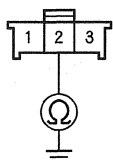
11. Remove the gauge control module (see page 22-102). Disconnect gauge control module connector B from the gauge control module.





12. Measure the resistance between the No. 2 terminal of the driver's seat wire harness 3P connector or SRS harness 3P connector and body ground. There should be an open circuit or at least 1 M Ω .

**DRIVER'S SEAT WIRE HARNESS 3P CONNECTOR or
SRS HARNESS 3P CONNECTOR**



Wire side of female terminals

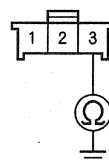
Is the resistance as specified?

YES—Go to step 13.

NO—Short to ground in the driver's seat wire harness, SRS harness, dashboard wire harness A and/or SRS subharness; replace the faulty harness. ■

13. Measure the resistance between the No. 3 terminal of the driver's seat wire harness 3P connector or SRS harness 3P connector and body ground. There should be an open circuit or at least 1 M Ω .

**DRIVER'S SEAT WIRE HARNESS 3P CONNECTOR or
SRS HARNESS 3P CONNECTOR**



Wire side of female terminals

Is the resistance as specified?

YES—Replace the SRS unit (see page 23-215). ■

NO—Short to ground in the driver's seat wire harness, SRS harness, SRS subharness, or dashboard wire harness A; replace the faulty harness. ■

DTC Troubleshooting (cont'd)

DTC 62-1x ("x" can be 0 thru 9 or A thru F): Open in Front Passenger's Seat Belt Buckle Switch

NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 23-19) and General Troubleshooting Information (see page 23-28).

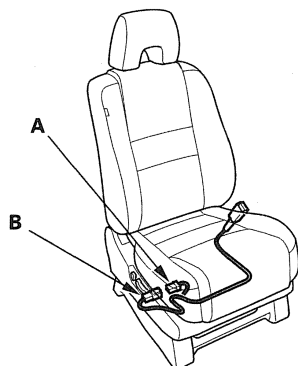
1. Clear the DTC memory (see page 23-29).
2. Turn the ignition switch ON (II), then buckle and unbuckle the front passenger's seat belt several times.
3. Check for a DTC.

Is DTC 62-1x indicated?

YES—Go to step 4.

NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-31). If another DTC is indicated, troubleshoot the DTC.

4. Turn the ignition switch OFF.
5. Disconnect the front passenger's seat wire harness 3P connector (A) (with heated seat) or the SRS harness 3P connector (A) (without heated seat) from the front passenger's seat belt buckle switch 3P connector (B).

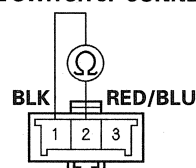


6. Buckle the front passenger's seat belt.

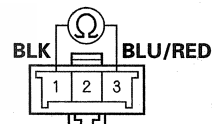
Measure the resistance between the No. 1 and No. 2 terminals of the front passenger's seat belt buckle switch 3P connector. There should be less than 1.0 Ω .

Measure the resistance between the No. 1 and No. 3 terminals of the same connector. There should be an open circuit or at least 1 M Ω .

FRONT PASSENGER'S SEAT BELT BUCKLE SWITCH 3P CONNECTOR



Terminal side of male terminals



Terminal side of male terminals

Are the resistances as specified?

YES—Go to step 7.

NO—Replace the front passenger's seat belt buckle assembly (see page 23-6), then clear the DTC. ■

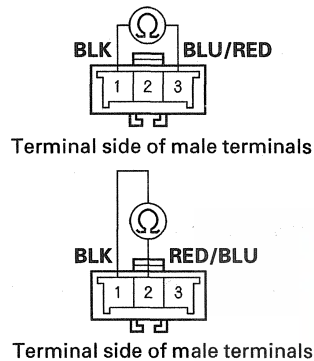


7. Unbuckle the front passenger's seat belt.

Measure the resistance between the No. 1 and No. 3 terminals of the front passenger's seat belt buckle switch 3P connector. There should be less than $1.0\ \Omega$.

Measure the resistance between the No. 1 and No. 2 terminals of the same connector. There should be an open circuit or at least $1\ \text{M}\Omega$.

FRONT PASSENGER'S SEAT BELT BUCKLE SWITCH 3P CONNECTOR



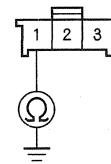
Are the resistances as specified?

YES—Go to step 8.

NO—Replace the front passenger's seat belt buckle assembly (see page 23-6), then clear the DTC. ■

8. Measure the resistance between the No. 1 terminal of the front passenger's seat wire harness 3P connector or SRS harness 3P connector and body ground. There should be less than $1.0\ \Omega$.

FRONT PASSENGER'S SEAT WIRE HARNESS 3P CONNECTOR or SRS HARNESS 3P CONNECTOR



Wire side of female terminals

Is the resistance as specified?

YES—Go to step 9.

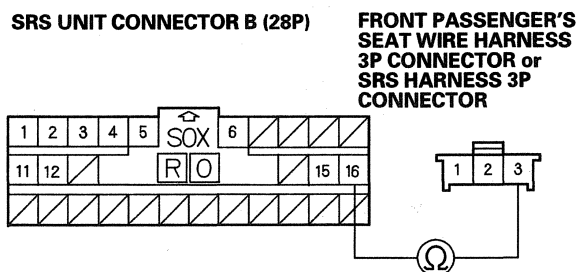
NO—Open in the front passenger's seat wire harness or SRS harness, or poor ground connection at G801 (see page 22-51). If G801 is OK, replace the faulty harness. ■

9. Disconnect the negative cable from the battery.
10. Disconnect both seat belt tensioner 2P connectors (see step 7 on page 23-28).

(cont'd)

DTC Troubleshooting (cont'd)

11. Disconnect SRS unit connector B (28P) from the SRS unit (see step 8 on page 23-28).
12. Measure the resistance between the No. 16 terminal of SRS unit connector B (28P) and the No. 3 terminal of the front passenger's seat wire harness 3P connector or SRS harness 3P connector. There should be less than 1.0 Ω .



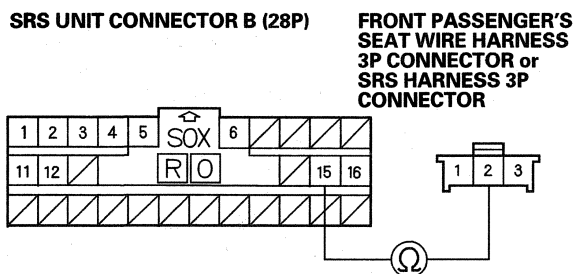
Wire side of female terminals

Is the resistance as specified?

YES—Go to step 13.

NO—Open in the front passenger's seat wire harness or SRS harness; replace the faulty harness. ■

13. Measure the resistance between the No. 15 terminal of SRS unit connector B (28P) and the No. 2 terminal of the front passenger's seat wire harness 3P connector or SRS harness 3P connector. There should be less than 1.0 Ω .



Wire side of female terminals

Is the resistance as specified?

YES—Replace the SRS unit (see page 23-215). ■

NO—Open in the front passenger's seat wire harness or SRS harness; replace the faulty harness. ■



DTC 62-2x ("x" can be 0 thru 9 or A thru F): Short in Front Passenger's Seat Belt Buckle Switch

NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 23-19) and General Troubleshooting Information (see page 23-28).

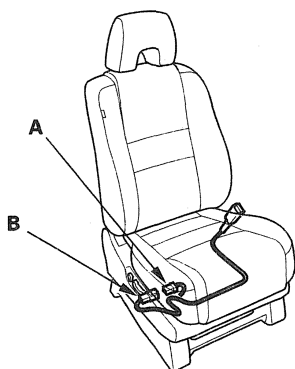
1. Clear the DTC memory (see page 23-29).
2. Turn the ignition switch ON (II), then buckle and unbuckle the front passenger's seat belt several times.
3. Check for a DTC.

Is DTC 62-2x indicated?

YES—Go to step 4.

NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-31). If another DTC is indicated, troubleshoot the DTC.

4. Turn the ignition switch OFF.
5. Disconnect the front passenger's seat wire harness 3P connector (A) (with heated seat) or SRS harness 3P connector (A) (without heated seat) from the front passenger's seat belt buckle switch 3P connector (B).

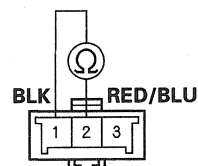


6. Buckle the front passenger's seat belt.

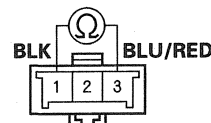
Measure the resistance between the No. 1 and No. 2 terminals of the front passenger's seat belt buckle switch 3P connector. There should be less than 1.0 Ω .

Measure the resistance between the No. 1 and No. 3 terminals of the same connector. There should be an open circuit or at least 1 M Ω .

FRONT PASSENGER'S SEAT BELT BUCKLE SWITCH 3P CONNECTOR



Terminal side of male terminals



Terminal side of male terminals

Are the resistances as specified?

YES—Go to step 7.

NO—Replace the front passenger's seat belt buckle assembly (see page 23-6), then clear the DTC. ■

(cont'd)

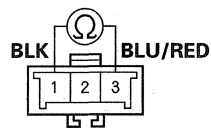
DTC Troubleshooting (cont'd)

7. Unbuckle the front passenger's seat belt.

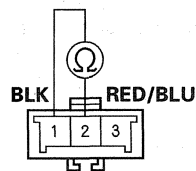
Measure the resistance between the No. 1 and No. 3 terminals of the front passenger's seat belt buckle switch 3P connector. There should be less than $1.0\ \Omega$.

Measure the resistance between the No. 1 and No. 2 terminals of the same connector. There should be an open circuit or at least $1\ M\Omega$.

FRONT PASSENGER'S SEAT BELT BUCKLE SWITCH 3P CONNECTOR



Terminal side of male terminals



Terminal side of male terminals

Are the resistances as specified?

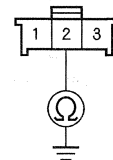
YES—Go to step 8.

NO—Replace the front passenger's seat belt buckle assembly (see page 23-6), then clear the DTC. ■

8. Disconnect the negative cable from the battery.
9. Disconnect both seat belt tensioner 2P connectors (see step 7 on page 23-28).
10. Disconnect SRS unit connector B (28P) from the SRS unit (see step 8 on page 23-28).

11. Measure the resistance between the No. 2 terminal of the front passenger's seat wire harness 3P connector or SRS harness 3P connector and body ground. There should be an open circuit, or at least $1\ M\Omega$.

FRONT PASSENGER'S SEAT WIRE HARNESS 3P CONNECTOR or SRS HARNESS 3P CONNECTOR



Wire side of female terminals

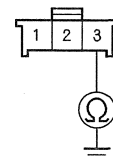
Is the resistance as specified?

YES—Go to step 12.

NO—Short to ground in the front passenger's seat wire harness or SRS harness; replace the faulty harness. ■

12. Measure the resistance between the No. 3 terminal of the front passenger's seat wire harness 3P connector or SRS harness 3P connector and body ground. There should be an open circuit or at least $1\ M\Omega$.

FRONT PASSENGER'S SEAT WIRE HARNESS 3P CONNECTOR or SRS HARNESS 3P CONNECTOR



Wire side of female terminals

Is the resistance as specified?

YES—Replace the SRS unit (see page 23-215). ■

NO—Short to ground in the SRS harness or front passenger's seat wire harness; replace the faulty harness. ■



DTC 71-1x ("x" can be 0 thru 9 or A thru F): Open in Driver's Seat Position Sensor

NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 23-19) and General Troubleshooting Information (see page 23-28).

1. Clear the DTC memory (see page 23-29).
2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

Does the SRS indicator stay on, and is DTC 71-1x indicated?

YES—Go to step 3.

NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-31). If another DTC is indicated, go to the DTC Troubleshooting Index.

3. Check the connection between the driver's seat wire harness or driver's seat position sensor subharness (without power seat) 2P connector and the driver's seat position sensor.
4. Clear the DTC memory.
5. Check for a DTC.

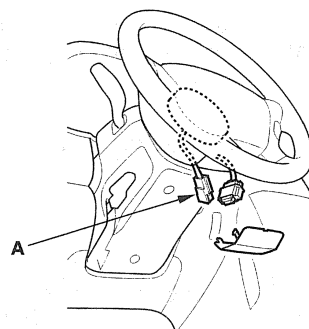
Is DTC 71-1x indicated?

YES—Go to step 6.

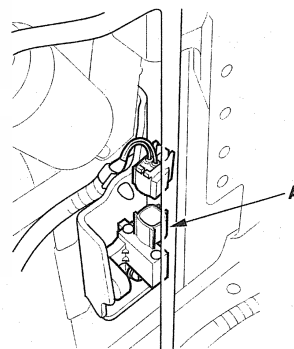
NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-31). If another DTC is indicated, troubleshoot the DTC.

6. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.

7. Disconnect the driver's airbag 4P connector (A) from the cable reel.



8. Disconnect the driver's seat wire harness or driver's seat position sensor subharness (without power seat) 2P connector from the driver's seat position sensor (A).



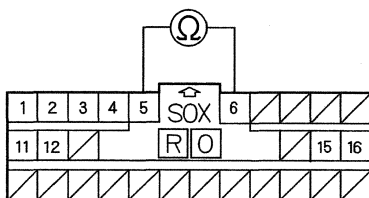
9. Connect the No. 1 and No. 2 terminals of the driver's seat wire harness 2P connector with a jumper wire.
10. Disconnect both seat belt tensioner 2P connectors (A) (see step 7 on page 23-28).

(cont'd)

DTC Troubleshooting (cont'd)

11. Disconnect SRS unit connector B (28P) from the SRS unit (see step 8 on page 23-28).
12. Measure the resistance between the No. 5 and No. 6 terminals of SRS unit connector B (28P). There should be less than 1.0 Ω .

SRS UNIT CONNECTOR B (28P)



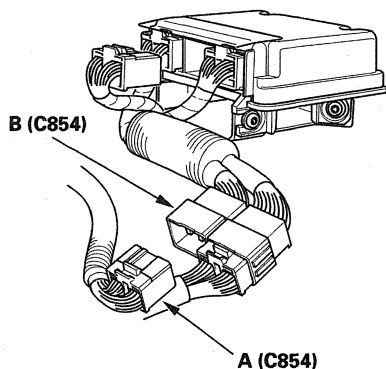
Wire side of female terminals

Is the resistance as specified?

YES—Faulty driver's seat position sensor or SRS unit; replace the driver's seat position sensor (see page 23-222). If the problem is still present, replace the SRS unit (see page 23-215). ■

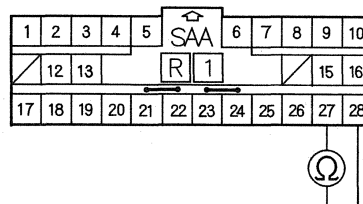
NO—Go to step 13.

13. Disconnect SRS harness 28P connector C854 (A) from SRS subharness connector C854 (B).



14. Measure the resistance between the No. 27 and No. 28 terminals of SRS harness 28P connector C854. There should be less than 1.0 Ω .

SRS HARNESS 28P CONNECTOR C854



Wire side of female terminals

Is the resistance as specified?

YES—Open in the SRS subharness; replace the SRS subharness. ■

NO—Go to step 15.

15. Disconnect driver's seat position sensor subharness 2P connector C605* or driver's seat wire harness 2P connector C606 from the SRS harness (see page 22-63).

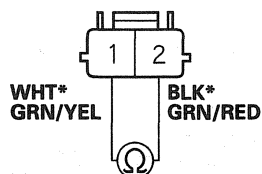
* : without power seat



16. Measure the resistance between the No. 1 and No. 2 terminals of driver's seat position sensor subharness 2P connector C605* or driver's seat wire harness 2P connector C606. There should be less than 1.0 Ω .

* : without power seat

**DRIVER'S SEAT WIRE HARNESS 2P CONNECTOR C606
or DRIVER'S SEAT POSITION SENSOR SUBHARNESS
2P CONNECTOR C605***



Wire side of female terminals

*: without power seat

Is the resistance as specified?

YES—Open in the SRS harness; replace the SRS harness. ■

NO—Open in the driver's seat wire harness; replace the driver's seat wire harness. ■

DTC 71-2x ("x" can be 0 thru 9 or A thru F): Short in Driver's Seat Position Sensor

NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 23-19) and General Troubleshooting Information (see page 23-28).

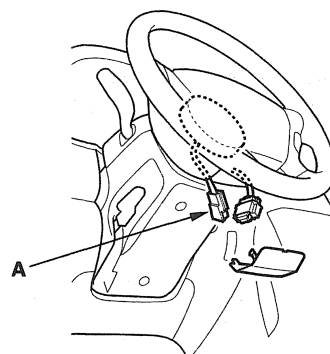
1. Clear the DTC memory (see page 23-29).
2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

Does the SRS indicator stay on, and is DTC 71-2x indicated?

YES—Go to step 3.

NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-31). If another DTC is indicated, troubleshoot the DTC.

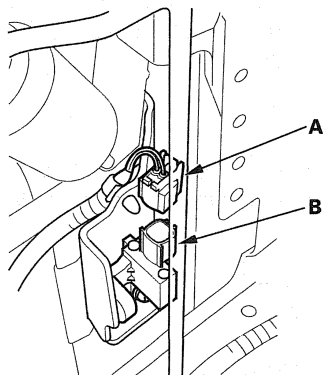
3. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.
4. Disconnect the driver's airbag 4P connector (A) from the cable reel.



(cont'd)

DTC Troubleshooting (cont'd)

5. Disconnect the driver's seat wire harness or driver's seat position sensor subharness (without power seat) 2P connector (A) from the driver's seat position sensor (B).



6. Reconnect the negative cable to the battery.
7. Clear the DTC memory.
8. Read the DTC.

Is DTC 71-2x indicated?

YES—Go to step 9.

NO—Faulty driver's seat position sensor; replace the driver's seat position sensor (see page 23-222). ■

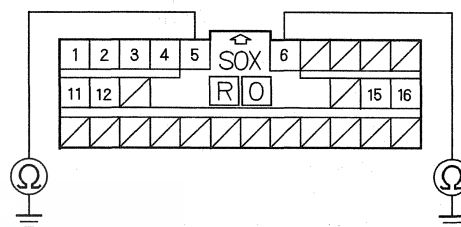
9. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.

10. Disconnect both seat belt tensioner 2P connectors (A) (see step 7 on page 23-28).

11. Disconnect SRS unit connector B (28P) from the SRS unit (see step 8 on page 23-28).

12. Measure the resistance between the No. 5 terminal of SRS unit connector B (28P) and body ground, and the No. 6 terminal and body ground. There should be an open circuit or at least 1 M Ω .

SRS UNIT CONNECTOR B (28P)



Wire side of female terminals

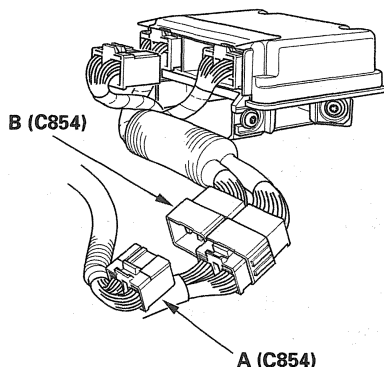
Is the resistance as specified?

YES—Faulty SRS unit, or poor connection at SRS unit connector B (28P) and the SRS unit. Check the connection; if the connection is OK, replace the SRS unit (see page 23-215). ■

NO—Go to step 13.

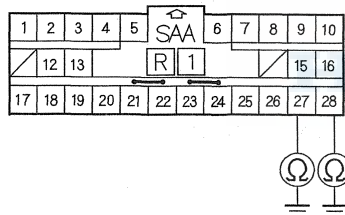


13. Disconnect SRS harness 28P connector C854 (A) from SRS subharness connector C854 (B).



14. Measure the resistance between the No. 27 terminal of SRS harness 28P connector C854 and body ground, and between the No. 28 terminal and body ground. There should be an open circuit or at least 1 M Ω .

SRS HARNESS 28P CONNECTOR C854



Wire side of female terminals

Is the resistance as specified?

YES—Short to ground in the SRS subharness; replace the SRS subharness. ■

NO—Go to step 15.

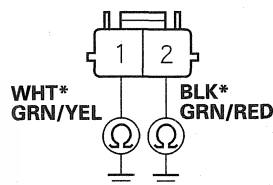
15. Disconnect driver's seat position sensor subharness 2P connector C605* or driver's seat wire harness 2P connector C606 from the SRS harness (see page 22-63).

* : without power seat

16. Measure the resistance between the No. 1 terminal of driver's seat position sensor subharness 2P connector C605* or driver's seat wire harness 2P connector C606 and body ground, and between the No. 2 terminal and body ground. There should be an open circuit or at least 1 M Ω .

* : without power seat

DRIVER'S SEAT WIRE HARNESS 2P CONNECTOR C606 or DRIVER'S SEAT POSITION SENSOR SUBHARNESS 2P CONNECTOR C605*



Wire side of female terminals

*: without power seat

Is the resistance as specified?

YES—Short to ground in the SRS harness; replace the SRS harness. ■

NO—Short to ground in the driver's seat wire harness; replace the driver's seat wire harness. ■

DTC Troubleshooting (cont'd)

DTC 81-61, 85-61: No Signal from the ODS Unit

DTC 81-62, 85-62: Response Data Error from the ODS unit

NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 23-19) and General Troubleshooting Information (see page 23-28).

1. Make sure nothing is on the front passenger's seat.
2. Initialize the ODS unit (see page 23-33).
3. Clear the DTC memory (see page 23-29).
4. Read for a DTC.

Is DTC 81-61, 85-61, 81-62, or 85-62 indicated?

YES—Go to step 5.

NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-31). If another DTC is indicated, troubleshoot the DTC.

5. Check the connection between the ODS unit harness 18P connector and the ODS unit.

Is the connection OK?

YES—Go to step 7.

NO—Repair the poor connection and retest. If DTC 81-61, 85-61, 81-62, or 85-62 is still present, go to step 6.

6. Turn the ignition switch OFF.

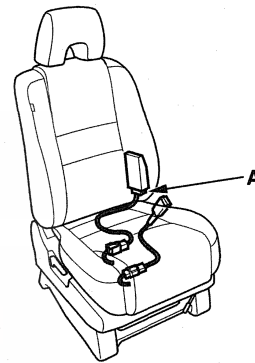
7. Check the No. 7 (7.5 A) fuse in the driver's under-dash fuse/relay box.

Is the fuse OK?

YES—Go to step 10.

NO—Replace the fuse, then turn the ignition switch ON (II). If the fuse blows again, check for a short in the No. 7 (7.5 A) fuse circuit (dashboard wire harness A, left floor wire harness, or ODS unit harness). ■

8. Disconnect the ODS unit harness 18P connector (A) from the ODS unit.

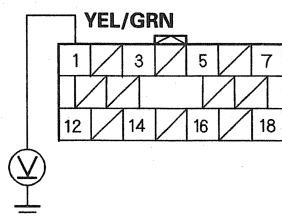


9. Turn the ignition switch ON (II).



10. Measure the voltage between the No. 1 terminal of the ODS unit harness 18P connector and body ground. There should be battery voltage.

ODS UNIT HARNESS 18P CONNECTOR



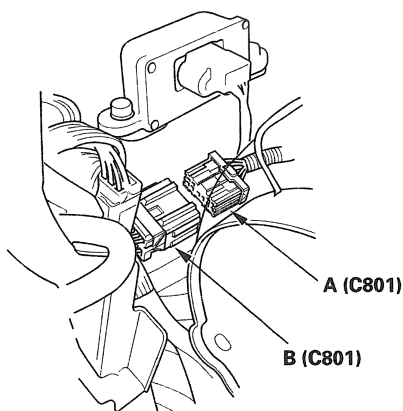
Wire side of female terminals

Is there battery voltage?

YES—Go to step 15.

NO—Go to step 11.

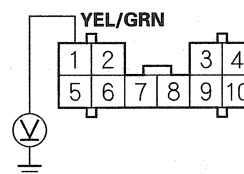
11. Turn the ignition switch OFF, and remove the center console (see page 20-88).
12. Disconnect dashboard wire harness A 10P connector C801 (A) from SRS harness connector C801 (B).



13. Turn the ignition switch ON (II).

14. Measure the voltage between the No. 1 terminal of dashboard wire harness A 10P connector C801 and body ground. There should be battery voltage.

DASHBOARD WIRE HARNESS A 10P CONNECTOR C801



Wire side of female terminals

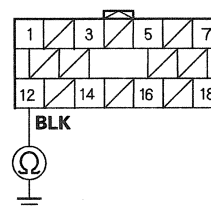
Is there battery voltage?

YES—Open in the YEL/GRN wire of the SRS harness or ODS unit harness; replace the faulty harness. ■

NO—Open in the YEL/GRN wire of dashboard wire harness A; replace dashboard wire harness A. ■

15. Turn the ignition switch OFF.
16. Measure the resistance between the No. 12 terminal of the ODS unit harness 18P connector and body ground. There should be less than 1.0 Ω .

ODS UNIT HARNESS 18P CONNECTOR



Wire side of female terminals

Is the resistance as specified?

YES—Go to step 17.

NO—Open in the BLK wire of the SRS harness, or ODS unit harness or poor ground at G801. Check the connection at G801 (see page 22-51); if the connection is OK, replace the faulty harness. ■

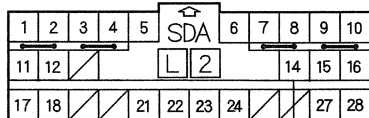
(cont'd)

SRS

DTC Troubleshooting (cont'd)

17. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.
18. Disconnect SRS unit connector A (28P) from the SRS unit (see step 8 on page 23-28).
19. Measure the resistance between the No. 14 terminal of SRS unit connector A (28P) and body ground. There should be an open circuit or at least 1 M Ω .

SRS UNIT CONNECTOR A (28P)



Wire side of female terminals

Is the resistance as specified?

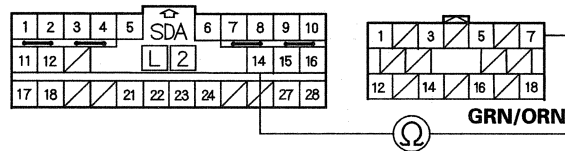
YES—Go to step 20.

NO—Go to step 23.

20. Measure the resistance between the No. 14 terminal of SRS unit connector A (28P) and the No. 7 terminal of the ODS unit harness 18P connector. There should be less than 1.0 Ω .

SRS UNIT CONNECTOR A (28P)

ODS UNIT HARNESS 18P CONNECTOR



Wire side of female terminals

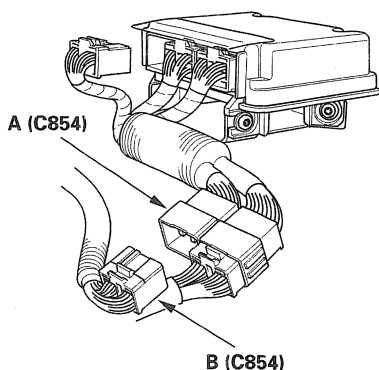
Is the resistance as specified?

YES—Faulty ODS unit or SRS unit; replace the ODS unit (see page 23-219). If the problem is still present, replace the SRS unit (see page 23-215). ■

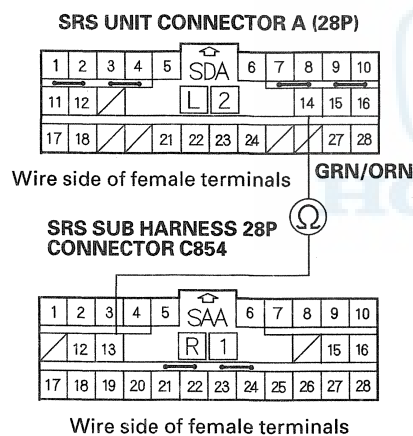
NO—Go to step 21.



21. Disconnect SRS subharness 28P connector C854 (A) from SRS harness connector C854 (B).



22. Measure the resistance between the No. 14 terminal of SRS unit connector A (28P) and the No. 13 terminal of SRS subharness 28P connector C854. There should be less than 1.0Ω .

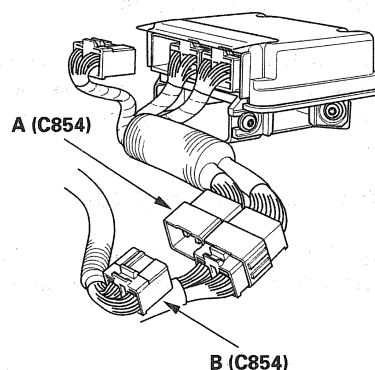


Is the resistance as specified?

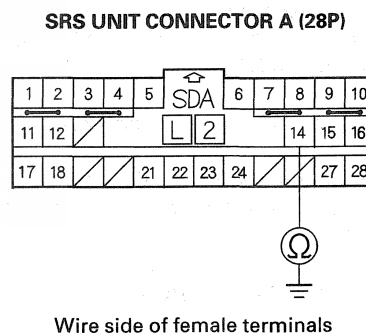
YES—Open in SRS harness or ODS unit harness; replace the faulty harness. ■

NO—Open in the SRS subharness; replace the SRS subharness. ■

23. Disconnect SRS subharness 28P connector C854 (A) from SRS harness connector C854 (B).



24. Measure the resistance between the No. 14 terminal of SRS unit connector A (28P) and body ground. There should be an open circuit or at least $1 \text{ M}\Omega$.



Is the resistance as specified?

YES—Short to ground in the ODS unit harness or SRS harness; replace the faulty harness. ■

NO—Short to ground in the SRS subharness; replace the SRS subharness. ■

DTC Troubleshooting (cont'd)

DTC 81-4x, 81-5x, 81-63, 81-64, 85-4x, 85-5x, 85-63, 85-64 ("x" can be 0 thru 9 or A thru F): Internal Failure of the ODS Unit

NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 23-19) and General Troubleshooting Information (see page 23-28).

1. Clear the DTC memory (see page 23-29).
2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

Does the SRS indicator stay on, and is DTC 81-4x, 81-5x, 81-63, 81-64, 85-4x, 85-5x, 85-63, or 85-64 indicated?

YES—Go to step 3.

NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-31). If another DTC is indicated, troubleshoot the DTC.

3. Calibrate the ODS unit (see page 23-34).
4. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

Does the SRS indicator go off?

YES—The system is OK at this time. ■

NO—Go to step 5.

5. Replace the ODS unit (see page 23-219).
6. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

Does the SRS indicator go off?

YES—The system is OK. ■

NO—Replace the SRS unit (see page 23-215). ■



DTC 81-71, 81-78: ODS Unit Does Not Calibrate

DTC 85-71, 85-78: ODS Unit Not Initialized

NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 23-19) and General Troubleshooting Information (see page 23-28).

1. Clear the DTC memory (see page 23-29).
2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

Does the SRS indicator stay on, and is 81-71, 81-78, 85-71, or 85-78 indicated?

YES—Go to step 3.

NO—Intermittent failure, the system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-31). If another DTC is indicated, troubleshoot the DTC.

3. Initialize the ODS unit (see page 23-33) or calibrate the ODS unit (see page 23-34).
4. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

Does the SRS indicator go off?

YES—The system is OK. ■

NO—Replace the ODS unit (see page 23-219). If the DTC is still present, replace the SRS unit (see page 23-215). ■

DTC 81-79: Front Passenger's Weight Sensors Initial Check Failure

NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 23-19) and General Troubleshooting Information (see page 23-28).

1. Clear the DTC memory (see page 23-29).
2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

Does the SRS indicator stay on, and is DTC 81-79 indicated?

YES—Turn the ignition switch OFF, and go to step 3.

NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-31). If another DTC is indicated, troubleshoot the DTC.

3. Make sure nothing is on the front passenger's seat or in the seat-back pocket.
4. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

Does the SRS indicator go off?

YES—The system is OK. ■

NO—Remove the seat assembly (see page 20-104) and front passenger's weight sensors, then reinstall them. Calibrate the ODS unit (see page 23-34). Retry the troubleshooting. ■

DTC Troubleshooting (cont'd)

DTC 85-79: OPDS Sensor Initial Check Failure

NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 23-19) and General Troubleshooting Information (see page 23-28).

1. Clear the DTC memory (see page 23-29).
2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

Does the SRS indicator stay on, and is DTC 85-79 indicated?

YES—Turn the ignition switch OFF, and go to step 3.

NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-31). If another DTC is indicated, troubleshoot the DTC.

3. Make sure nothing is on the front passenger's seat or in the seat-back pocket.
4. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

Does the SRS indicator go off?

YES—The system is OK. ■

NO—Initialize the ODS unit (see page 23-33). ■

DTC 82-1x ("x" can be 0 thru 9 or A thru F): No Signal from the Inner Side Front Passenger's Weight Sensor

DTC 83-2x ("x" can be 0 thru 9 or A thru F): No Signal from the Outer Side Front Passenger's Weight Sensor

NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 23-19) and General Troubleshooting Information (see page 23-28).

1. Clear the DTC memory (see page 23-29).
2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

Does the SRS indicator stay on, and is DTC 82-1x or 83-2x indicated?

YES—Faulty front passenger's weight sensor, replace the inner side or outer side front passenger's weight sensors (see page 23-221). ■

NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-31). If another DTC is indicated, troubleshoot the DTC.



DTC 86-1x, 86-2x ("x" can be 0 thru 9 or A thru F): Faulty OPDS Sensor

NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 23-19) and General Troubleshooting Information (see page 23-28).

1. Clear the DTC memory (see page 23-29).
2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

Does the SRS indicator stay on, and is DTC 86-1x or 86-2x indicated?

YES—Go to step 3.

NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-31). If another DTC is indicated, troubleshoot the DTC.

3. Check the connection at the OPDS sensor harness connector and the ODS unit connector.

Are the connections OK?

YES—Go to step 4.

NO—Reconnect the OPDS sensor harness connector, and clear the DTC. ■

4. Remove the front passenger's seat (see page 20-104) and replace the OPDS sensor/seat-back foam.

- 8-way power seat (see page 20-107)
- Manual seat (see page 20-109)

After replacing the OPDS sensor/seat-back foam, initialize the ODS unit (see page 23-33).

5. Clear the DTC memory, then check for DTC 86-1x or 86-2x.

Is DTC 86-1x or 86-2x indicated?

YES—Go to step 6.

NO—The system is OK. ■

6. Replace the ODS unit (see page 23-219), and initialize the ODS unit (see page 23-33).

7. Clear the DTC memory, then check for DTC 86-1x or 86-2x.

Is DTC 86-1x or 86-2x indicated?

YES—Replace the SRS unit (see page 23-215). ■

NO—The system is OK. ■

DTC Troubleshooting (cont'd)

DTC 87-3 ("x" can be 0 thru 9 or A thru F): Side Airbag Cutoff Indicator Stays On/Off

NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 23-19) and General Troubleshooting Information (see page 23-28).

1. Clear the DTC memory (see page 23-29).
2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

Does the SRS indicator stay on, and is DTC 87-32 indicated?

YES—Go to step 3.

NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-31). If another DTC is indicated, troubleshoot the DTC.

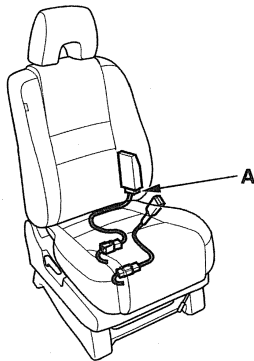
3. Check the side airbag cutoff indicator as the key is turned OFF and back ON.

Does the indicator come on for 6 seconds and go off?

YES—Replace the ODS unit (see page 23-219). ■

NO—Go to step 4.

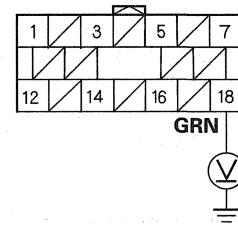
4. Turn the ignition switch OFF. Make sure nothing is on the front passenger's seat.
5. Disconnect the ODS unit harness 18P connector (A) from the ODS unit.



6. Turn the ignition switch ON (II).

7. Measure the voltage between the No. 18 terminal of the ODS unit harness 18P connector and body ground. There should be battery voltage.

ODS UNIT HARNESS 18P CONNECTOR



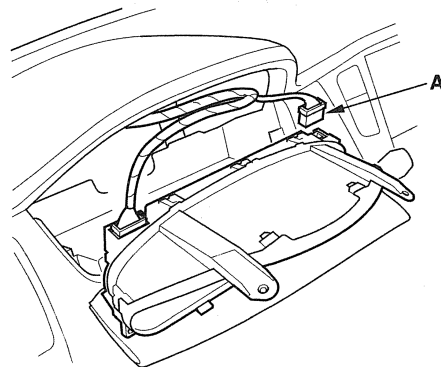
Wire side of female terminals

Is there battery voltage?

YES—Faulty ODS unit or gauge control module; replace the ODS unit (see page 23-219). If the problem is still present, replace the gauge control module (see page 22-102).

NO—Go to step 8.

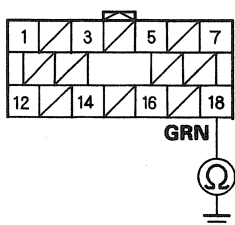
8. Turn the ignition switch OFF.
9. Remove the gauge control module (see page 22-102). Disconnect gauge control module connector A (20P) from the gauge control module.





10. Measure the resistance between the No. 18 terminal of the ODS unit harness 18P connector and body ground. There should be an open circuit or at least 1 M Ω .

ODS UNIT HARNESS 18P CONNECTOR



Wire side of female terminals

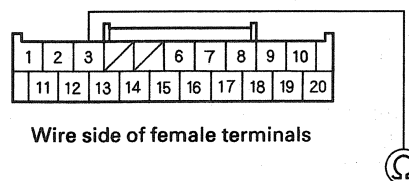
Is the resistance as specified?

YES—Go to step 11.

NO—Short to ground in the ODS unit harness, SRS wire harness, or dashboard wire harness; replace the faulty harness. ■

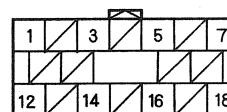
11. Measure the resistance between the No. 18 terminal of the ODS unit harness 18P connector and the No. 3 terminal of gauge control module connector A (20P). There should be 0—1.0 Ω .

GAUGE CONTROL MODULE CONNECTOR A (20P)



Wire side of female terminals

ODS UNIT HARNESS 18P CONNECTOR



Wire side of female terminals

Is the resistance as specified?

YES—Replace the gauge control module (see page 22-102).

NO—Open in the ODS unit harness, SRS harness, dashboard wire harness A; replace the faulty harness. ■

DTC Troubleshooting (cont'd)

DTC Ex-xx ("x" can be 0 thru 9 or A thru F):
Control Operation Recorded

DTC Fx-xx ("x" can be 0 thru 9 or A thru F):
Airbags and/or Tensioners Deployment
Recorded

NOTE:

- Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 23-19) and General Troubleshooting Information (see page 23-28).
- DTC E2-11: Front passenger's airbag does not deploy by SWS operation.
- DTC E4-11: Front passenger's side airbag does not deploy by OPDS operation.
- DTC F1-11: Driver's airbag and/or driver's seat belt tensioner deployed.
- DTC F2-11: Front passenger's airbag and/or front passenger's seat belt tensioner deployed.
- DTC F3-11: Driver's side airbag, left side curtain airbag, and/or driver's seat belt tensioner deployed.
- DTC F4-11: Front passenger's side airbag, right side curtain airbag, and/or front seat belt tensioner deployed.
- DTC F5-11: Both or only one side curtain airbag and seat belt tensioner deployed.
- DTC F6-11: Left side curtain airbag or right side curtain airbag deployed.

The SRS unit must be replaced after any airbags and/or tensioners have deployed (see page 23-198).

NOTE:

- DTC E2-11 is set if the system triggered airbag deployment but the front passenger's airbag was prevented from deploying because of the seat weight sensor.
- DTC E4-11 is set if the system triggered a passenger's side airbag deployment but the airbag was prevented from deploying by the ODS. Replace the right side impact sensor (first) (see page 23-216).

DTC 91-1x ("x" can be 0 thru 9 or A thru F):
Short to Ground in the SRS Indicator Circuit

NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 23-19) and General Troubleshooting Information (see page 23-28).

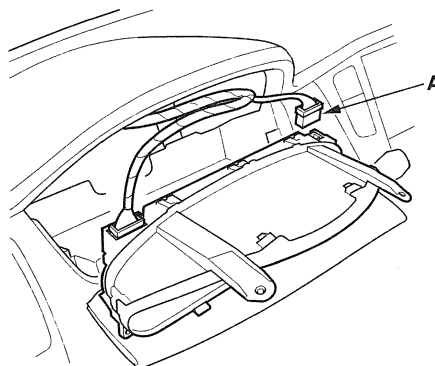
1. Clear the DTC memory (see page 23-29).
2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

Does the SRS indicator stay on, and is DTC 91-1x indicated?

YES—Go to step 3.

NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-31). If another DTC is indicated, troubleshoot the DTC.

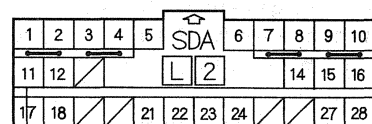
3. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.
4. Disconnect SRS unit connector A (28P) from the SRS unit (see step 8 on page 23-28).
5. Remove the gauge control module (see page 22-102). Disconnect gauge control module connector A (20P), from the gauge control module.





6. Measure the resistance between the No. 11 terminal of SRS unit connector A (28P) and body ground. There should be an open circuit or at least 1 M Ω .

SRS UNIT CONNECTOR A (28P)



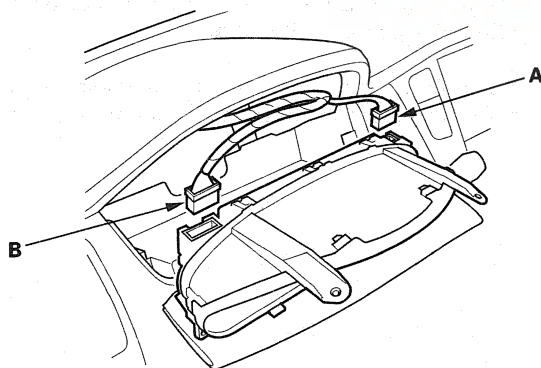
Wire side of female terminals

Is the resistance as specified?

YES—Go to step 7.

NO—Short to ground in the dashboard wire harness A or SRS subharness; replace the faulty harness. ■

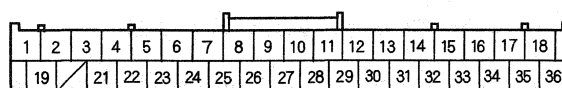
7. Reconnect gauge control module connector A (20P) and connector B (36P).



8. Turn the ignition switch ON (II).

9. Install a jumper wire between the No. 25 terminal of the gauge control module connector B (36P) and the No. 8 terminal of the gauge control module connector A (20P). The SRS indicator should go off.

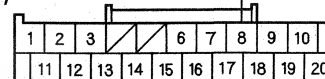
GAUGE CONTROL MODULE CONNECTOR B (36P)



JUMPER WIRE

Wire side of female terminals

GAUGE CONTROL MODULE CONNECTOR A (20P)



Wire side of female terminals

Does the indicator go off?

YES—Faulty SRS unit; replace the SRS unit (see page 23-215). ■

NO—Short to ground in the SRS indicator circuit of the gauge control module; replace the gauge control module (see page 22-102). ■

DTC Troubleshooting (cont'd)

DTC 92-1x ("x" can be 0 thru 9 or A thru F): Open in the Front Passenger's Airbag Cutoff Indicator

NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 23-19) and General Troubleshooting Information (see page 23-28).

1. Clear the DTC memory (see page 23-29).
2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

Does the SRS indicator stay on, and is DTC 92-1x indicated?

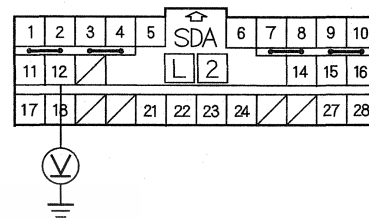
YES—Go to step 3.

NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-31). If another DTC is indicated, troubleshoot the DTC.

3. Disconnect the passenger's airbag cutoff indicator 7P connector (see page 23-224).
4. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.

5. Disconnect SRS unit connector A (28P) from the SRS unit (see step 8 on page 23-28).
6. Reconnect the negative cable to the battery.
7. Turn the ignition switch ON (II).
8. Check for voltage between the No. 12 terminal of SRS unit connector A (28P) and body ground. There should be 0.5 V or less.

SRS UNIT CONNECTOR A (28P)



Wire side of female terminals

Is the voltage as specified?

YES—Faulty SRS unit or passenger's airbag cutoff indicator; replace the passenger's airbag cutoff indicator. If the problem is still present, replace the SRS unit (see page 23-215). ■

NO—Short to power in the dashboard wire harness; replace the dashboard wire harness. ■



**DTC 92-2x ("x" can be 0 thru 9 or A thru F):
Open or Short to Ground in the Passenger's
Airbag Cutoff Indicator**

NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 23-19) and General Troubleshooting Information (see page 23-28).

1. Clear the DTC memory (see page 23-29).
2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

Does the SRS indicator stay on, and is DTC 92-2x indicated?

YES—Go to step 3.

NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-31). If another DTC is indicated, troubleshoot the DTC.

3. Check the connection between the dashboard wire harness 8P connector and the passenger's airbag cutoff indicator.
4. Clear the DTC memory.
5. Check for a DTC.

Is DTC 92-2x indicated?

YES—Go to step 6.

NO—Repair the poor connections and retest. If DTC 92-2x is still present, go to step 6.

6. Check the No. 7 (7.5 A) fuse in the driver's under-dash fuse/relay box.

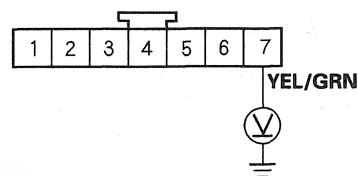
Is the fuse OK?

YES—Go to step 7.

NO—Replace the fuse, then turn the ignition switch ON (II). If the fuse blows again, check for a short in the No. 7 (7.5 A) fuse circuit (dashboard wire harness A, SRS harness, or ODS unit harness). ■

7. Disconnect the passenger's airbag cutoff indicator 8P connector (A).
8. Turn the ignition switch ON (II).
9. Measure the for voltage between the No. 7 terminal of the passenger's airbag cutoff indicator 8P connector and body ground. There should be battery voltage.

**PASSENGER'S AIRBAG CUTOFF INDICATOR
7P CONNECTOR**



Wire side of female terminals

Is there battery voltage?

YES—Go to step 10.

NO—Open in dashboard wire harness A; replace dashboard wire harness A. ■

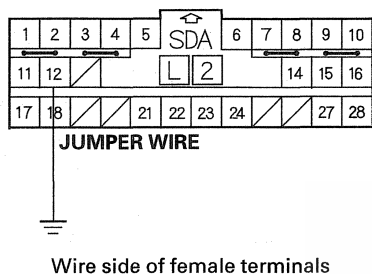
10. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.

(cont'd)

DTC Troubleshooting (cont'd)

11. Disconnect SRS unit connector A (28P) from the SRS unit (see step 8 on page 23-28).
12. Reconnect the dashboard wire harness A 8P connector to the passenger's airbag cutoff indicator.
13. Reconnect the negative cable to the battery.
14. Connect the No. 12 terminal of SRS unit connector A (28P) to body ground with a jumper wire.

SRS UNIT CONNECTOR A (28P)



15. Turn the ignition switch ON (II).
16. Check the passenger's airbag cutoff indicator.

Does the passenger's airbag cutoff indicator come on?

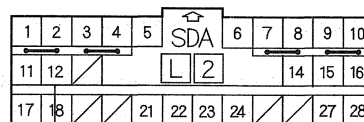
YES—Faulty SRS unit; replace the SRS unit (see page 23-215). ■

NO—Go to step 17.

17. Turn the ignition switch OFF.
18. Disconnect the jumper wire.

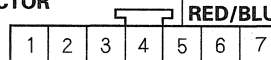
19. Disconnect the passenger's airbag cutoff indicator 7P connector again.
20. Measure the resistance between the No. 5 terminal of the passenger's airbag cutoff indicator 7P connector and the No. 12 terminal of SRS unit connector A (28P). There should be less than 1.0 Ω .

SRS UNIT CONNECTOR A (28P)



Wire side of female terminals

PASSENGER'S AIRBAG CUTOFF INDICATOR 7P CONNECTOR



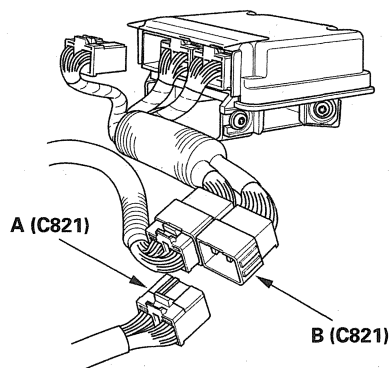
Wire side of female terminals

Is the resistance as specified?

YES—Check for faulty SRS unit or passenger's airbag cutoff indicator; replace the passenger's airbag cutoff indicator. If the problem is still present, replace the SRS unit (see page 23-215).

NO—Go to step 21.

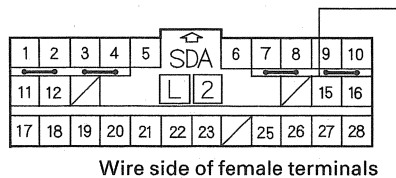
21. Disconnect SRS dashboard wire harness A 28P connector C821 (A) from SRS subharness connector C821 (B).



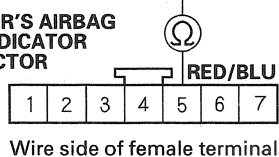


22. Measure the resistance between the No. 5 terminal of the passenger's airbag cutoff indicator 7P connector and the No. 15 terminal of dashboard wire harness A 28P connector C821. There should be less than 1.0 Ω .

DASHBOARD WIRE HARNESS A 28P CONNECTOR C821



**PASSENGER'S AIRBAG
CUTOFF INDICATOR
7P CONNECTOR**



Is the resistance as specified?

YES—Open in the SRS subharness; replace the SRS subharness. ■

NO—Open in dashboard wire harness A; replace dashboard wire harness A. ■

DTC Troubleshooting (cont'd)

DTC A1-1x ("x" can be 0 thru 9 or A thru F): Faulty Power Supply (VA line)

NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 23-19) and General Troubleshooting Information (see page 23-28).

1. Check the No. 1 (15 A) fuse in the driver's under-dash fuse/relay box.

Is the fuse OK?

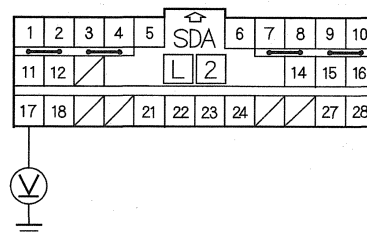
YES—Go to step 2.

NO—Short to ground in the driver's under-dash fuse/relay box No. 1 (15 A) fuse circuit (dashboard wire harness A, or SRS harness). ■

2. Turn the ignition switch OFF. Disconnect the negative cable from the battery.
3. Disconnect SRS unit connector A (28P) from the SRS unit (see step 8 on page 23-28).

4. Reconnect the negative cable to the battery.
5. Connect a voltmeter between the No. 17 terminal of SRS unit connector A (28P) and body ground. Turn the ignition switch ON (II), and measure the voltage. There should be battery voltage.

SRS UNIT CONNECTOR A (28P)



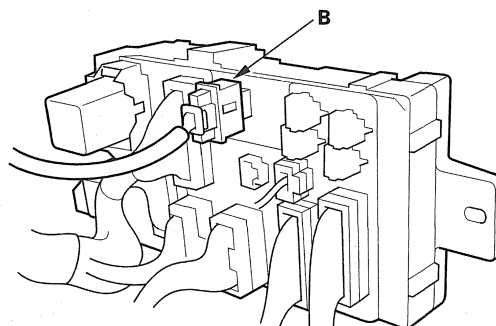
Wire side of female terminals

Is there battery voltage?

YES—Faulty SRS unit or poor connection at SRS unit connector A (28P) and the SRS unit; check the connection. If the connection is OK, replace the SRS unit (see page 23-215). ■

NO—Go to step 6.

6. Turn the ignition switch OFF.
7. Disconnect driver's under-dash fuse/relay box connector B (2P).

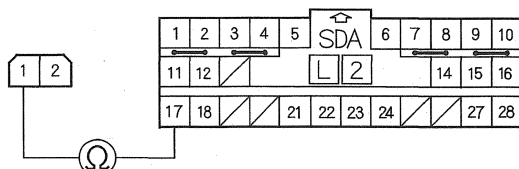




8. Measure the resistance between the No. 1 terminal of driver's under-dash fuse/relay box connector B (2P) and the No. 17 terminal of SRS unit connector A (28P). There should be less than 1.0 Ω .

**DRIVER'S
UNDER-DASH
FUSE/RELAY BOX
CONNECTOR B (2P)**

SRS UNIT CONNECTOR A (28P)



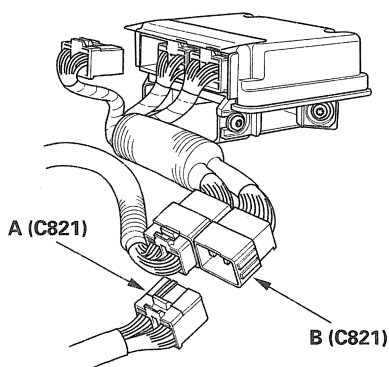
Wire side of female terminals

Is the resistance as specified?

YES—Open in the driver's under-dash fuse/relay box or poor connection at driver's under-dash fuse/relay box connector B (2P) and the driver's under-dash fuse/relay box; check the connection. If the connection is OK, replace the driver's under-dash fuse/relay box. ■

NO—Go to step 9.

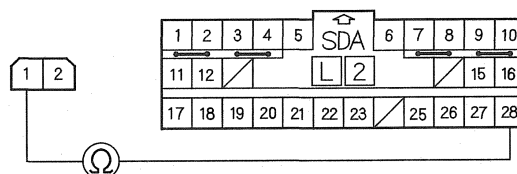
9. Disconnect dashboard wire harness A 28P connector C821 (A) from SRS subharness connector C821 (B).



10. Measure the resistance between the No. 1 terminal of driver's under-dash fuse/relay box connector B (2P) and the No. 28 terminal of dashboard wire harness A 28P connector C821. There should be less than 1.0 Ω .

**DRIVER'S
UNDER-DASH
FUSE/RELAY BOX
CONNECTOR B (2P)**

**DASHBOARD WIRE HARNESS A
28P CONNECTOR C821**



Wire side of female terminals

Is the resistance as specified?

YES—Open in the SRS subharness; replace the SRS subharness. ■

NO—Open in dashboard wire harness A; replace dashboard wire harness A. ■

DTC Troubleshooting (cont'd)

DTC A2-1x ("x" can be 0 thru 9 or A thru F): Faulty Power Supply (VB line)

NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 23-19) and General Troubleshooting Information (see page 23-28).

1. Check the No. 2 (10 A) fuse in the driver's under-dash fuse/relay box.

Is the fuse OK?

YES—Go to step 2.

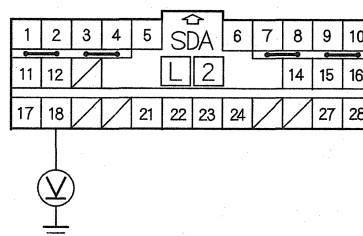
NO—Replace the fuse, then turn the ignition switch ON (II). If the fuse blows again, check for a short to ground in the driver's under-dash fuse/relay box No. 2 (10 A) fuse line, in dashboard wire harness A, or in the SRS subharness; replace the driver's under-dash fuse/relay box.

2. Turn the ignition switch OFF. Disconnect the negative cable from the battery.
3. Disconnect SRS unit connector A (28P) from the SRS unit (see step 8 on page 23-28).

4. Reconnect the negative cable to the battery.

5. Connect a voltmeter between the No. 18 terminal of SRS unit connector A (28P) and body ground. Turn the ignition switch ON (II), and measure the voltage. There should be battery voltage.

SRS UNIT CONNECTOR A (28P)



Wire side of female terminals

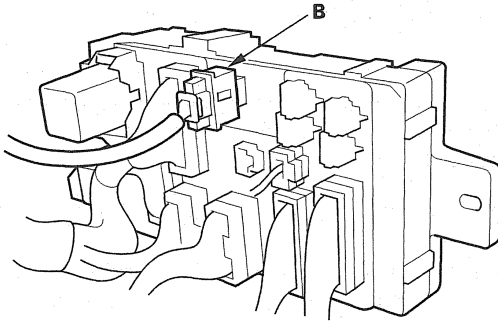
Is there battery voltage?

YES—Faulty SRS unit or poor connection at SRS unit connector A (28P) and the SRS unit; check the connection. If the connection is OK, replace the SRS unit (see page 23-215). ■

NO—Go to step 6.



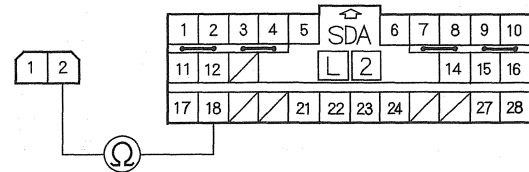
6. Turn the ignition switch OFF.
7. Disconnect driver's under-dash fuse/relay box connector B (2P).



8. Measure the resistance between the No. 2 terminal of driver's under-dash fuse/relay box connector B (2P) and the No. 18 terminal of SRS unit connector A (28P). There should be less than 1.0 Ω .

**DRIVER'S
UNDER-DASH
FUSE/RELAY BOX
CONNECTOR B (2P)**

SRS UNIT CONNECTOR A (28P)



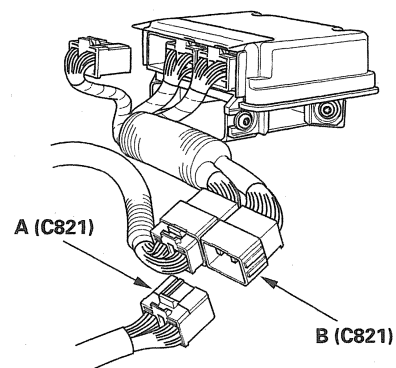
Wire side of female terminals

Is the resistance as specified?

YES—Open in the driver's under-dash fuse/relay box or poor connection at driver's under-dash fuse/relay box connector B (2P) and the driver's under-dash fuse/relay box; check the connection. If the connection is OK, replace the driver's under-dash fuse/relay box. ■

NO—Go to step 9.

9. Disconnect dashboard wire harness A 28P connector C821 (A) from SRS subharness connector C821 (B).



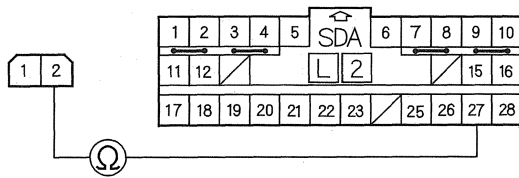
(cont'd)

DTC Troubleshooting (cont'd)

- Measure the resistance between the No. 2 terminal of driver's under-dash fuse/relay box connector B (2P) and the No. 27 terminal of dashboard wire harness A 28P connector C821. There should be less than 1.0 Ω .

**DRIVER'S
UNDER-DASH
FUSE/RELAY BOX
CONNECTOR B (2P)**

**DASHBOARD WIRE HARNESS A
28P CONNECTOR C821**



Wire side of female terminals

Is the resistance as specified?

YES—Open in the SRS subharness; replace the SRS subharness. ■

NO—Open in dashboard wire harness A; replace dashboard wire harness A. ■

DTC B1-11: No Signal from the Roll Rate Sensor

Special Tools Required

- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead H 07YAZ-S3AA100

NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 23-19) and General Troubleshooting Information (see page 23-28).

- Clear the DTC memory (see page 23-29).
- Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

Does the SRS indicator stay on, and is DTC B1-11 indicated?

YES—Go to step 3.

NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-31). If another DTC is indicated, troubleshoot the DTC.

- Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.
- Check the connection between the SRS harness 2P connector and the roll rate sensor.

Is the connection OK?

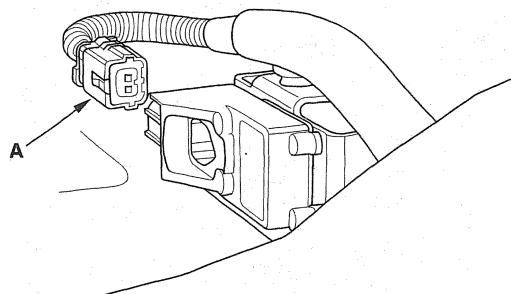
YES—Go to step 5.

NO—Repair the poor connection and retest. If DTC B1-11 is still present, go to step 5.

- Disconnect the driver's side airbag and front passenger's side airbag 2P connectors (see step 4 on page 23-27).
- Disconnect the both seat belt tensioner 2P connectors (see step 7 on page 23-28).

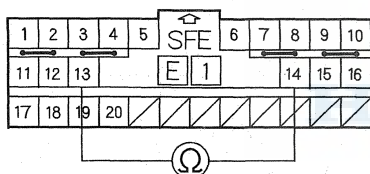


7. Disconnect the SRS harness 2P connector (A) from the roll rate sensor.



8. Disconnect SRS unit connector C (28P) from the SRS unit (see step 8 on page 23-28).
9. Measure the resistance between the No. 13 and No. 14 terminals of SRS unit connector C (28P). There should be an open circuit or at least 1 M Ω .

SRS UNIT CONNECTOR C (28P)



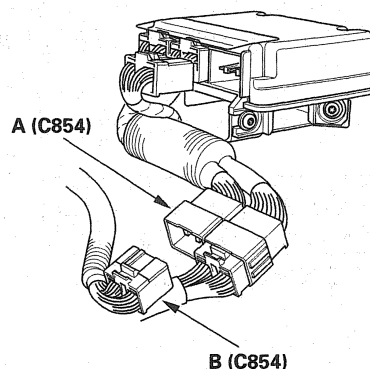
Wire side of female terminals

Is the resistance as specified?

YES—Go to step 12.

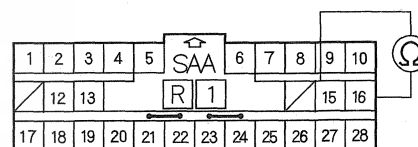
NO—Go to step 10.

10. Disconnect SRS subharness 28P connector C854 (A) from SRS harness 28P connector C854 (B).



11. Measure the resistance between the No. 15 and No. 16 terminals of the SRS subharness 28P connector C854. There should be an open circuit or at least 1 M Ω .

SRS HARNESS 28P CONNECTOR C854



Wire side of female terminals

Is the resistance as specified?

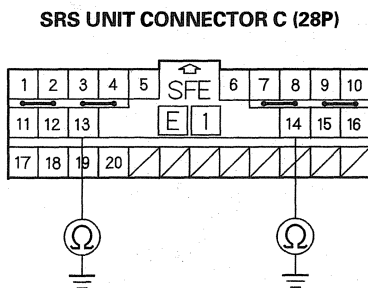
YES—Short in the SRS subharness; replace the SRS subharness. ■

NO—Short in the SRS harness; replace the SRS harness. ■

(cont'd)

DTC Troubleshooting (cont'd)

12. Measure the resistance between the No. 13 terminal of SRS unit connector C (28P) and body ground, and between the No. 14 terminal and body ground. There should be an open circuit or at least 1 M Ω .



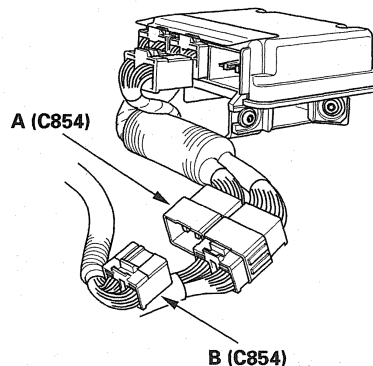
Wire side of female terminals

Is the resistance as specified?

YES—Go to step 15.

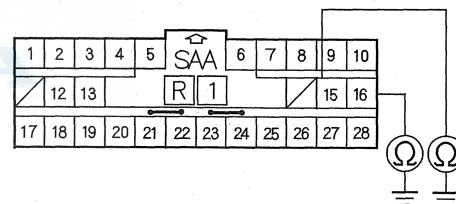
NO—Go to step 13.

13. Disconnect SRS subharness 28P connector C854 (A) from SRS harness 28P connector C854 (B).



14. Measure the resistance between the No. 15 terminals of the SRS subharness 28P connector C854 and body ground, and between the No. 16 terminal and body ground. There should be an open circuit or at least 1 M Ω .

SRS HARNESS 28P CONNECTOR C854



Wire side of female terminals

Is the resistance as specified?

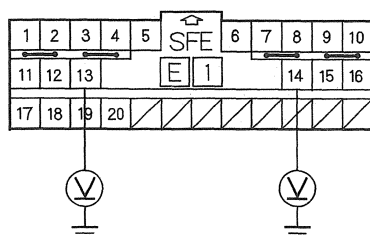
YES—Short to ground in the SRS subharness; replace the SRS subharness. ■

NO—Short to ground in the SRS harness; replace the SRS harness. ■



15. Reconnect the negative cable to the battery.
16. Measure the for voltage between the No. 13 terminal of SRS unit connector C (28P) and body ground, and between the No. 14 terminal and body ground. There should be less than 1 V.

SRS UNIT CONNECTOR C (28P)



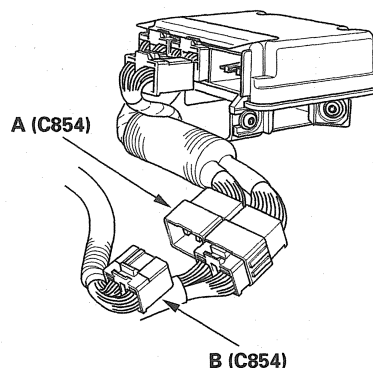
Wire side of female terminals

Is the voltage as specified?

YES—Go to step 19.

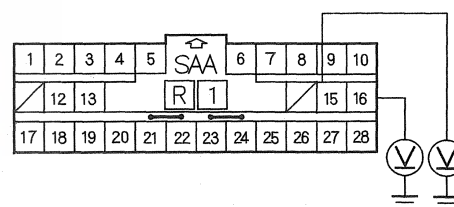
NO—Go to step 17.

17. Disconnect SRS subharness 28P connector C854 (A) from SRS harness 28P connector C854 (B).



18. Measure the voltage between the No. 15 terminals of the SRS subharness 28P connector C854 and body ground, and between the No. 16 terminal and body ground. There should be less than 1 V.

SRS HARNESS 28P CONNECTOR C854



Wire side of female terminals

Is the voltage as specified?

YES—Short to power in the SRS subharness; replace the SRS subharness. ■

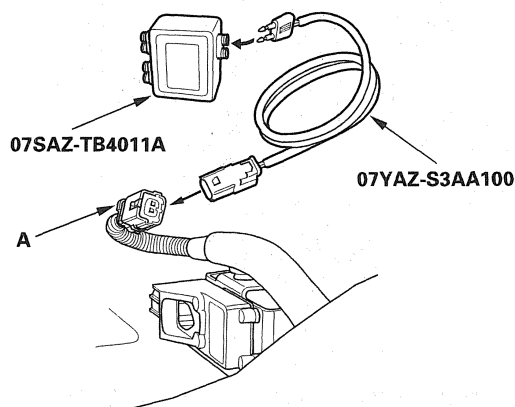
NO—Short to power in the SRS harness; replace the SRS harness. ■

(cont'd)

SRS

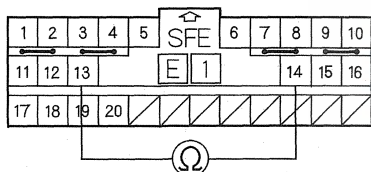
DTC Troubleshooting (cont'd)

19. Connect the SRS inflator simulator (jumper connector) and simulator lead H to the SRS harness 2P connector (A).



20. Measure the resistance between the No. 13 and No. 14 terminals of SRS unit connector C (28P). There should be less than 1.0 Ω .

SRS UNIT CONNECTOR C (28P)



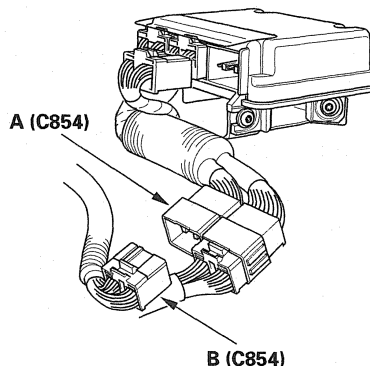
Wire side of female terminals

Is the resistance as specified?

YES—Faulty roll rate sensor or SRS unit; replace the roll rate sensor (see page 23-223). If the problem is still present, replace the SRS unit (see page 23-215). ■

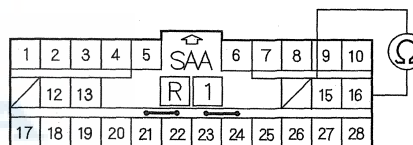
NO—Go to step 21.

21. Disconnect SRS subharness 28P connector C854 (A) from SRS harness 28P connector C854 (B).



22. Measure the resistance between the No. 15 and No. 16 terminals of the SRS harness 28P connector C854. There should be less than 1.0 Ω .

SRS HARNESS 28P CONNECTOR C854



Wire side of female terminals

Is the resistance as specified?

YES—Open in the SRS subharness; replace the SRS subharness. ■

NO—Open in the SRS harness; replace the SRS harness. ■



DTC B1-17, B1-8x, B1-9x, B1-Ax, B1-Bx
(“x” can be 0 thru 9 or A thru F):
Internal Failure of the Roll Rate Sensor

NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 23-19) and General Troubleshooting Information (see page 23-28).

1. Clear the DTC memory (see page 23-29).
2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

Does the SRS indicator stay on, and is B1-17, B1-8x, B1-9x, B1-Ax, or B1-Bx indicated?

YES—Replace the roll rate sensor (see page 23-223). If the DTC returns, replace the SRS unit (see page 23-215). ■

NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-31). If another DTC is indicated, troubleshoot the DTC.



DTC Troubleshooting (cont'd)

DTC B2-11: No Signal from the Rear Safing Sensor

Special Tools Required

- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead H 07YAZ-S3AA100

NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 23-19) and General Troubleshooting Information (see page 23-28).

1. Clear the DTC memory (see page 23-29).
2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

Does the SRS indicator stay on, and is DTC B2-11 indicated?

YES—Go to step 3.

NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-31). If another DTC is indicated, troubleshoot the DTC.

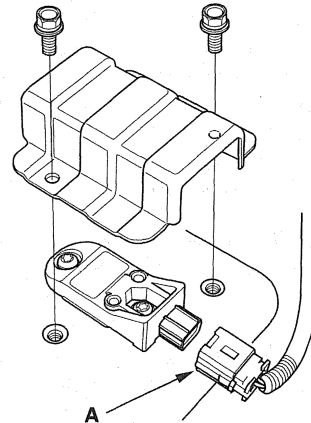
3. Turn the ignition switch OFF. Disconnect the negative cable from the battery, and wait for 3 minutes.
4. Check the connections between the right side wire harness 2P connector and the rear safing sensor (see page 23-218).

Is the connection OK?

YES—Go to step 5.

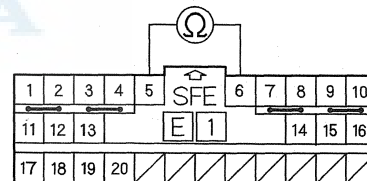
NO—Repair the poor connection and retest. If the DTC B2-11 is still present, go to step 5.

5. Disconnect the right side wire harness 2P connector (A) from the rear safing sensor.



6. Disconnect SRS unit connector C (28P) from the SRS unit (see step 8 on page 23-28).
7. Measure the resistance between the No. 5 and No. 6 terminals of SRS unit connector C (28P). There should be an open circuit or at least 1 MΩ.

SRS UNIT CONNECTOR C (28P)



Wire side of female terminals

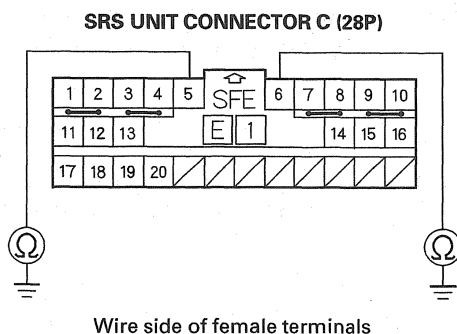
Is the resistance as specified?

YES—Go to step 8.

NO—Short in the right side wire harness; replace the right side wire harness. ■



8. Measure the resistance between the No. 5 terminal of SRS unit connector C (28P) and body ground, and between the No. 6 terminal and body ground. There should be an open circuit or at least 1 M Ω .



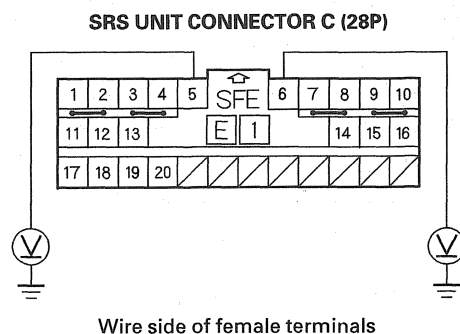
Is the resistance as specified?

YES—Go to step 9.

NO—Short to ground in the right side wire harness, SRS harness or SRS subharness; replace the faulty harness. ■

9. Reconnect the negative cable to the battery.
10. Turn the ignition switch ON (II).

11. Measure the voltage between the No. 5 terminal of SRS unit connector C (28P) and body ground, and between the No. 6 terminal and body ground. There should be less than 1 V.

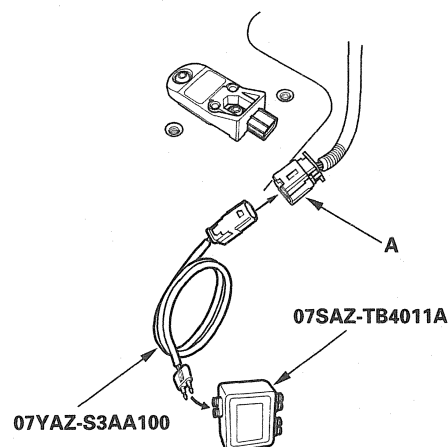


Is the voltage as specified?

YES—Go to step 12.

NO—Short to power in the right side wire harness, SRS harness or SRS subharness; replace the faulty harness. ■

12. Turn the ignition switch OFF.
13. Connect the SRS inflator simulator (jumper connector) and simulator lead H to the right side wire harness 2P connector (A).

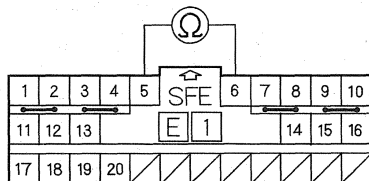


(cont'd)

DTC Troubleshooting (cont'd)

14. Measure the resistance between the No. 5 and No. 6 terminals of SRS unit connector C (28P). There should be less than 1.0 Ω .

SRS UNIT CONNECTOR C (28P)



Wire side of female terminals

Is the resistance as specified?

YES—Faulty rear safing sensor or SRS unit; replace the rear safing sensor (see page 23-218). If the problem is still present, replace the SRS unit (see page 23-215). ■

NO—Open in the right side wire harness, SRS harness or SRS subharness; replace the faulty harness. ■

DTC B2-17, B2-84, B2-90, B2-Ax, B2-Bx ("x" can be 0 thru 9 or A thru F): Internal Failure of the Rear Safing Sensor

NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 23-19) and General Troubleshooting Information (see page 23-28).

1. Clear the DTC memory (see page 23-29).
2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

Does the SRS indicator stay on, and is B2-17, B2-84, B2-90, B2-Ax, or B2-Bx indicated?

YES—Replace the rear safing sensor (see page 23-218). If the DTC returns, replace the SRS unit (see page 23-215). ■

NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 23-31). If another DTC is indicated, troubleshoot the DTC.



Symptom Troubleshooting

SRS indicator does not come on

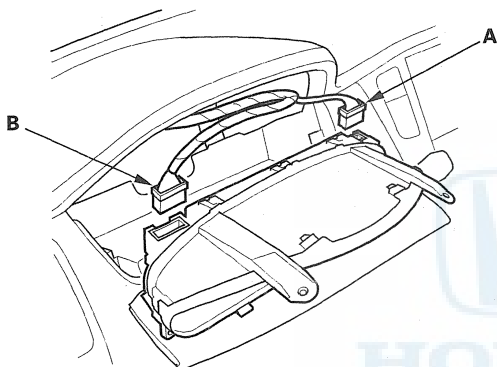
1. Turn the ignition switch ON (II), and see if the other indicators come on (brake system, etc.).

Do the other indicator come on?

YES—Go to step 2.

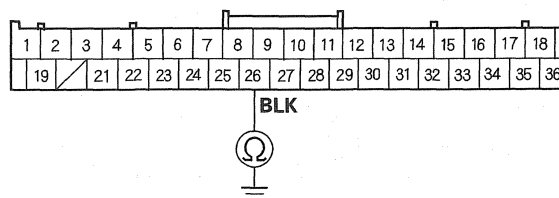
NO—Go to step 8.

2. Turn the ignition switch OFF, then remove the gauge control module (see page 22-102). Disconnect gauge control module connector A and B from the gauge control module.



3. Measure the resistance between No. 26 terminal of gauge control module connector B (36P) and body ground. There should be less than 1.0 Ω .

GAUGE CONTROL MODULE CONNECTOR B (36P)



Wire side of female terminals

Is the resistance as specified?

YES—Go to step 4.

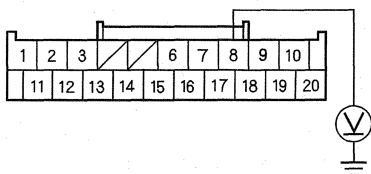
NO—Open in the BLK wire of dashboard wire harness or faulty body ground terminal (G502) (see page 22-39). If the body ground terminal is OK, replace dashboard wire harness A. ■

(cont'd)

Symptom Troubleshooting (cont'd)

4. Measure the voltage between No. 8 terminal of gauge control module connector A (20P) and body ground within the first 6 seconds after turning the ignition switch ON (II). There should be about 1.0 V for 6 seconds, and then about 11 V.

GAUGE CONTROL MODULE CONNECTOR A (20P)



Wire side of female terminals

Is the voltage as specified?

YES—Faulty SRS indicator circuit in the gauge control module; replace the gauge control module. ■

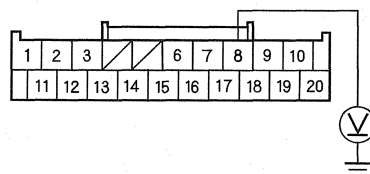
NO—Go to step 5.

5. Turn the ignition switch OFF.

6. Disconnect SRS unit connector A (28P) from the SRS unit (see step 8 on page 23-28).

7. Connect a voltmeter between No. 8 terminal of gauge control module connector A (20P) and body ground. Turn the ignition switch ON (II), and measure the voltage. There should be less than 0.5 V.

GAUGE CONTROL MODULE CONNECTOR A (20P)



Wire side of female terminals

Is the voltage as specified?

YES—Faulty SRS unit; replace the SRS unit (see page 23-215). ■

NO—Go to step 12.



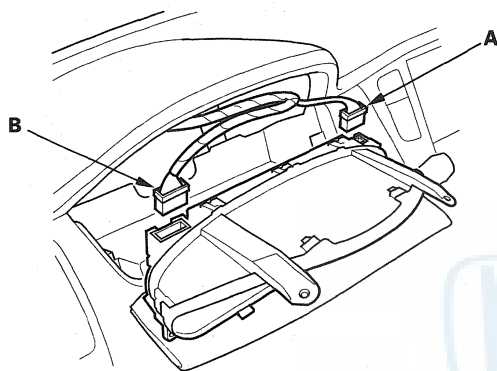
8. Turn the ignition switch OFF. Check the No. 9 (10 A) fuse in the driver's under-dash fuse/relay box.

Is the fuse blown?

YES—Go to step 11.

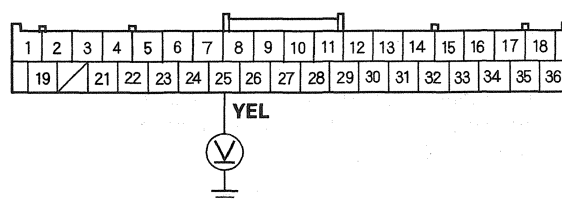
NO—Replace the fuse, then go to step 9.

9. Remove the gauge control module (see page 22-102). Disconnect gauge control module connector A and B from the gauge control module.



10. Connect a voltmeter between No. 25 terminal of gauge control module connector B (36P) and body ground. Turn the ignition switch ON (II), and measure the voltage. There should be battery voltage.

GAUGE CONTROL MODULE CONNECTOR B (36P)



Wire side of female terminals

Is there battery voltage?

YES—Faulty SRS indicator circuit in the gauge control module or poor connection at gauge control module connector B and the gauge control module; if the connection is OK, replace the gauge control module. ■

NO—Open in the driver's under-dash fuse/relay box No. 9 (10 A) fuse line, or open in the YEL wire of dashboard wire harness A. If the driver's under-dash fuse/relay box is OK, replace dashboard wire harness A. ■

(cont'd)

Symptom Troubleshooting (cont'd)

11. Replace the No. 9 (10 A) fuse, and check to see if the SRS indicator comes on.

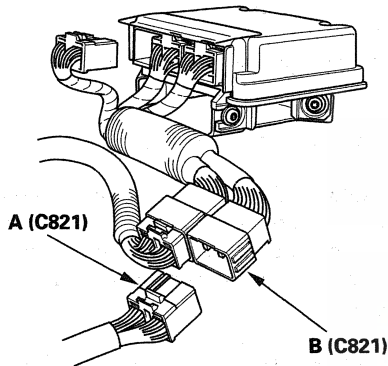
Does the SRS indicator come on?

YES—The system is OK at this time. ■

NO—Repair short to ground in the under-dash fuse/relay box No. 9 (10 A) fuse circuit. ■

12. Turn the ignition switch OFF.

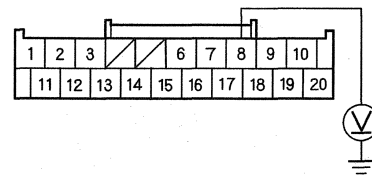
13. Disconnect dashboard wire harness A 28P connector C821 (A) from SRS subharness connector C821 (B).



14. Turn the ignition switch ON (II).

15. Connect a voltmeter between the No. 8 terminal of gauge control module connector A (20P) and body ground. Turn the ignition switch ON (II), and measure the voltage. There should be less than 0.5 V.

GAUGE CONTROL MODULE CONNECTOR A (20P)



Wire side of female terminals

Is the voltage as specified?

YES—Short to power in the SRS subharness; replace the SRS subharness. ■

NO—Short to power in the dashboard wire harness A; replace dashboard wire harness A. ■

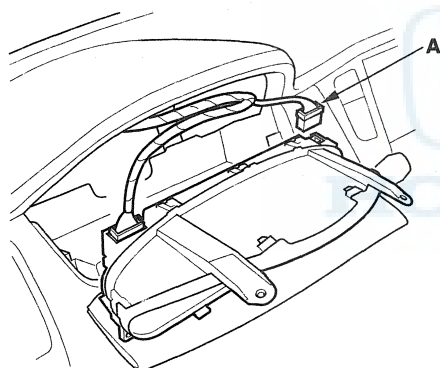


SRS indicator stays on, but no DTCs are stored

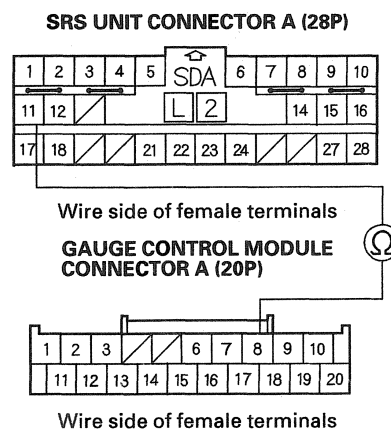
NOTE:

- A new SRS unit must sense the entire system is OK before completing its initial self-test. The most common cause of an incomplete self-test is the failure to replace all deployed parts after a collision, in particular seat belt tensioners (see page 23-198).
- A battery/system voltage above 15.2 V can cause the SRS indicator to come on without storing any DTCs.

1. Disconnect the negative cable from the battery, and wait for 3 minutes.
2. Disconnect SRS unit connector A (28P) from the SRS unit (see step 8 on page 23-28).
3. Remove the gauge control module (see page 22-102). Disconnect gauge control module connector A (20P) from the gauge control module.



4. Measure the resistance between the No. 8 terminal of gauge control module connector A (20P) and the No. 11 terminal of SRS unit connector A (28P). There should be less than 1 Ω .



Is the resistance as specified?

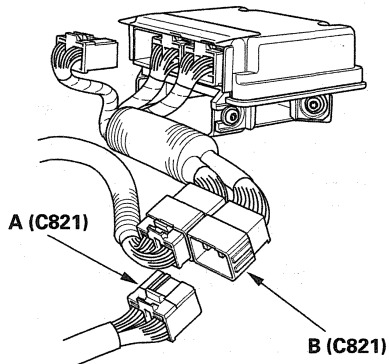
YES—Go to step 7.

NO—Go to step 5.

(cont'd)

Symptom Troubleshooting (cont'd)

5. Disconnect dashboard wire harness A 28P connector C821 (A) from SRS subharness connector C821 (B).



6. Measure the resistance between the No. 8 terminal of gauge control module connector A (20P) and the No. 16 terminal of the dashboard wire harness A 28P connector C821. There should be less than 1 Ω .

DASHBOARD WIRE HARNESS A 28P CONNECTOR C821

1	2	3	4	5	SDA	6	7	8	9	10
11	12				L 2			14	15	16
17	18			21	22	23	24		27	28

Wire side of female terminals

GAUGE CONTROL MODULE CONNECTOR A (20P)

1	2	3			6	7	8	9	10
11	12	13	14	15	16	17	18	19	20

Wire side of female terminals

Is the resistance as specified?

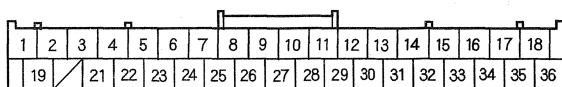
YES—Open in the SRS subharness; replace the SRS subharness. ■

NO—Open in dashboard wire harness A; replace dashboard wire harness A. ■



7. Reconnect the gauge control module connector (40P) to the gauge control module.
8. Reconnect the battery negative cable.
9. Turn the ignition switch ON (II).
10. Install a jumper wire between the No. 8 terminal of the gauge control module connector A (20P) and No. 25 terminal of the gauge control module connector B (36P). The SRS indicator should go off.

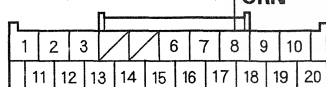
GAUGE CONTROL MODULE CONNECTOR B (36P)



YEL Wire side of female terminals

JUMPER WIRE

GAUGE CONTROL MODULE CONNECTOR A (20P)



Wire side of female terminals



Does the SRS indicator go off?

YES—Faulty SRS unit or poor connection at SRS unit connector A (28P) and the SRS unit; check the connection. If the connection is OK, replace the SRS unit (see page 23-215). ■

NO—Faulty SRS indicator circuit in the gauge control module or poor connections at the gauge control module connector A (20P) and B (36P); check the connections. If the connections are OK, replace the gauge control module. ■

Component Replacement/Inspection After Deployment

NOTE: Before doing any SRS repairs, use the HDS SRS menu method to check for DTCs; refer to the DTC Troubleshooting Index for the less obvious deployed parts (seat belt tensioners, front impact sensors, side impact sensors, etc.).

After a collision where the seat belt tensioners deployed, replace these items:

- SRS unit
- Deployed seat belt tensioners and protectors
- Front impact sensors

After a collision where the front airbag(s) deployed, replace these items:

- SRS unit
- Deployed airbag(s)
- Deployed seat belt tensioners and protectors
- Front impact sensors

After a collision where the side airbag(s) deployed, replace these items:

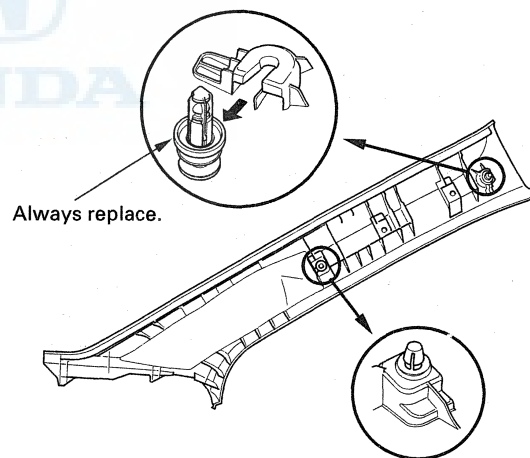
- SRS unit
- Deployed side airbag(s)
- Side impact sensor(s) (first) for the side(s) that deployed
- Deployed seat belt tensioners and protectors

After a collision where a side curtain airbag has deployed, replace the items for the side(s) that deployed:

- SRS unit
- Deployed side curtain airbag(s)
- Side impact sensor(s) (first) for the side(s) that deployed
- Side impact sensor(s) (second) for the side(s) that deployed
- Deployed seat belt tensioners and protectors
- Rear safing sensor
- Roll rate sensor
- Roof trim
- C-pillar upper trim
- Grab handles
- All grab handle brackets for the side(s) that deployed
- All related trim clips
- Sunvisor

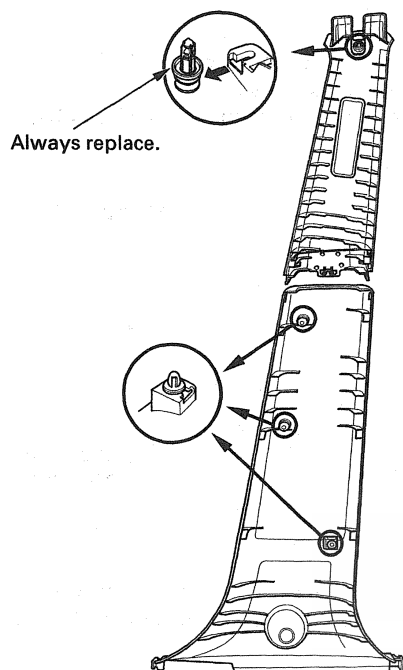
After a moderate to severe side or rear collision, inspect for any damage on the side curtain airbag or other related components. Replace the components as needed.

A-pillar trim

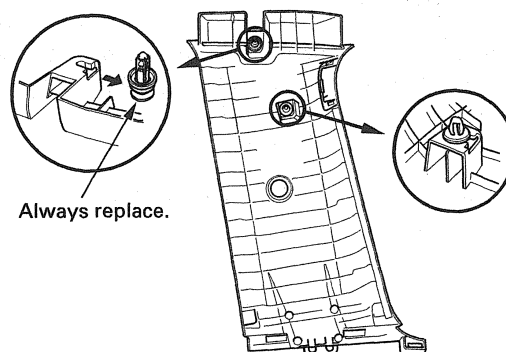




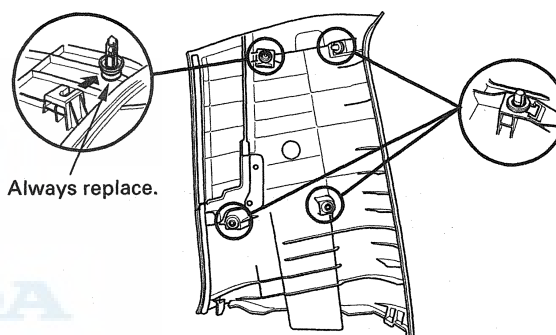
B-pillar trim



C-pillar trim



D-pillar trim



During the repair process, inspect these areas:

- Inspect all the SRS wire harnesses. Replace, don't repair, any damaged harnesses.
- Inspect the cable reel for heat damage. If there is any damage, replace the cable reel.

Check the operation of the ODS unit (see page 23-35) must be checked after any of these actions.

- Replacement of front passenger's seat component(s)
- After a vehicle collision

After the vehicle is completely repaired, turn the ignition switch ON (II). If the SRS indicator comes on for about 6 seconds and then goes off, the SRS airbag system is OK. If the indicator does not function properly, use the HDS SRS Menu Method to read the DTC (see page 23-29).

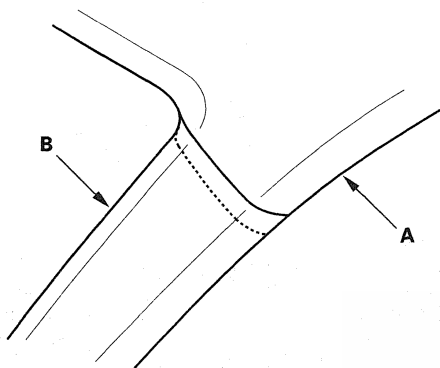
(cont'd)

Component Replacement/Inspection After Deployment (cont'd)

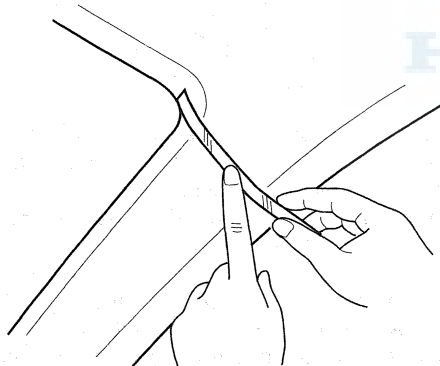
Checking and Adjusting the Headliner/Pillar Trim Overlap

To prevent the side curtain airbag from deploying and damaging the pillar trim, the overlap between the headliner and pillar trim must be less than 15 mm (0.6 in.). To check the overlap, do this:

1. Install the headliner (A) and the pillar trim (B).

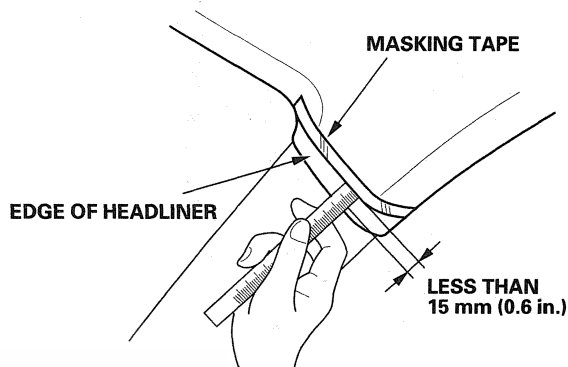


2. Using masking tape on the headliner, mark the upper edge of each pillar trim.

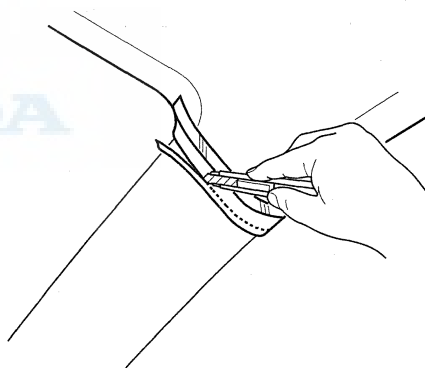


3. Remove the pillar trim, and measure the headliner overlap.

- If the overlap is less than 15 mm (0.6 in.), remove the tape, and install the pillar trim.
- If the overlap is more than 15 mm (0.6 in.), go to step 4.



4. Carefully trim the headliner with a utility knife, reducing the overlap to less than 15 mm (0.6 in.).



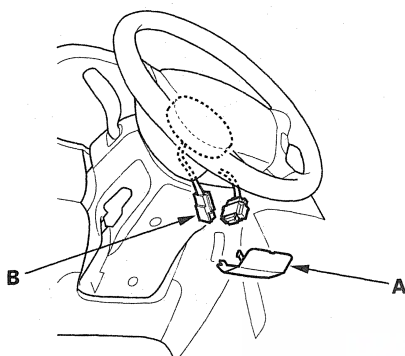
5. Remove the tape, and install the pillar trim.



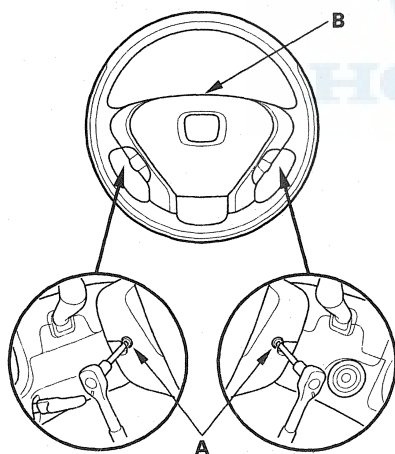
Driver's Airbag Replacement

Removal

1. Disconnect the negative cable from the battery, and wait at least 3 minutes before beginning work.
2. Remove the access panel (A) from the steering wheel, then disconnect the driver's airbag 4P connector (B) from the cable reel.



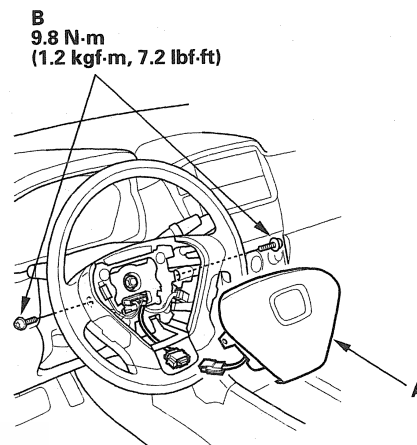
3. Using a TORX T30 bit, remove the two TORX bolts (A).



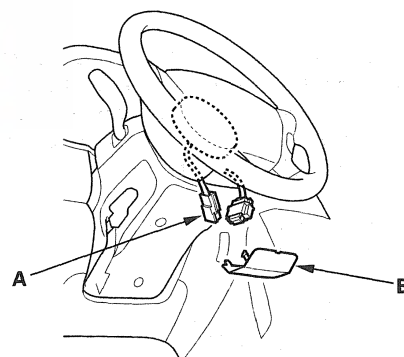
4. Remove the driver's airbag (B).

Installation

1. Place the new driver's airbag (A) in the steering wheel, and secure it with new TORX bolts (B).



2. Connect the cable reel to the driver's airbag 4P connector (A), then install the access panel (B) on the steering wheel.

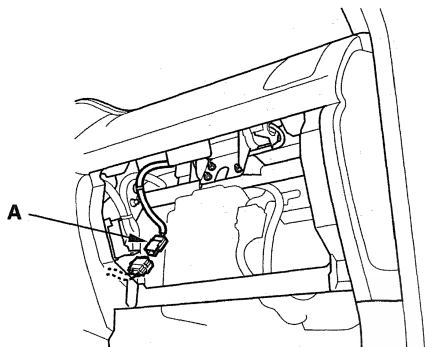


3. Reconnect the negative cable to the battery.
4. After installing the airbag, confirm proper system operation:
 - Turn the ignition switch ON (II); the SRS indicator should come on for about 6 seconds and then go off.
 - Make sure the horn button works.

Front Passenger's Airbag Replacement

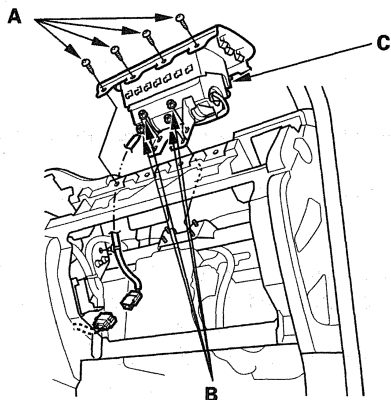
Removal

1. Disconnect the negative cable from the battery, and wait at least 3 minutes before beginning work.
2. Remove the glove box (see page 20-95).
3. Disconnect the front passenger's airbag 4P connector (A) from dashboard wire harness A.



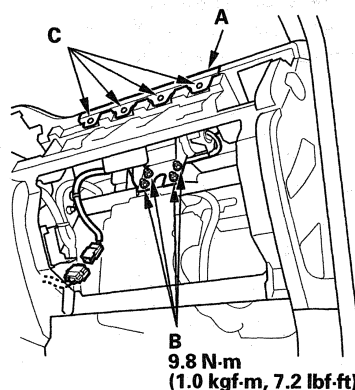
4. Remove the dashboard center panel (see page 20-93).
5. Remove the four screws (A) and the four mounting nuts (B) from the bracket. Cover the lid and dashboard with a flat-tip cloth, and pry carefully with a screwdriver to lift the front passenger's airbag (C) out of the dashboard.

NOTE: The airbag lid has pawls on its side which attach it to the dashboard.

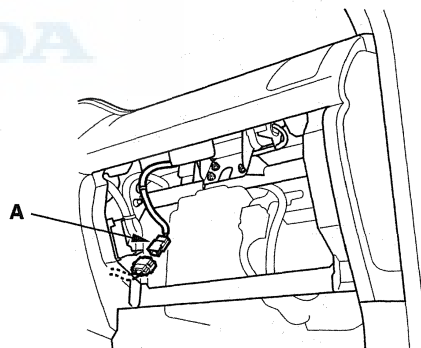


Installation

1. Place the new front passenger's airbag (A) into the dashboard. Tighten the front passenger's airbag mounting nuts (B) and screws (C).



2. Reinstall the dashboard center panel (see page 20-93).
3. Connect the front passenger's airbag 4P connector (A) to dashboard wire harness A.



4. Reinstall the glove box (see page 20-95).
5. Reconnect the negative cable to the battery.
6. After installing the airbag, confirm proper system operation: Turn the ignition switch ON (II); the SRS indicator should come on for about 6 seconds and then go off.

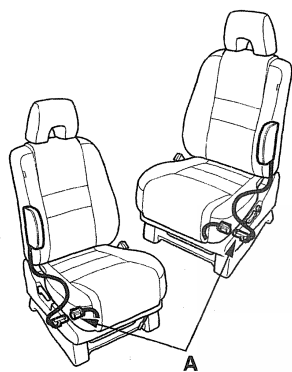


Side Airbag Replacement

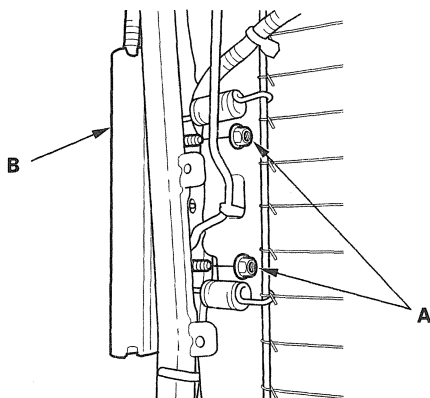
NOTE: Review the seat replacement procedure (see page 20-104) before doing repairs or service.

Removal

1. Slide the seat to the center position.
2. Disconnect the negative cable from the battery, and wait at least 3 minutes before beginning work.
3. Disconnect the side airbag harness 2P connectors (A).



4. Remove the front seat assembly (see page 20-104) and front seat-back cover (see page 20-113).
5. Remove the mounting nuts (A) and the side airbag (B).

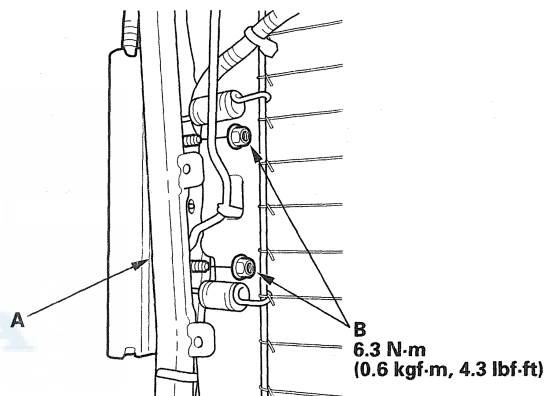


Installation

NOTE:

- If the side airbag lid is secured by tape, remove the tape.
- Do not open the lid of the side airbag cover.
- Use new mounting nuts tightened to the specified torque.
- Make sure that the seat-back cover is installed properly. Improper installation may prevent proper deployment.
- Be sure to install the harness wires so that they are not pinched or interfering with other parts.

1. Place the new side airbag on the seat-back frame (A). Tighten the side airbag mounting nuts (B).



2. Install the front seat-back cover (see page 20-113).
3. Install the front seat assembly (see page 20-104), then connect the side airbag harness 2P connector.
4. Reconnect the negative cable to the battery.
5. Move the front seat and the seat-back through their full ranges of movement, making sure the harness wires are not pinched or interfering with other parts.
6. After installing the side airbag, confirm proper system operation: Turn the ignition switch ON (II); the SRS indicator should come on for about 6 seconds and then go off.

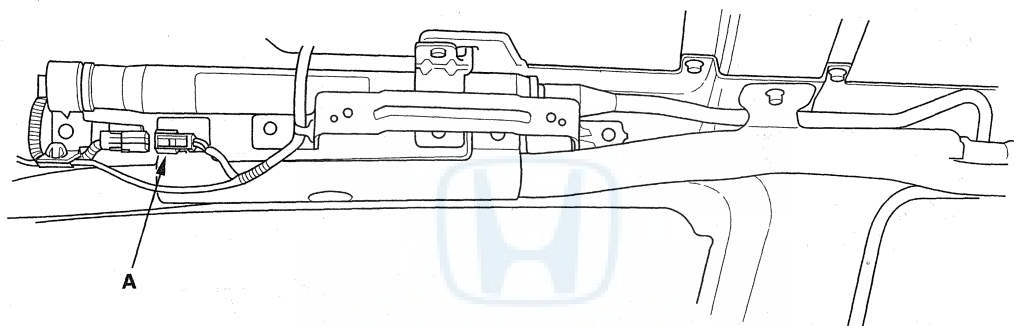
Side Curtain Airbag Replacement

Removal

NOTE:

- Review the interior trim replacement procedure before performing repair or service.
- Removal of the side curtain airbag must be performed according to the precautions and procedures (see page 23-19).
- The side curtain airbag system consists of the side curtain airbag module, including the roof trim, front grab handle, all grab handle brackets and shielding protector. When the side curtain airbag has been deployed, these parts should be replaced (see page 23-198).

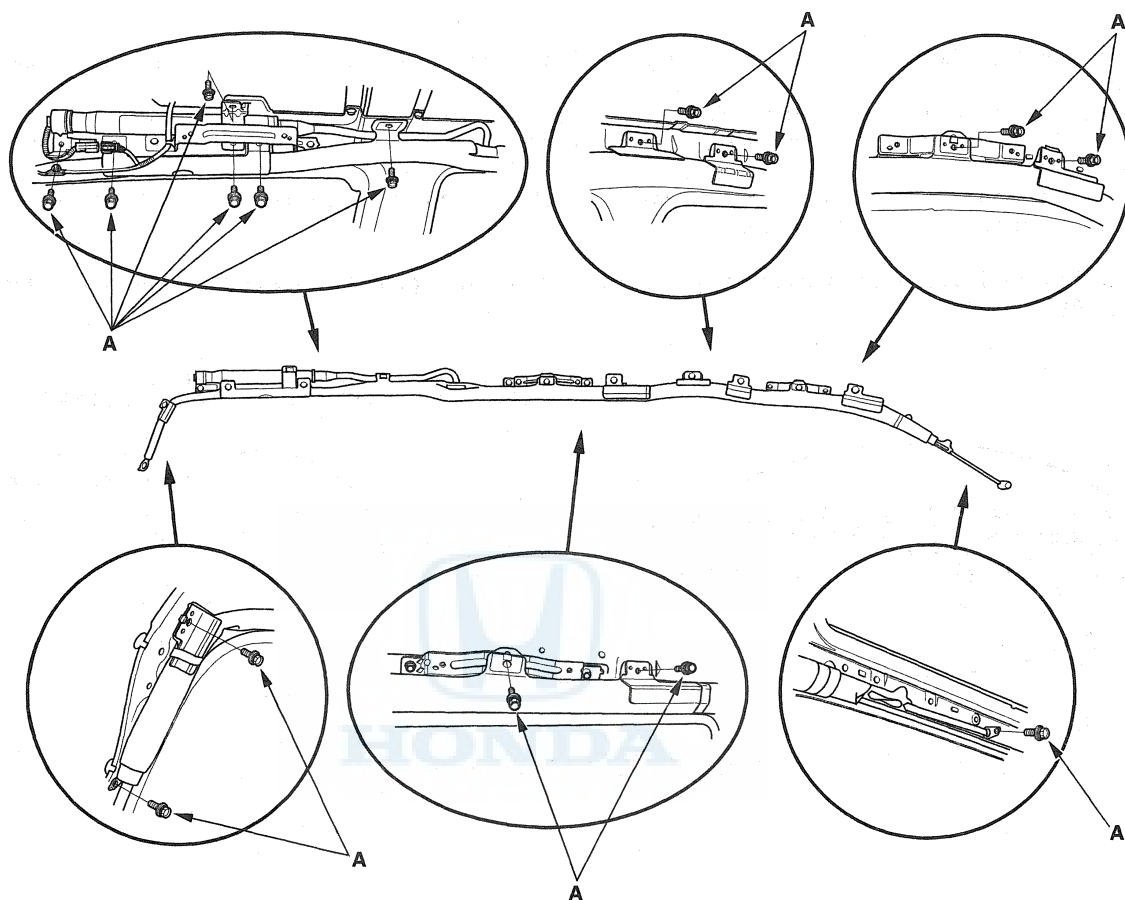
1. Disconnect the negative cable from the battery, and wait at least 3 minutes before beginning work.
2. Remove the headliner (see page 20-83).
3. Disconnect the roof wire harness 2P connector (A) from the side curtain airbag.



Left side shown; right side is similar.



4. Remove the mounting bolts (A) from the brackets.



Left side shown; right side is similar.

(cont'd)

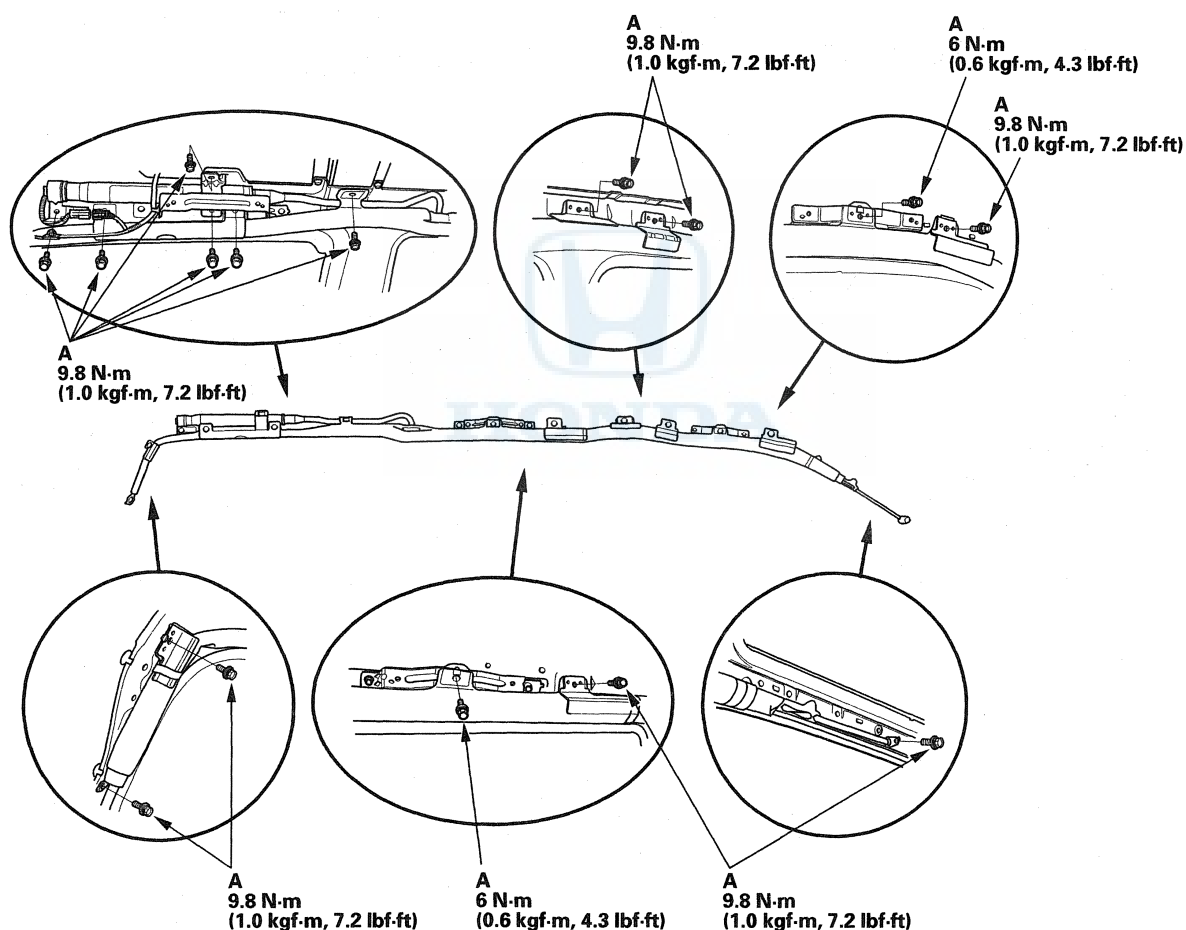
Side Curtain Airbag Replacement (cont'd)

Installation

NOTE:

- Installation of the side curtain airbag must be performed according to the precautions and procedures (see page 23-19).
- If the airbag is frayed, or has only other visible damage, replace it. Do not attempt to repair an airbag.
- When you install the airbag, make sure it is not twisted, and that it is not caught between the inflator bracket by the bracket bolts.
- Make sure that the side curtain airbag inflator retainer is installed properly, otherwise the airbag could deploy incorrectly and cause damage or injuries.

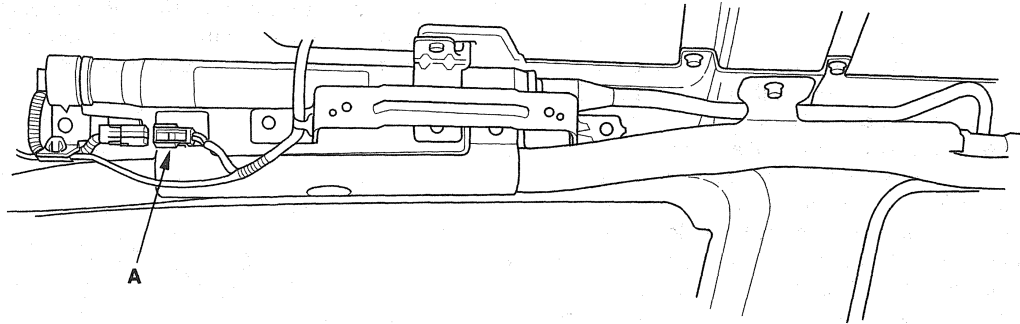
1. Place the new side curtain airbag assembly on the side of the roof. Tighten the side curtain airbag mounting bolts (A).



Left side shown; right side is similar.

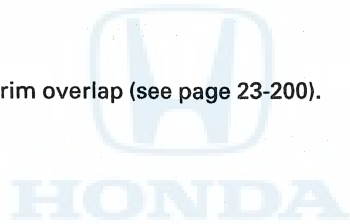


2. Connect the roof wire harness 2P connector (A) to the side curtain airbag.



Left side shown; right side is similar.

3. Reconnect the negative cable to the battery.
4. After installing the side curtain airbag, confirm proper system operation: Turn the ignition switch ON (II); the SRS indicator should come on for about 6 seconds and then go off.
5. Install all removed parts.
6. Confirm proper headliner/pillar trim overlap (see page 23-200).



Airbag and Tensioner Disposal

Special Tools Required

Deployment tool 07HAZ-SG00500

Before scrapping any airbags, side airbags, or seat belt tensioners (including those in a whole vehicle to be scrapped), they must be deployed. If the vehicle is still within the warranty period, the Honda District Parts and Service Manager must give approval and/or special instruction before deploying the airbags, side airbags, or seat belt tensioners. Only after the airbags, side airbags, or seat belt tensioners have been deployed (as the result of vehicle collision, for example), can they be scrapped. If the airbags, side airbags, or seat belt tensioners appear intact (not deployed), treat them with extreme caution. Follow this procedure.

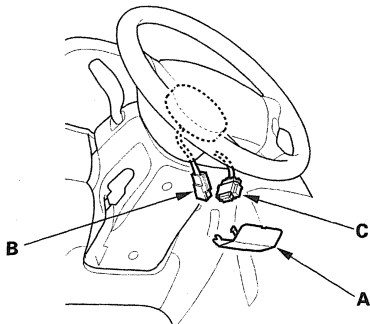
Deploying Airbags in the Vehicle

If an SRS equipped vehicle is to be entirely scrapped, its airbags, side airbags, or seat belt tensioners should be deployed while still in the vehicle. The airbags, side airbags, or seat belt tensioners should not be considered as salvageable parts and should never be installed in another vehicle.

1. Turn the ignition switch OFF, then disconnect the negative cable from the battery, and wait at least 3 minutes.
2. Confirm that each airbag, side airbag, or seat belt tensioner is securely mounted.
3. Confirm that the deployment tool is functioning properly by following the check procedure on the tool label.

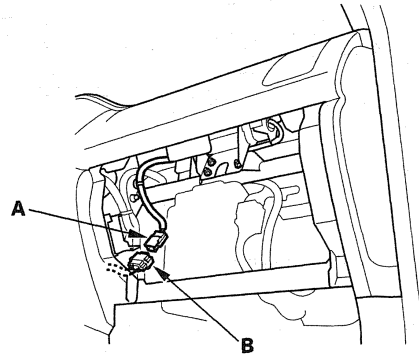
Driver's Airbag

4. Remove the access panel (A), then disconnect the 4P connector between the driver's airbag (B) and the cable reel (C).



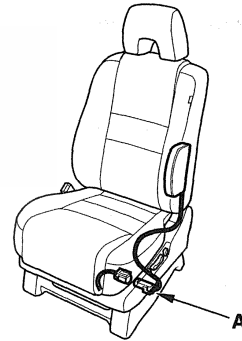
Front Passenger's Airbag

5. Remove the glove box, then disconnect the 4P connector between the front passenger's airbag (A) and the dashboard wire harness (B).



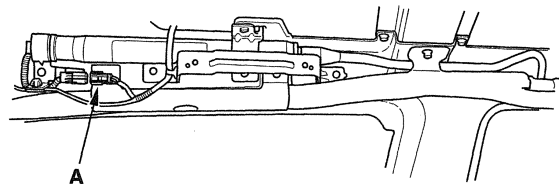
Side Airbag

6. Disconnect the 2P connector (A).



Side Curtain Airbag

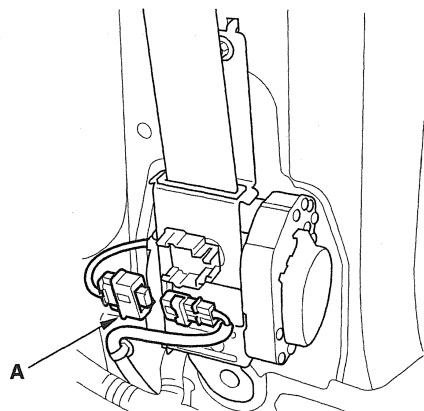
7. Disconnect the roof wire harness 2P connector (A) from the side curtain airbag.





Seat belt tensioner

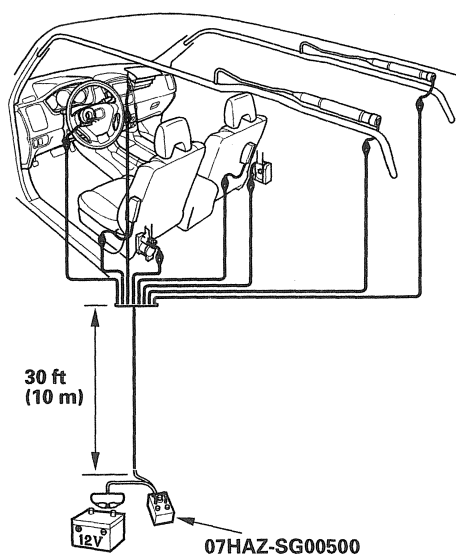
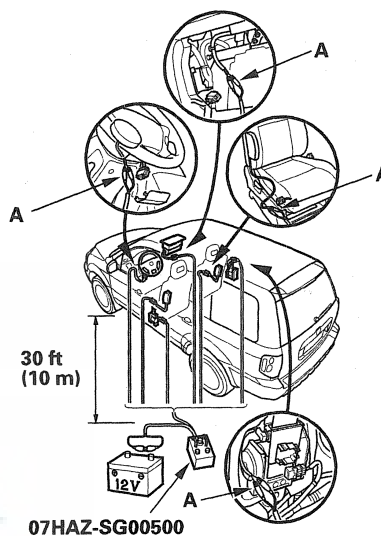
8. Disconnect the seat belt tensioner 2P connector (A).



9. Pull the seat belt out all the way and cut it.

10. Cut off each connector, strip the ends of the wires. Twist each pair of unlike colored wires together, and clip an alligator clip (A) to each pair. Place the deployment tool at least 30 feet (10 meters) away from the vehicle.

NOTE: The driver's airbag and the front passenger's airbag each have four wires, two yellow and two red. Twist each pair of unlike colored wires together, and connect an alligator clip to each pair.



(cont'd)

Airbag and Tensioner Disposal (cont'd)

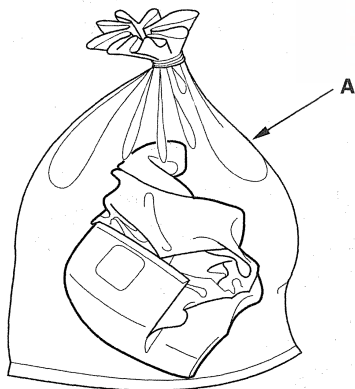
11. Connect a 12 volt battery to the tool.

- If the green light on the tool comes on, the igniter circuit is defective and cannot deploy the component. Go to Disposal of Damaged Components.
- If the red light on the tool comes on, the component is ready to be deployed.

12. Push the tool's deployment switch. The airbags and tensioners should deploy (deployment is both highly audible and visible: a loud noise and rapid inflation of the bag, followed by slow deflation).

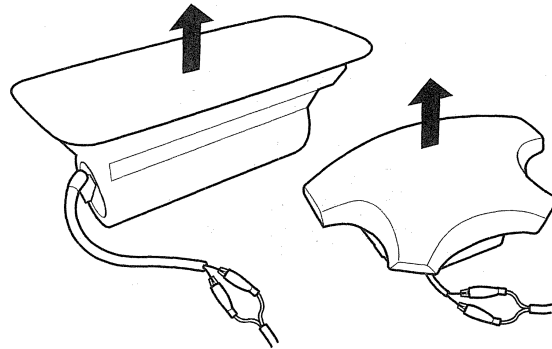
- If the components deploy and the green light on the tool comes on, continue with this procedure.
- If a component doesn't deploy, and the green light comes ON, its igniter is defective. Go to Disposal of Damaged components.
- During deployment, the airbags can become hot enough to burn you. Wait 30 minutes after deployment before touching the airbags.

13. Dispose of the complete airbag. No part of it can be reused. Place it in a sturdy plastic bag (A), and seal it securely. Dispose of the deployed airbag according to your local regulations.



Deploying Components Out of the Vehicle

If an intact airbag or tensioner has been removed from a scrapped vehicle, or has been found defective or damaged during transit, storage, or service, it should be deployed as follows:



1. Confirm that the deployment tool is functioning properly by following the check procedure on the tool label.
2. Position the airbag face up, outdoors, on flat ground, at least 30 feet (10 meters) from any obstacles or people.
3. Follow steps 9 through 12 of Deploying Airbags in the Vehicle.

NOTE: The driver's and front passenger's airbags have dual inflators. The like color wires go to the individual inflators.



Disposal of Damaged Components

1. If installed in a vehicle, follow the removal procedure for the driver's airbag (see page 23-201), front passenger's airbag (see page 23-202), side airbag (see page 23-203), side curtain airbag (see page 23-204), and seat belt tensioner (see page 23-4).
2. In all cases, make a short circuit by cutting, stripping, and twisting together the two inflator wires.

NOTE: The driver's and front passenger's airbags have dual inflators. The like color wires go to the individual inflators.

3. Package the component in exactly the same packaging that the new replacement part came in.
4. Mark the outside of the box "DAMAGED AIRBAG NOT DEPLOYED," "DAMAGED SIDE AIRBAG NOT DEPLOYED," "DAMAGED SIDE CURTAIN AIRBAG NOT DEPLOYED," "DAMAGED SEAT BELT TENSIONER NOT DEPLOYED" so it does not get confused with your parts stock.
5. Contact your Honda District Parts and Service Manager for how and where to return it for disposal.

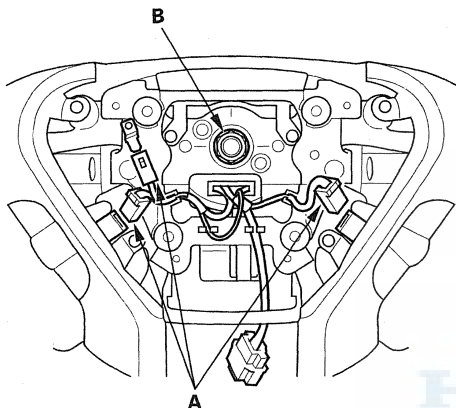
Deployment Tool Check

1. Connect the yellow clips to both switch protector handles on the tool; connect the tool to a battery.
2. Push the operation switch: green means the tool is OK; red means the tool is faulty.
3. Disconnect the yellow clips from the battery.

Cable Reel Replacement

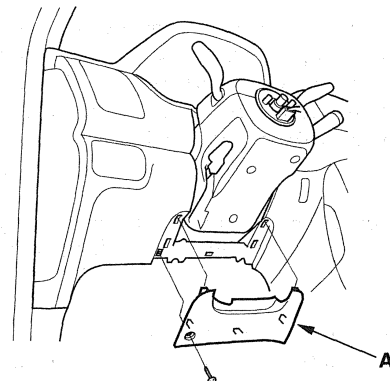
Removal

1. Make sure the front wheels are aligned straight ahead.
2. Disconnect the negative cable from the battery, and wait at least 3 minutes.
3. Remove the driver's airbag (see page 23-201).
4. Disconnect the connectors (A) from the cruise control set/resume switch, horn switch and radio remote switch, then remove the steering wheel nut (B).

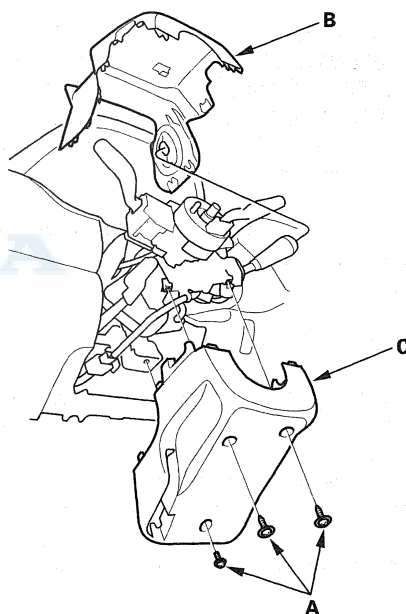


5. Remove the steering wheel with a steering wheel puller (see step 5 on page 17-22). Do not tap on the steering wheel or steering column shaft when removing the steering wheel.

6. Remove the dashboard lower cover (A).

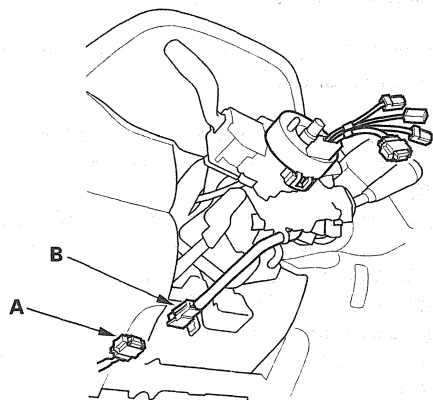


7. Remove the column cover screws (A), then remove the column covers (B, C).

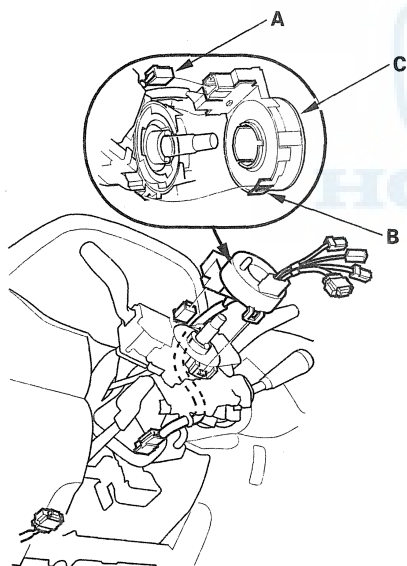




8. Disconnect the dashboard wire harness A 4P connector (A) from the cable reel 4P connector (B).

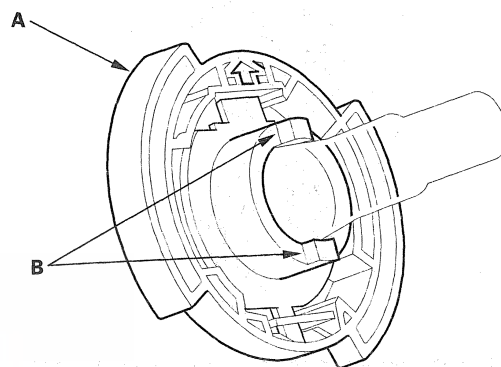


9. Disconnect the dashboard wire harness B 5P connector (A), and release the tab (B), then pull off the cable reel (C).

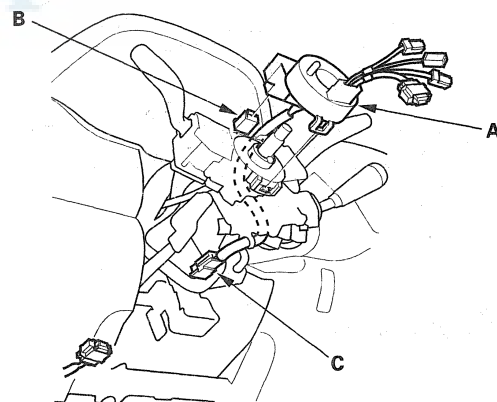


Installation

1. Before installing the steering wheel, align the front wheels straight ahead.
2. If not already done, disconnect the negative cable from the battery, and wait at least 3 minutes.
3. Set the turn signal canceling sleeve (A) so the projections (B) are aligned vertically.



4. Carefully install the cable reel (A) on the combination switch. Then connect the 5P connector (B) and the 4P connector (C).

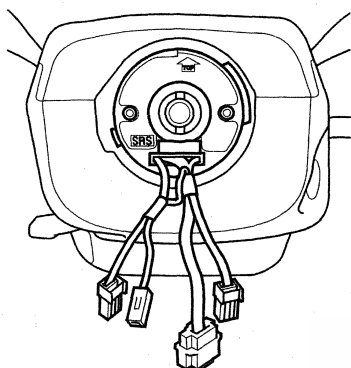


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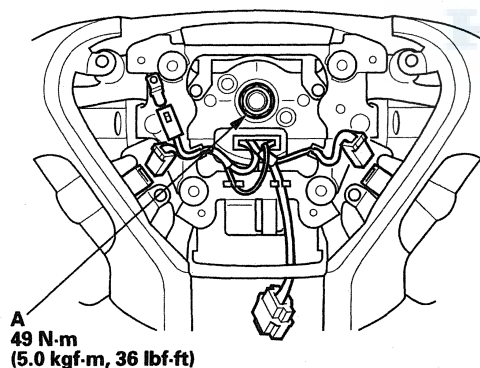
Cable Reel Replacement (cont'd)

5. Install the steering column covers.

6. If necessary, center the cable reel. (New replacement cable reels come centered.) Do this by first rotating the cable reel clockwise until it stops. Then rotate it counterclockwise (about 2 1/2 turns) until the arrow mark on the cable reel label points straight up.



7. Align the projections on the cable reel with the holes on the steering wheel, and install the steering wheel with a new steering wheel nut (A). Then reconnect the connectors.



8. Install the driver's airbag (see page 23-201).

9. Reconnect the negative cable to the battery.

10. After installing the cable reel, confirm proper system operation:

- Turn the ignition switch ON (II); the SRS indicator should come on for about 6 seconds and then go off.
- After the SRS indicator has turned off, turn the steering wheel fully left and right to confirm the SRS indicator does not come on.
- Make sure the horn works.
- Make sure the cruise control buttons work.
- Make sure the steering wheel audio controls work.
- Make sure the INFO/SEL buttons work.
- Make sure there are no DTCs.

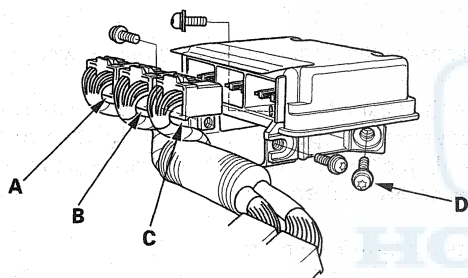


SRS Unit Replacement

Removal

NOTE: If you are only disconnecting SRS unit connector A, skip step 2.

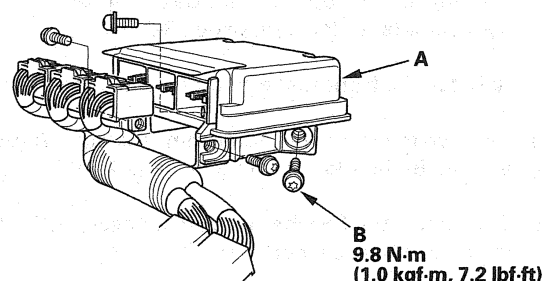
1. Disconnect the negative cable from the battery, and wait at least 3 minutes before beginning work.
2. Disconnect both seat belt tensioner connectors (see step 5 on page 23-27).
3. Remove the center console side trim (see step 4 on page 20-89).
4. Pull down the console carpet on the driver's side and passenger's side, then disconnect SRS unit connector A (28P), SRS unit connector B (28P), and SRS unit connector C (28P). Remove the TORX bolts (D), then pull out the SRS unit.



Installation

1. Install the new SRS unit (A) with TORX bolts (B), then connect the connectors to the SRS unit; push them into position until it clicks.

NOTE: Be sure the SRS unit is sitting squarely against its bracket before torquing the TORX bolts.



2. Reinstall the center console side trim (see step 4 on page 20-89).
3. Reconnect both seat belt tensioner connectors (see step 7 on page 23-28).
4. Reconnect the negative cable to the battery.
5. Calibrate the ODS unit (see page 23-34).

NOTE: Initialization is only needed if you installed a new SRS unit.

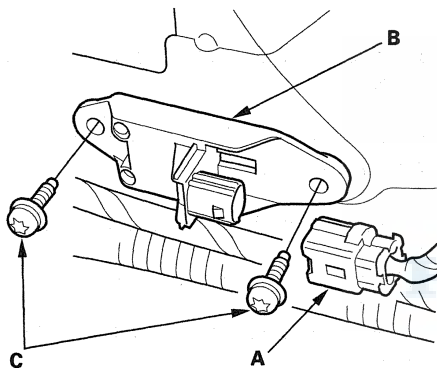
6. Install all removed parts.
7. Do the ODS unit operation check (see page 23-35).
8. After installing the SRS unit, confirm proper system operation: Turn the ignition switch ON (II); the SRS indicator should come on for about 6 seconds and then go off.

Side Impact Sensor (First) Replacement

NOTE: Review the seat replacement procedure (see page 20-104) before doing repairs or service.

Removal

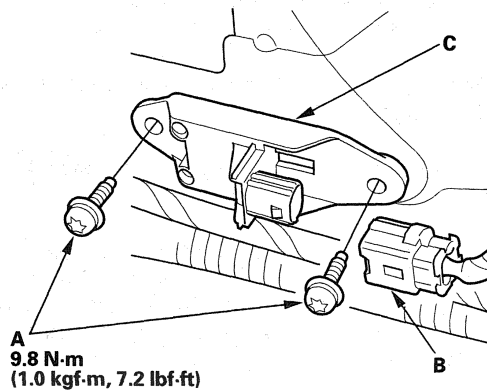
1. Disconnect the negative cable from the battery, and wait at least 3 minutes before beginning work.
2. Disconnect the appropriate side airbag 2P connector (see step 4 on page 23-27).
3. Remove the front seat assembly (see page 20-104).
4. Remove the front side outer trim (see page 20-65), and the B-pillar lower trim (see page 20-70).
5. Disconnect the SRS harness 2P connector (A) from the side impact sensor (first) (B).



6. Using a TORX T30 bit, remove the TORX bolt (C), then remove the side impact sensor (first) (B).

Installation

1. Install the new side impact sensor with new TORX bolts (A), then connect the SRS harness 2P connector (B) to the side impact sensor (first) (C).



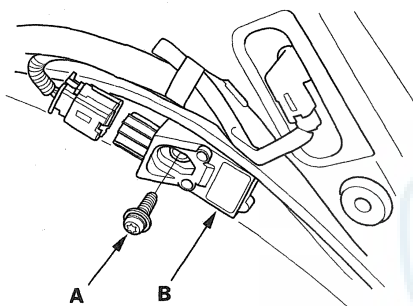
2. Reconnect the negative cable to the battery.
3. After installing the side impact sensor, confirm proper system operation: Turn the ignition switch ON (II); the SRS indicator should come on for about 6 seconds and then go off.
4. Install all removed parts.



Side Impact Sensor (Second) Replacement

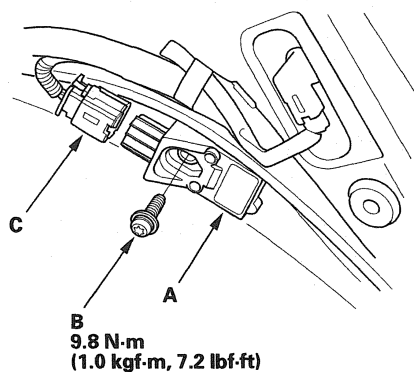
Removal

1. Disconnect the negative cable from the battery, and wait at least 3 minutes before beginning work.
2. Disconnect the appropriate side curtain airbag 2P connector (see page 23-27).
3. Remove the rear side trim panel (see page 20-80).
4. Disconnect the side wire harness 2P connector from the side impact sensor (second).
5. Using a TORX T30 bit, remove the TORX bolt (A), then remove the side impact sensor (second) (B).



Installation

1. Install the new side impact sensor (second) (A) with TORX bolt (B), then connect the side wire harness 2P connector (C) to the side impact sensor (second).

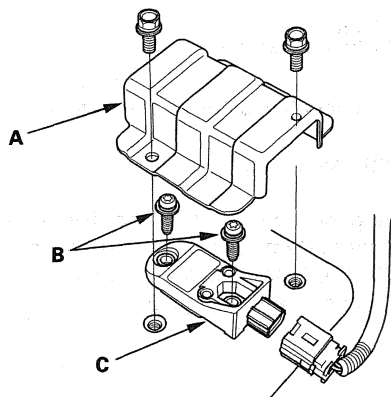


2. Reconnect the negative cable to the battery.
3. Install all removed parts.
4. After installing the side impact sensor (second), confirm proper system operation: Turn the ignition switch ON (II); the SRS indicator should come on for about 6 seconds and then go off.

Rear Safing Sensor Replacement

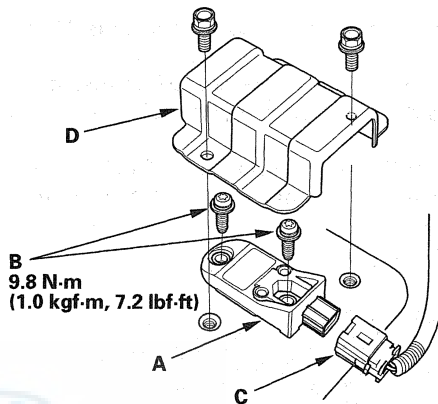
Removal

1. Disconnect the negative cable from the battery, and wait at least 3 minutes before beginning work.
2. Disconnect both side curtain airbag 2P connectors (see page 23-27).
3. Remove the third row seat (see page 20-128).
4. Disconnect the right side wire harness 2P connector from the rear safing sensor.
5. Remove the cover (A), and using a TORX T30 bit, remove the TORX bolts (B), then remove the rear safing sensor (C).



Installation

1. Install the new rear safing sensor (A) with TORX bolts (B) then connect the right side wire harness 2P connector (C) to the rear safing sensor.
2. Reinstall the cover (D).



3. Reconnect the negative cable to the battery.
4. Install all removed parts.
5. After installing the rear safing sensor, confirm proper system operation: Turn the ignition switch ON (II); the SRS indicator should come on for about 6 seconds and then go off.

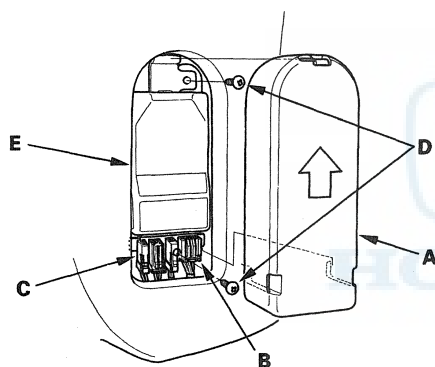


ODS Unit Replacement

NOTE: Review the seat replacement procedures (see page 20-104) before doing repairs or service.

Removal

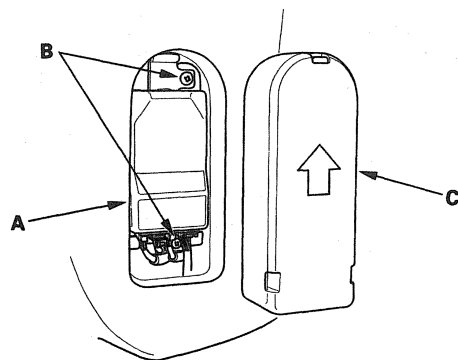
1. Disconnect the negative cable from the battery, and wait at least 3 minutes before beginning work.
2. Disconnect the passenger's side airbag harness 2P connector (see step 4 on page 23-27).
3. Remove the front passenger's seat assembly (see page 20-104) and seat-back cover (see page 20-112).
4. Remove the cover (A), then disconnect the ODS unit harness 18P connector (B) and sensor connectors (C) from the ODS unit.



5. Remove the three screws (D) and the ODS unit (E).

Installation

1. Place the new ODS unit (A) on the seat-back frame. Tighten the three screws (B), and connect the ODS harness 18P connector and sensor connectors to the ODS unit. Reinstall the cover (C).



2. Install the seat-back cover (see page 20-112).
3. Install the seat assembly (see page 20-104), then connect the side airbag 2P connector.
4. Reconnect the negative cable to the battery.
5. Set the seat-back in the normal position, and make sure there is nothing on the front passenger's seat.
6. Initialize the ODS unit (see page 23-33).
7. Calibrating the ODS unit (see page 23-34).
8. After installing the ODS unit, confirm proper system operation: Turn the ignition switch ON (II); the SRS indicator should come on for about 6 seconds and then go off.

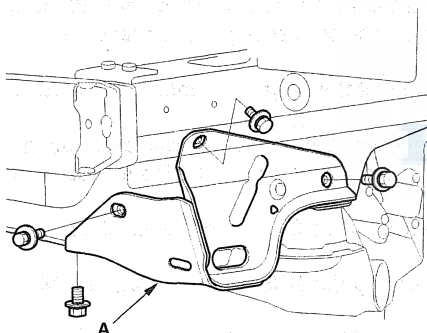
Front Impact Sensor Replacement

Removal

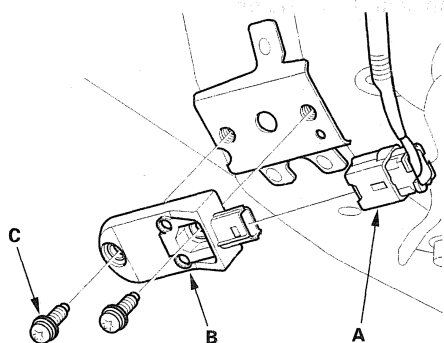
NOTE:

- Removal of the front impact sensor must be performed according to precautions and procedures (see page 23-19).
- Before disconnecting the front impact sensor 2P connector(s), disconnect the driver's and front passenger's airbag 4P connectors, and both seat belt tensioner 2P connector(s).
- Do not turn the ignition switch ON (II), and do not connect the battery cable while removing the front impact sensor.

1. Remove the battery, and wait at least 3 minutes before beginning work.
2. Remove the front bumper (see page 20-138).
3. Remove the resonator (see page 11-403), and washer reservoir (see page 22-218).
4. Remove the tow hook brackets (A).



5. Disconnect the front impact sensor 2P connector (A) from the front impact sensor (B).



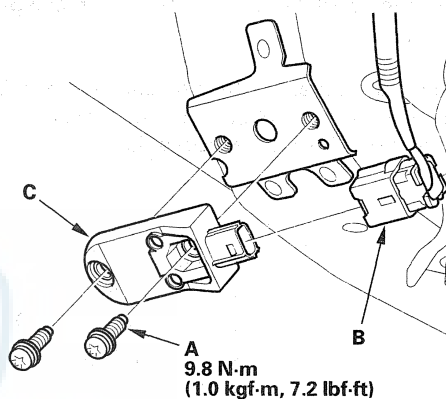
6. Using a TORX T30 bit, remove the TORX bolt (C), then remove the front impact sensor.

Installation

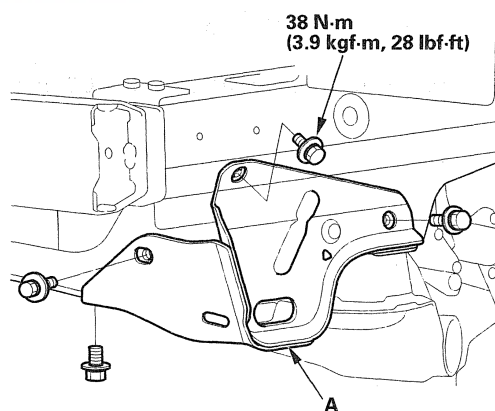
NOTE:

- Be sure to install the harness wires so they are not pinched or interfering with other parts.
- Do not turn the ignition switch ON (II), and do not connect the battery cable while installing the front impact sensor.

1. Install the new front impact sensor with new TORX bolts (A), then connect the front impact sensor 2P connector (B) to the front impact sensor (C).



2. Install the tow hook bracket (A), and the removed parts.



3. Reconnect the negative cable to the battery.
4. After installing the front impact sensor, confirm proper system operation: Turn the ignition switch ON (II); the SRS indicator should come on for about 6 seconds and then go off.

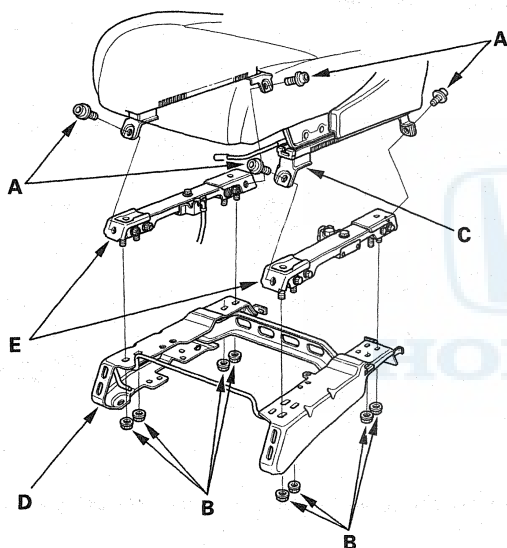


Front Passenger's Weight Sensor Replacement

Removal

NOTE: Removal of the front passenger's weight sensors must be performed according to precautions and procedures (see page 23-19).

1. Disconnect the battery negative cable and wait at least 3 minutes before beginning work.
2. Remove the front passenger's seat assembly (see page 20-104).
3. Remove the tamper-resistant TORX bolts (A) and TORX nuts (B) attaching the seat track (C) and seat riser (D) to the front passenger's weight sensors (E).

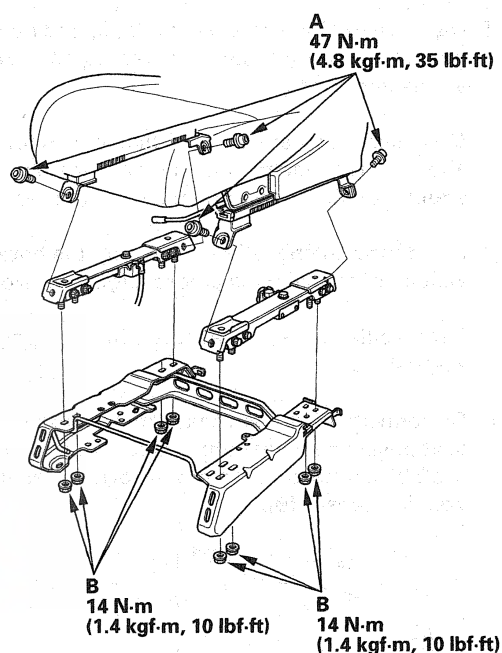


4. Disconnect the sensors connectors from the ODS unit, then remove the front passenger's weight sensors.

Installation

NOTE: Be sure to install the harness wires so they are not pinched or interfering with other parts.

1. Install the new front passenger's weight sensors with TORX bolts (A) and TORX nuts (B) under the seat track.



2. Connect the front passenger's weight sensor connectors to the ODS unit.
3. Reinstall the front passenger's seat (see page 20-104).
4. Reconnect the negative cable to the battery.
5. Calibrate the ODS unit (see page 23-34).
6. After installing the front passenger's weight sensors, confirm proper system operation: Turn the ignition switch ON (II); the SRS indicator should come for about 6 seconds and then go off.

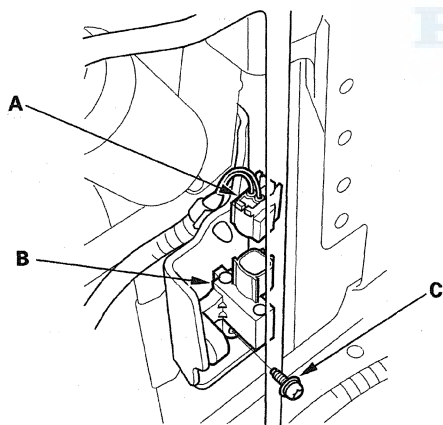
Driver's Seat Position Sensor Replacement

Removal

NOTE:

- Removal of the driver's seat position sensor must be performed according to precautions and procedures (see page 23-19).
- Before disconnecting the driver's seat position sensor 2P connector, disconnect the driver's airbag 4P connector.
- Do not turn the ignition switch ON (II), and do not connect the battery cable while removing the driver's seat position sensor.

1. Make sure you have the anti-theft codes for the audio system and the navigation system (if equipped), then write down the audio presets.
2. Disconnect the negative cable from the battery, and wait at least 3 minutes before beginning work.
3. Remove the driver's seat assembly (see page 20-104).
4. Disconnect the driver's seat wire harness or driver's seat position sensor subharness (without power seat) 2P connector (A) from the driver's seat position sensor (B).



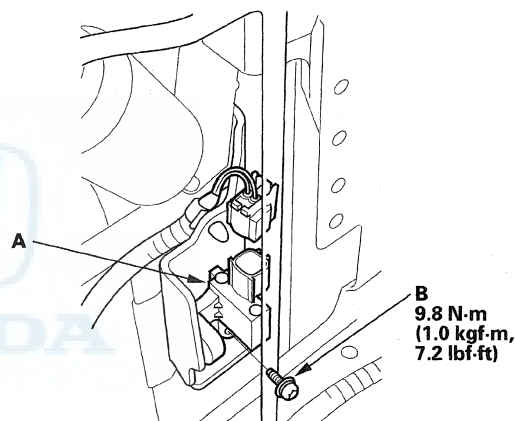
5. Using a TORX T30 bit, remove the TORX bolt (C), then remove the driver's seat position sensor.

Installation

NOTE:

- Be sure to install the harness wires so they are not pinched or interfering with other parts.
- Do not turn the ignition switch ON (II), and do not connect the battery cable while installing the driver's seat position sensor.
- After installing the driver's seat position sensor, make sure it is clean. Keep it away from dust.

1. Install the new driver's seat position sensor (A) with a TORX bolt (B), then connect the driver's seat wire harness or driver's seat position sensor subharness (without power seat) 2P connector to the driver's seat position sensor.



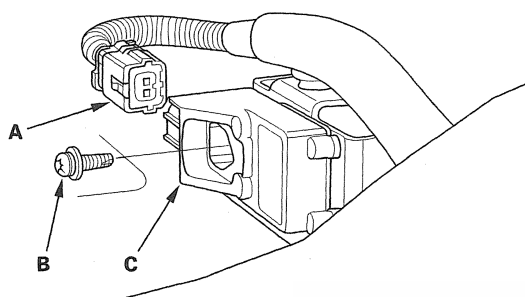
2. Install the driver's seat assembly (see page 20-104).
3. Reconnect the negative cable to the battery.
4. Check the operation of the driver's seat position sensor with the HDS (see page 23-36).



Roll Rate Sensor Replacement

Removal

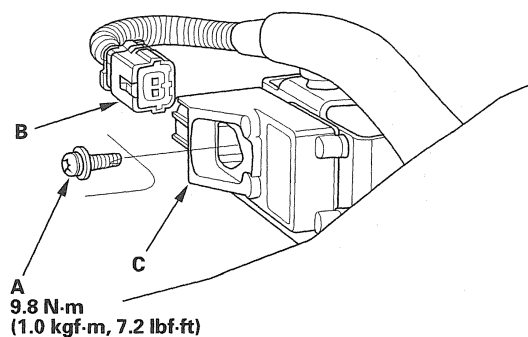
1. Disconnect the negative cable from the battery, and wait at least 3 minutes before beginning work.
2. Remove the center console (see page 20-88).
3. Disconnect the SRS harness 2P connector (A) from the roll rate sensor.



4. Using a TORX T30 bit, remove the TORX bolt (B), then remove the roll rate sensor (C).

Installation

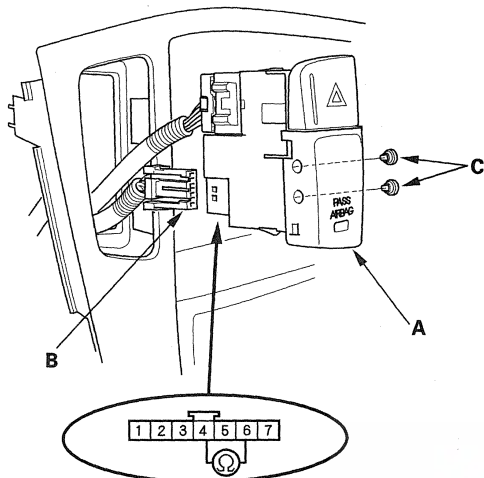
1. Install the new roll rate sensor with a TORX bolt (A), then connect the SRS harness 2P connector (B) to the roll rate sensor (C).



2. Reconnect the negative cable to the battery.
3. Install all removed parts.
4. After installing the roll rate sensor, confirm proper system operation: Turn the ignition switch ON (II); the SRS indicator should come on for about 6 seconds and then go off.

Passenger's Airbag Cutoff Indicator Illumination Bulb Test

1. Remove the center panel (see page 20-93).
2. Push out the passenger's airbag cutoff indicator (A) from behind the center panel.



3. Disconnect the 7P connector (B) from the passenger's airbag cutoff indicator.
4. Check for continuity between the No. 4 and No. 6 terminals of the indicator. If there is no continuity, replace the bulbs (C).

NOTE: Both illumination bulbs are connected in parallel. If there is continuity, remove one bulb at a time and recheck.

5. Install the parts in the reverse order of removal.



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